

SCIENCE

Curriculum Intent	Science allows us to understand the world around us by asking and considering questions. We work together to develop our investigative and communicative skills. This inspires us to consider the future impact of science in our lives and our roles in it.
KS3 Curriculum	Each topic at KS3 in each of the disciplines builds on the prior knowledge, for example Cells is taught in Year 7 and then in Year 8 pupils look at plants and photosynthesis to apply what they have already been taught. Chemistry and Physics follow similar patterns
KS4 Curriculum	GCSE starts in Year 9 with Cells and Atomic Structure, these are completed before energy. The topics that follow will build on the key threads that have been taught throughout, so Biology will start with Cells, Move onto Organization, then Infection and Response, each topic will be interleaved with the previous topic in each discipline.

Year Group	HT1	HT2	HT3	HT4	HT5	HT6
7	Content <u>Chemistry – Particles</u> Particle Model of Matter, Changes of State, Diffusion, Solutions and pressure, Separating Mixtures <u>Biology – Cells</u> Plant and Animal cells Microscopes, Cell structure, Bacteria and uses, Yeast cells, Transport within cells and gas exchange.	<u>Biology</u> - Continuation of Cells <u>Physics – Energy</u> Energy paths and transfers, Calculations of gravitational potential energy, Kinetic energy, Elastic energy, Energy sources, Renewable and Non-Renewable energy resources, Sustainability	<u>Physics</u> – Continuation of Energy <u>Chemistry – Chemical Reactions</u> Acids and Alkalis, Oxidation Reactions, Metals and Acids, Titration, Antacid Investigation	<u>Physics – Forces</u> Force Diagrams, Contact and Non-Contact forces, Resultant Forces, Calculations, Weight and mass, Investigation into Speed, Friction, Parachutes, Distance/time graphs, Speed calculations <u>Biology – Reproduction</u> Human Reproduction, Puberty, Fertilisation, Gestation and Birth, Menstrual cycle, Plant reproduction, Germination, Variation, Evolution	<i>Continuation of topics from term 4.</i> <i>This term will be spent completing the curriculum and revising for the End of Year assessments. Lessons will focus on skills required to access the test. Any catch-up work that may have been missed due to COVID will take place in this term also.</i>	<u>Biology – Ecology from Year 8 scheme</u> Food webs and chains, Decay, Sampling, Photosynthesis, Competition within plants and animals, Adaptations, Natural Selection, Biodiversity, Global warming, Sustainability
8	Content <u>Physics – Forces recap</u> Force diagrams, Resultant forces, Gravity and weight, Pressure,	<u>Biology – Digestion and nutrition</u> (as before)	<u>Chemistry - Materials and the Earth</u> Structure of the Earth, Rocks, Fossils, Fossil fuels,	<u>Physics – Electricity and Magnetism</u> Series and parallel circuits, Potential difference,	<u>Physics – Electricity and Magnetism</u> (as before)	Begin Year 9 content. <u>Biology – Biological Systems and processes</u>

		<p>Friction, Speed distance time Due to missed topic, due to school closure.</p> <p>Build on graph skills and calculations.</p> <p><u>Biology – Digestion and nutrition</u> Diet, Importance of a balanced diet, Energy release, Food tests, Digestive system, Enzymes, Effects of Temperature on enzyme activity.</p> <p><u>Chemistry – Atoms and the periodic table</u> Elements, Atomic model, Properties of metals, Compounds, Conservation of mass, Group 1 and 7</p>	<p><u>Chemistry – Atoms and the periodic table (as before)</u></p> <p><u>Chemistry - Materials and the Earth</u> Structure of the Earth, Rocks, Fossils, Fossil fuels, Atmosphere, Global warming, Recycling</p> <p><u>Physics – Light and Space</u> Light waves, Reflection, Refraction, Vision, Colour filters, Gravity, Seasons, Our Solar System and the Universe</p>	<p>Atmosphere, Global warming, Recycling</p> <p><u>Physics – Light and Space</u> Light waves, Reflection, Refraction, vision, Colour, Filters, Gravity, Seasons, The Universe</p>	<p>Ohm’s law, Resistance, Insulators, Electromagnets</p> <p><u>Biology – Ecology</u> Food webs, Decay, Estimating populations, Classification, Adaptations, Natural selection, Evolution, Biodiversity</p>	<p><u>Biology - Ecology (as before)</u></p> <p><i>Revision – prior to end of year assessments</i></p> <p><i>This term will be spent completing the curriculum and revising for the End of Year assessments. Lesson will focus on skills required to access the test. Any catch up work that may have been missed due to COVID will take place in this term also.</i></p>	<p>Skeleton, Muscles, Respiratory System, Circulatory System, Smoking, Alcohol, Drugs.</p> <p><u>Chemistry – Reactivity</u> Atoms, Elements and Compounds, Ionic Bonding, Period Table, Metals and acids, metal oxides and acids, metal carbonates and acid, metal extraction, Fractional Distillation</p>
9	Content	<p><u>Physics – Electricity</u> Missed due to school closure from Year 8 Calculations will have been missed Sets the baseline for GCSE Electricity topic</p> <p><u>Biology – Biological System’s and Processes</u> Skelton, Muscles, Respiratory System, Circulatory System, Smoking, Alcohol, Drugs.</p>	<p><u>Chemistry – Reactivity</u> Atoms, Elements and Compounds, Ionic Bonding, Period Table, Metals and acids, metal oxides and acids, metal carbonates and acid, metal extraction, Fractional Distillation</p> <p><u>Physics – Sound</u> Waves, Wave function, The ear, How speakers work</p>	<p><u>Physics – Forces in Action</u> Calculations Moments, Pivots and levers, momentum,</p> <p><u>Chemical Reactants - Energetics and Rates</u> Exothermic and Endothermic reactions, Rates of reactions, Effect of surface area, Effect of temperature, Effect of concentration on rates of reactions, Catalysts</p>	<p><u>Physics – Matter</u> Revisit particle theory, Density, Volume, Calculations, Investigating Density of an irregular shaped object,</p> <p><u>Biology – Plants and Photosynthesis</u> Photosynthesis Reaction, Adaptations of a leaf, investigating rates of Photosynthesis, Limiting Factors in Photosynthesis</p>	<p><u>GCSE Topics – Cells (Biology)</u> Eukaryotic and Prokaryotic cells, Microscopes, Required Practical of Microscopy, Transport in Cells, Required Practical on Osmosis, Microbiology, Stem cells, Mitosis, Cancer</p> <p><u>Chemistry - Atomic Structure</u> Atoms, Elements and Compounds, Separating Mixtures, Chromatography, Distillation, Atomic</p>	

