

Year 7 Science Curriculum Sequence

Year 7 Science Curriculum Sequence						
Big Question:						
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Big idea/Theme	Safety in science	Energy	States of matter	Acids and alkalis	Electricity	Investigations
Big idea/Theme	Separation techniques	Food and digestion	Forces	Plants	Investigations	
Big Idea/Theme	The Human body					
Knowledge that needs to stick	<p>I can work safely in science lessons.</p> <p>I can independently separate mixtures.</p> <p>I can define a mixture.</p> <p>I can name various joints and their uses.</p> <p>I know how muscles support movement.</p> <p>I can define a body system and give examples.</p>	<p>I can name different energy stores and give examples.</p> <p>I can investigate how different foods release different amounts of energy.</p> <p>I can describe a balanced diet and give examples of deficiency diseases.</p> <p>I can define a food web/chain with examples.</p>	<p>I can draw and describe the three states of matter.</p> <p>I can explain what happens to particles as a substance changes state.</p> <p>I can correctly investigate forces and what affects them.</p> <p>I can use mathematical equations to calculate force with correct units.</p>	<p>I can state what pH means and use pH scale to determine acids and alkalis.</p> <p>I can qualitatively determine endpoint of a neutralisation reaction using colour and pH scale.</p> <p>I can state the word equation for photosynthesis.</p> <p>I can explain why photosynthesis is important for a plant.</p>	<p>I can identify various electrical circuit symbols.</p> <p>I can describe and explain the differences between series and parallel circuits.</p> <p>I can identify variables in scientific investigations.</p>	<p>I can plan scientific investigations.</p> <p>I can represent results for scientific investigation.</p> <p>I can use evidence to make conclusions about scientific investigations.</p> <p>I can evaluate scientific investigations.</p>
Demonstration of Knowledge (Assessment)	<p>Practical assessment – assessment task for each unit.</p> <p>End of term test.</p>	<p>Practical assessment – assessment task for each unit.</p> <p>End of term test.</p>	<p>Practical assessment – assessment task for each unit.</p> <p>End of term test.</p>	<p>Practical assessment – assessment task for each unit.</p> <p>End of term test.</p>	<p>Practical assessment – assessment task for each unit.</p> <p>End of term test.</p>	<p>Practical assessment – assessment task for each investigation.</p> <p>End of Year test.</p>
Links to key stage 2/ prior knowledge needed	Working scientifically.	Working scientifically.	<p>Working scientifically.</p> <p>Healthy eating.</p> <p>Forces as pushes, pulls and twists.</p>	Working scientifically.	Working scientifically.	Working scientifically.

Skill set development	Risk awareness. Collaborative working. Identifying scientific variables in investigations.	Collaborative working. Scientific modelling.	Collaborative working. Scientific planning.	Collaborative working. Scientific observations and results.	Collaborative working. Scientific evaluations.	Working scientifically. Collaborative working.
Key Vocabulary (Tier 2/ Tier 3)	Hazard, risk, flammable, oxidising, explosive, corrosive, irritant, toxic, danger, environment, pressure, pure, mixture, solution, solvent, solute, solubility, dissolving, filtration, filtrate, soluble, insoluble. Organ, organ system, oesophagus, pancreas, capillary, bronchi, bronchioles, diffusion, concentration.	Diet, nutrients, mixture, mass, Joule, energy, ratios, calories, thermal, elastic, nuclear, gravitational potential, electric, magnetic, chemical, kinetic, cells. Fats, vitamins, protein, carbohydrates, minerals, fibre, consumer, deficiency, protease, amylase, scurvy, bile, rickets, enzymes, lipase, catalyst.	Solids, liquids, gases, compress, density, volume, melting, freezing. Gravity, mass, weight, balanced, stretch, friction, speed, distance, time, seconds, force, acceleration, Newton, lubricant.	Acids, alkali, bases, neutralisation, universal indicator, litmus, pH scale, leaf, stem, roots, flower, fruit, Photosynthesis, carbon dioxide, stomata, palisade cell, spongy mesophyll, waxy cuticle, epidermis, guard cells, dye, compare, adapted, xylem, phloem, protein, glucose, starch, cellulose, respiration, lipids, petal, flower, fertilisation, pollination, dispersal, food security, stigma, style, stamen, weed, autotrophic, herbicide	Bulb, circuits, fault, components, open switch, closed switch, ammeter, voltmeter, model, energy, current, voltage, battery, charge, chemical reaction, chemical energy, acidic, electrolyte, electrode, series circuit, variables, parallel circuit, attract, repel, resistance, ohm, conductor, insulator, field, pole, compass, core, magnetic field, electromagnet, static electricity, electron, proton, charged up, negatively charged, positively charged	Variables, independent, dependent, control, accuracy, precision, results
Reading and Oracy	Literacy based activities, such as summarising passages of text, or keyword bingo.	Energy DART 1. Literacy based activities, such as summarising	Frayer modelling. Anagrams. Rearranging formula, significant figures, decimal places.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.

