



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Atoms and their history	Atomic Structure	The Periodic Table	Evolution of the Atmosphere	Pollution and Climate Change	Energy Changes
Content	<ul style="list-style-type: none"> Atoms, Elements, and compounds. Word and balanced symbol equations. Mixtures and separating mixtures. Early development of the atomic model. 	<ul style="list-style-type: none"> Structure of the atom. Ions, atoms and isotopes. Electronic structure 	<ul style="list-style-type: none"> Development and arrangement of the periodic table. Groups 0, 1 and 7. 	<ul style="list-style-type: none"> History and the evolution of the atmosphere. The carbon cycle 	<ul style="list-style-type: none"> Greenhouse gases and global warming. Effects of global warming and carbon footprint. Other pollution types (e.g. acid rain) 	<ul style="list-style-type: none"> Endothermic and Exothermic Reactions *Bond breaking and Bond making in chemical reactions. Cells and batteries
Rationale/ Linking	Follows on from work on elements compounds and mixtures in middle school. Begins to build in the first of the scientific skills WS1.1 Understanding how scientific methods and theories have developed over time.	Structure of the atom is fundamental to understanding all future chemical reactions. This knowledge underpins many of the future topics and is built on throughout the course.	Further development of the WS 1.1 skills and build in WS1.3 and WS 1.4 - power and limitations of science and the importance of peer review. Learning to navigate and use the PT, a tool to be used across many of the further topics in Chemistry e.g Bonding in Y10.	Teaches the processes that are required to understand how global warming works, build foundations for next steps. Linked to biology curriculum – carbon cycle revisited in Biology in Y10 (spiral learning).	Very relevant to current affairs, helps students to understand the causes and implications of climate change. Links to GCSE Geography curriculum particularly the urban issues and challenges unit.	Provides an understanding of why chemical reactions get hot or cold at foundation level this can be used in many everyday applications. At a higher level this provides the basic knowledge and skills for further education in science.
Assessment	Formal assessment – once per half term which includes an interim assessment part way into each topic and a final assessment for each topic. Regular informal assessment opportunities built into lessons and homework.			Learning Resources	GCSE AQA Chemistry Textbook. Practical resources for displacement reactions, exothermic and endothermic reactions and fuel cells.	



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Forces	Motion	Energy Stores	Introduction to Waves	Introduction to Circuits	Energy Resources
Content	-Contact & Non-contact Forces -Magnets & Magnetic fields -Forces & Elasticity (springs) -Gravity	-Scalars and Vectors (definitions and examples) -Speed -Stopping Distance	-Energy Stores and Transfers -Efficiency	-Transverse and Longitudinal Waves -Properties of the Electromagnetic Spectrum -Reflection and Refraction	-Building Circuits and Circuit Diagrams -Current, Potential Difference and Resistance	-National and Global Energy Resources
Rationale/ Linking	Provides a good introduction to forces which underpins future work on motion. This also provides opportunities to develop practical skills with the springs required practical.	Continues to develop student's understanding of using equations with the speed equation and an opportunity to explore unit conversions in familiar settings.	Introduces energy stores and concepts of energy transfer so that students can identify these throughout their future studies.	Provides an application of energy transfers as well as introducing wave topics to underpin future study on waves in Y10	Provides an application of energy transfer and develops an understanding of circuits, including practical experience, to underpin study of this in Y10	Follows on from discussion of energy and looks at the application of this in real life
Assessment	Synoptic Assessment in at the end of Autumn term Mid and end of topic test			Learning Resources		



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Bonding and Structure	Bonding and Properties of Matter	Rates of Reaction	Rates of reaction and equilibria	Chemical Analysis	Using the Earth's resources
Content	<ul style="list-style-type: none"> Ionic bonding Covalent Bonding Metallic bonding and the properties of metals. Using models and diagrams to represent bonding. States of matter. 	<ul style="list-style-type: none"> Properties of ionic compounds and simple covalent molecules. Giant covalent structures and the allotropes of carbon. An introduction to polymers. 	<ul style="list-style-type: none"> Finding and calculating the rate of reaction. Introduction to collision theory. The effect of concentration, temperature, surface area, pressure on the rate of reaction. 	<ul style="list-style-type: none"> Rate of reaction required practical The effect of a catalyst on the rate of reaction. Reversible reactions and equilibria. 	<ul style="list-style-type: none"> Pure substances and formulations Chromatography Testing for common gases. 	<ul style="list-style-type: none"> Water treatment processes. Distillation required practical Lifecycle assessments and reducing our use of resources. Alloys as useful materials Ceramics, Polymers and composites
Rationale/ Linking	This topic provides a spiral learning opportunity to revisit the structure of the atom from the start of Y9 and provides a perfect chance for retrieval practice then moving on to application of atomic structure. Topic also provides explanations for all chemical reactions that will be learnt about during Y10 and Y11.	Using work on bonding from last half term students now use this knowledge to explain the properties of a range of substances and link this to their applications in the wider world.	Understanding collision theory and rates of reaction provides opportunities for spiral learning from the energy changes topic, getting students to consider what is happening in a chemical reaction on a particle level.	Using understanding from spring 1 to make predictions. Developing skills WS 1.2, 1.5, 2.1, 2.2, 2.3, 2.4, 2.6, 2.7 and all WS3 skills.	Students continue to build heavily of the practical skills from WS2 and 3 that were developed during the Spring term.	As part of this topic students will also spiral back to the impact of humans on the environment (from Y9 atmosphere) with a focus on sustainable living and reducing our use of resources.
Assessment	Formal assessment – once per half term which includes an interim assessment part way into each topic and a final assessment for each topic. Y10 trial exams take place in the summer term. Regular informal assessment opportunities built into lessons and homework.			Learning Resources	GCSE AQA Chemistry Textbook. Practical resources for rates of reaction required practical and chemical analysis testing.	