					<i>Revision and catch up – End of Year tests sat in this term to prepare for GCSE to start.</i>	Structure, Development of the atomic model, history of the periodic table, group 1 elements, group 7 elements	
10	Content	<p><u>Chemistry - Atomic Structure</u> Atoms, Elements and Compounds, Separating Mixtures, Chromatography, Distillation, Atomic Structure, Development of the atomic model, history of the periodic table, group 1 elements, group 7 elements</p> <p><u>Physics – Energy</u> Energy pathways and transfers, Kinetic Energy, Gravitational Potential Energy, Elastic Energy, Renewable and non-renewable energy sources.</p>	<p><u>Chemistry – Bonding</u> Ionic Bonding, Reactivity of Metals, Covalent Bonding, Metallic Bonding, Properties of Ionic compounds, Simple molecules, allotropes of carbon</p> <p><u>Biology – Organisation</u> Digestive system, Enzymes, Required Practical, Circulatory System, Heart, Blood and Blood vessels, Respiratory System, Adaptations of the lungs,</p> <p><u>Chemistry – Quantitative Chemistry</u> Relative Formula Mass, Moles, Equation and Calculations, Balanced Equations,</p>	<p><u>Biology - Infection and Response</u> Pathogens, Communicable Diseases, Viruses, Bacteria, Fungi and Protists, Immune Response, Vaccinations, Clinical Trials</p> <p><u>Chemistry - Chemical Changes</u> The Reactivity Series, Displacement Reactions. Extracting Metals, Salts from Insoluble bases, Neutralisation and the pH scale, Strong and Weak Acids.</p>	<p><u>Physics – Atomic Structure and Radiation</u> Atomic Structure, History of the atom, Alpha, Beta and Gamma radiation, Half life</p> <p><u>Physics – Electricity</u> Circuits and symbols, series circuits, parallel circuits, Required Practical, Resistance equations, Resistance of a wire, Wiring a plug, National Grid,</p> <p><u>Chemistry – Energetics</u> Electrolysis, Extraction of Aluminium, Electrolysis of Aqueous Solutions</p>	<p><u>Chemistry – Rates of Reaction</u> Rates, Effect of concentration on rates of reactions, effect of surface area, effect of temperature, Catalysts</p> <p><u>Biology – Bioenergetics</u> Photosynthesis, Adaptations of a leaf, Respiration, Effects of exercise on the body</p> <p><i>REVISION AND END OF YEAR ASSESSMENT</i></p>	<p><u>Chemistry – Rates of Reaction continued</u></p> <p><u>Physics – Electricity and Magnetism</u> Permanent and Induced Magnets, Electromagnetism,</p>
11	Content	<p><u>Chemistry - Rates of Reaction</u> Rates, Effect of concentration on rates of reactions, effect of surface area, effect of temperature, Catalysts</p> <p><u>Physics – Atomic Structure and Radiation</u> Atomic Structure, History of the atom, Alpha, Beta and Gamma radiation, Half life</p>	<p><u>Forces – Continued</u></p> <p><u>Chemistry – Chemical Analysis</u> Pure and Impure substances, Chromatography, Tests for Gases</p> <p><u>Biology – Homeostasis</u> Nervous system, Reflexes, Required</p>	<p><u>Biology – Homeostasis continued</u></p> <p><u>Physics – Waves</u> Longitudinal and transverse waves, Electromagnetic spectrum, Properties of waves, Uses of electromagnetic waves, Dangers of ionising radiation, Frequency calculations, Required Practical</p>	<p><u>Biology – Inheritance</u> Genes, DNA, Inheritance, Inherited Diseases, Genetic Diagrams, theory of Evolution, evidence of evolution, fossils</p> <p><u>Physics – Electricity and Magnetism</u> Permanent and Induced Magnets, Electromagnetism,</p>	<p><i>This term will be spent revising and preparing for the pupils upcoming GCSE assessments.</i></p>	<p><i>Pupils will be completing their GCSE exams</i></p>

		<p><u>Physics – Forces</u> Contact and Non-contact forces, Gravity and Weight, Resultant Forces, Required Practical, Hooke’s Law, Speed/Time graphs, Distance/time graphs speed calculations, acceleration, stopping distance</p> <p>Baseline Tests UL</p>	<p>Practical, Endocrine system, Diabetes, Menstrual cycle, Artificial control of fertility</p>	<p><u>Chemistry – Using Resources</u> Finite and Renewable Resources, Reuse and Recycle, Life Cycle Assessments, Potable Water, Desalination and Waste Water Treatment</p>			
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