		passages of text, or keyword bingo.				
Numeracy	Volume	Measuring values of energy.	Plotting graphs.	Measuring pH values	Plotting graphs.	Plotting graphs.
Opportunities						
Careers	Chemist, environmental scientist, brewer, forensic scientist	Medical, nutritionist, chemist.	Chemist, engineer	Chemist, pharmacist, botanist, gardener/landscaper, environmental biologist.	Electrician, engineer, inventor.	Research scientist, laboratory technician, field scientist.
SMSC including British Values, Culture and Diversity	<ul style="list-style-type: none"> Wonder about what is special about life, Pupils to become increasingly curious. Group practical work. Team working skills and taking responsibility. Taking responsibility for their own and other people's safety. Take the views and opinions of others into account. Take turns and instructions from others. 	<ul style="list-style-type: none"> Looking for meaning and purpose in natural and physical phenomena. Group practical work. Take the views and opinions of others into account. Take turns and instructions from others. Take the views and opinions of others into account. Take turns and instructions from others. Work as a team. 	<ul style="list-style-type: none"> Emotional drive to know more and to wonder about the world. Group practical work. Take the views and opinions of others into account. Take turns and instructions from others. Take the views and opinions of others into account. Take turns and instructions from others. Work as a team. Discuss findings. 	<ul style="list-style-type: none"> Group practical work. Team working skills and taking responsibility. Take the views and opinions of others into account. Take turns and instructions from others. Work as a team. Discuss findings. Offer support and advice to others. 	<ul style="list-style-type: none"> Group practical work. Team working skills and taking responsibility. Take the views and opinions of others into account. Take turns and instructions from others. Make choices when planning an investigation. Others may have different points of view as to where to start. 	<ul style="list-style-type: none"> Group practical work. Team working skills and taking responsibility. Take the views and opinions of others into account. Take turns and instructions from others. Make choices when planning an investigation. Others may have different points of view as to where to start.

Year 8 Science Curriculum Sequence						
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Big idea/Theme	Safety in science	Chemical reactions	Periodic table	Metals and reactivity	Atmosphere	Investigation
Big idea/Theme	Waves	Cells	Forces and motion	Interdependence	Inheritance and evolution	Space
Big Idea/Theme	Health and disease					
Knowledge that needs to stick	<ul style="list-style-type: none"> Describe wave properties Describe pathogens 	<ul style="list-style-type: none"> Describe chemical reactions and their reactants and products Describe animal and plant cells 	<ul style="list-style-type: none"> Describe the periodic table Describe different forces and how they affect the motion of an object 	<ul style="list-style-type: none"> Describe the reaction of metals and the order of reactivity of metals Describe interdependent and intradependent relationships between organisms in the same ecosystem 	<ul style="list-style-type: none"> Describe the Earth's atmosphere Describe how lifestyle choices impact the Earth's atmosphere Describe how characteristics are inherited Describe evolution 	<ul style="list-style-type: none"> I can plan scientific investigations. I can represent results for scientific investigation. I can use evidence to make conclusions about scientific investigations. I can evaluate scientific investigations. Describe the different components of the solar system Explain how seasons occur
Demonstration of Knowledge (Assessment)	Practical assessment – assessment task for each unit. End of term test.	Practical assessment – assessment task for each unit. End of term test.	Practical assessment – assessment task for each unit. End of term test.	Practical assessment – assessment task for each unit. End of term test.	Practical assessment – assessment task for each unit. End of term test.	Practical assessment – assessment task for each investigation. End of Year test.