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Forces and their influence on Motion	Analysis of Motion	Density, Pressure and Floating	Calculating Changes in Energy and Thermal Energy	Waves	Electricity
Content	-Newtons Laws -Acceleration -Terminal Velocity	-Motion graphs -Momentum and Collisions	-Pressure in Fluids -Floating and sinking -Density	-Quantitative treatment of energy stores -Heat Capacity -Latent Heat -Conduction	-The Wave Equation -Sound and Ultrasound -Investigating waves -Seismic Waves -Light and Lenses	-Factors Affecting Resistance -V-I Characteristics of components -Energy transfers within circuits -Mains electricity and the National Grid.
Rationale/ Linking	Builds on Y9 work on forces with quantitative treatment of the material. Allows more difficult calculations to be introduced to build on prior work.	Builds on work from Autumn 1 to apply force and motion to more complex systems. Provides an opportunity to revisit stopping distances through motion graphs	Brings together ideas about forces from Autumn to consider forces in fluids. Density investigations follow naturally within this theme.	Builds on Y9 work on energy stores to include equations to calculate changes in energy.	Builds on Y9 work to include quantitative treatment of waves and wave of applications. Study of light allows refraction to be revisited and expanded.	Builds on Y9 study of electricity as well as providing foundation for Y11 study on electromagnetism.
Assessment	Formal assessment – once per half term which includes an interim assessment part way into each topic and a final assessment for each topic. Y10 trial exams take place in the summer term. Regular informal assessment opportunities built into lessons and homework.			Learning Resources		



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Quantitative Chemistry	Organic Chemistry	Chemical Changes	Chemical Changes	Revision and Past Paper Practice Final Exams	N/A
Content	<ul style="list-style-type: none"> Relative formula mass Calculating concentrations 	<ul style="list-style-type: none"> Crude oil, hydrocarbons and fractional distillation. Combustion and cracking. 	<ul style="list-style-type: none"> The reactions of metals including with acid and redox. The reactivity series. Extraction of metals by reduction. 	<ul style="list-style-type: none"> The pH scale neutralisation and salts. Electrolysis 	Revision of topics and practice of past exam papers as exam preparation.	N/A
Rationale/ Linking	Topic starts with spiralling back to atomic structure and the periodic table with students analysing information about subatomic particles from the periodic table. Students then use numeracy skills from maths with the introduction to quantitative calculations.	Students spiral learn from the using resources topic with the introduction of organic chemistry and processing and uses of crude oil (non-renewable resource). Combustion links to the changing atmosphere from Y9. Students also use skills from bonding to apply to hydrocarbons.	Spiralling round again from the using resources topic on alloys and corrosion students revisit the reactions and extractions of metals. Students also revisit displacement reactions that they first met in year 9 with the halogen displacement reactions.	Students draw on their knowledge from KS3 when studying the pH scale and neutralisation. Finally students learn about electrolysis which while conceptually challenging ties many other areas and gives an excellent opportunity to revisit many topics prior to starting formal class revision. For example atomic structure, energy changes (half equations), properties of ionic substances, sustainability, resources and extracting metals.		N/A
Assessment	Y11 Mock Exams in the Autumn Term – one full exam paper. Formal assessment – once per half term which includes an interim assessment part way into each topic and a final assessment for each topic. Regular informal assessment opportunities built into lessons and homework.			Learning Resources	GCSE AQA Chemistry Textbook. Practical resources for Neutralisation, Reduction, Extraction of Metals and Electrolysis	



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	The Atom and Radiation	Fission, Fusion, Gases and Space Physics	Scalars, Vectors and Advanced Motion	Electromagnetism	Revision and Exam Preparation	Revision and Exam Preparation
Content	-History of the Atom -Radioactivity -Applications of radiation (including medical physics)	-Nuclear Fission, Reactors and Fusion -Gas properties (Pressure, Volume and Temperature) -The Solar System -Big Bang theory	-Adding vectors by scale drawing -Resolving vectors into components -Applications of acceleration and final velocity equations	-Electromagnetic Devices -Motors -Generators -Transformers		
Rationale/ Linking	Builds on work from Y9 chemistry, providing opportunity to revisit this topic.	Follows from Autumn 1 work thematically, with links between atoms, gases and radiation and leading into stars through nuclear fusion.	Represents the most difficult mathematical aspects of the course (vectors and velocity equations). By visiting this in Y11, students have the necessary maths skills.	Builds on work from Y9 on magnetic fields (giving opportunity to revisit this) and Y10 electricity. Conceptually challenging topic, benefiting from secure foundations build in Y9 and 10.		
Assessment	Mid and end of topic test Mock Exam in December			Learning Resources		