Links to key stage 2/ prior knowledge needed	Working scientifically.	Working scientifically.	Working scientifically.	Working scientifically.	Working scientifically.	Working scientifically.
Skill set development	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Plotting graphs. Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.
Key Vocabulary (Tier 2/ Tier 3)	Hazard, risk, flammable, oxidising, explosive, corrosive, irritant, toxic, danger, environment, pressure, matter, energy, air, free space, vibrate, tuning fork, crest, trough, oscillation, vibration, undulation, sound, amplitude, frequency, wavelength, peak, transverse, longitudinal, compression, rarefaction, echo, ear drum, eustachian, ossicles/ear bones, cochlea, auditory nerve, medium, vacuum, reflected, pitch, ultrasound, diffraction, loudness,	Organisms, cells, tissues, organs, organ systems, multicellular, skeletal system, joint, fixed, arthritis, cartilage, ball and socket, hinge, antagonistic, muscle, organelle, specialised, differentiate, diffusion, fizz, heat, light, temperature, chemical, physical, reactants, products, properties, chemical, physical, atoms, burning, heat, fuel, hydrocarbons, complete combustion, breaking down, reaction, colour change, thermal	Solid, liquid, gas, metal, non-metal, chemical, physical, protons, electrons, neutrons, atom, charge, mass, neutral, element, compound, row, column, molecule, period, group, symbol, properties, mass, Mendeleev, predictions, gaps, atomic No, reactivity, shell, orbital, reaction, bonding, reactants, products, compound, formula, Speed, distance, time, acceleration, seconds, force, Newton, moment, Pascals	Metals, non-metals, displacement, physical change, reactivity, reactivity series, neutralisation, compound, physical change, formula, element, classification, kingdom, organisation, variation, binomial, chordates, interdependence, survival, dissolving, evaporating, filtering, insoluble, Liebig condenser, condensing, separation techniques, soluble, solute, solution, solvent, relationship, survival, beneficial, symbiotic,	Gas, oxygen, atmosphere, stratosphere, photosynthesis, respiration, combustion, ice, solid, liquid, gas, melting, atmosphere, condensation, evaporation, sublimation, freezing, solidification, breathe, eat, burn, decay, rot, respiration, photosynthesis, combustion, decompose, oxygen, burn, fair test, fossil fuel, incomplete, complete, particulates, greenhouse, carbon dioxide, floods, sea level, wavelength,	Variables, independent, dependent, control, accuracy, precision, results

	<p>volume, decibels, insulation, acoustic, absorb, source, emit, luminous, non-luminous, transmit, transparent, translucent, plane, normal, incident, refraction, lens, convex, converging, focus, focal length, cornea, pupil, iris, retina, optics, variables, dependent, independent, control, prism, spectrum, dispersion, continuous, frequency, primary colour, secondary colour, filter, electromagnetic, radiation, laser, exposure, radio, microwave, infrared, visible, ultraviolet, X-ray, gamma, deteriorate, symptoms, annotate, support, health, disease, addiction, illegal, legal, symptoms, recreation, withdrawal,</p>	<p>decomposition, carbonates, limewater, carbon dioxide, hydrogen, oxygen, chlorine, splint, litmus, limewater, precipitate, metal, acid, bubbles, effervescence, salt, water, reactivity, neutral, acidic, chloride, sulphide, nitrate, respiration, photosynthesis, exothermic, endothermic</p>		<p>mutualism, commensalism, parasitism, interdependence, bacteria, chemosynthesis, chemosynthetic, glucose, microorganisms, photosynthesis, consumer, energy transfer, food web, produce, bioaccumulation, deforestation, global warming, pesticides, primary consumer, secondary consumer, tertiary consumer</p>	<p>source, methane, emission, deforestation, bleaching, pollution, breathe, atmospheric, exhaust, fumes, asthma, re use, reduce, recycle, consumption, decay, vegan, vegetarian, omnivore, inherited, family, environmental, variation, continuous, discontinuous, gene, DNA, nucleus, molecule, chromosome, allele, vertical, extraction, ethanol, dominant, recessive, phenotype, genotype, adaptation, evolution, natural selection, gene bank, biodiversity</p>	
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	analgesic, medicine, spread, communicable, non-communicable, illness, contagious, pathogen, magnification, bacteria, virus, microorganism, petri dish, washing, contamination, sterilise, septicaemia, immunity, specific, antibody, antigen, platelet, antibiotics, painkillers					
Reading and Oracy	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.
Numeracy	Wave speed calculations. Recording angles.	Calculating rates of reaction.	Force and motion equations.	Plotting graphs.	Plotting graphs.	Using magnitudes.
Opportunities						
Careers	Medical, chemist, researcher	Chemist, researcher	Engineer, chemist	Ecologist, chemist, environmental scientist	Ecologist, evolutionist, geneticist, environmentalist	Astronomist
SMSC including British Values,	<ul style="list-style-type: none"> Group practical work. Taking responsibility for 	<ul style="list-style-type: none"> An awareness of the scale of living things from the small micro- 	<ul style="list-style-type: none"> Group practical work. Scientific discoveries as a 	<ul style="list-style-type: none"> The interdependence of all living things 	<ul style="list-style-type: none"> Development of open mindedness to 	<ul style="list-style-type: none"> Wonder at the vastness of space and the beauty of natural object.

<p>Culture and Diversity</p>	<p>their own and other people's safety.</p> <ul style="list-style-type: none"> • Take the views and opinions of others into account. • Take turns and instructions from others. • Understand the importance of safety rules when working scientifically. • Know that there are consequences in rules are not followed. 	<p>organism to the largest.</p> <ul style="list-style-type: none"> • Group practical work. • Take the views and opinions of others into account. • Take turns and instructions from others. 	<p>part of our culture.</p> <ul style="list-style-type: none"> • Scientific discoveries of other cultures. • Scientific discoveries by a wide range of men and women in many different cultures. 	<p>and materials of the Earth.</p> <ul style="list-style-type: none"> • Work as a team. • Discuss findings. • Offer support and advice to others. 	<p>the suggestions of others.</p> <ul style="list-style-type: none"> • Considering the environment. • Scientific developments may give rise to moral dilemmas. • Group practical work. • Take the views and opinions of others into account. • Take turns and instructions from others. • Scientific discoveries have come from other cultures. • Religious beliefs often compete with scientific understanding. 	<ul style="list-style-type: none"> • Group practical work. • Take the views and opinions of others into account. • Take turns and instructions from others. • Make choices when planning an investigation. • Others may have different points of view as to where to start. • Scientific discoveries have come from other cultures. • Religious beliefs often compete with scientific understanding.
<p>Relationship and Sex Education and Health Education</p>	<p>Students learn to support each other in a safe and respectful way.</p>	<p>Students learn about what cells in their body do, and what they need to stay healthy.</p>	<p>Students learn to support each other in a safe and respectful way.</p>	<p>Students learn to support each other in a safe and respectful way.</p>	<p>Students learn about the atmosphere and how lifestyle choices can affect this, and lead to health problems, and global issues.</p>	<p>Students learn to support each other in a safe and respectful way.</p>
<p>Enrichment Activities</p>	<p>Astronomy club & Science club.</p>					

Year 9 Science Curriculum Sequence						
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Big idea/Theme	Conservation and dissipation of energy	Energy transfer by heating	Energy resources	Electric circuits	Electricity in the home	Molecules and matter
Big idea/Theme	Cell structure and transport	Cell division	Organisation and the digestive system	Communicable diseases	Preventing and treating disease	Non-communicable diseases
Big Idea/Theme	Atomic structure	The periodic table	Structure and bonding	Chemical calculations	Chemical changes	Electrolysis
Knowledge that needs to stick	<ul style="list-style-type: none"> Describe how energy is stored and transferred Describe and compare eukaryotic cells and prokaryotic cells Describe diffusion, osmosis, and active transport Describe the structure of atoms 	<ul style="list-style-type: none"> Calculate energy transfers Define thermal conductivity Describe stem cells and their use in human medicine Describe the importance of the periodic table 	<ul style="list-style-type: none"> Describe sources of renewable energy Describe factors that affect enzyme action Describe the use of stents to prevent heart attack Describe ionic, covalent, and metallic bonding 	<ul style="list-style-type: none"> Describe electric current Compare series and parallel circuits Describe communicable diseases and their treatments and prevention Calculate molecular masses Calculate moles 	<ul style="list-style-type: none"> Describe relationships between current, potential difference, and resistance Describe how to prevent the spread of diseases Describe the reactivity series Describe displacement reactions and neutralisation reactions 	<ul style="list-style-type: none"> Describe density Calculate the half-life of a radioactive isotope Describe the effect of lifestyle choices on health Describe electrolysis Calculate half-equations
Demonstration of Knowledge (Assessment)	PAGs, Levelled Feedback tasks End of unit tests.					PAGs. Levelled feedback tasks. End of unit tests. End of Year test.

Links to key stage 3/ prior knowledge needed	Working scientifically. Cells. Elements, compounds and mixtures.	Working scientifically. Energy. Energy transfers. The periodic table.	Working scientifically. Energy. Energy transfers. The human body. Elements, compounds and mixtures.	Working scientifically. Electricity. The human body. Elements, compounds and mixtures.	Working scientifically. Electricity. The human body. Chemical reactions.	Working scientifically. States of matter. The human body. Chemical reactions.
Skill set development	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.
Key Vocabulary (Tier 2/ Tier 3)	Closed system, conservation of energy, work done, spring constant, kinetic, thermal, useful, wasted, dissipated, input, efficiency, power, resolving power, nucleus, cytoplasm, cell membrane, mitochondria, ribosomes, algae, cell wall, cellulose, chloroplasts, chlorophyll, permanent vacuole, eukaryotic, prokaryotic, xylem, phloem, diffusion, gradient, concentration,	Thermal conductivity, infrared radiation, black body radiation, emits, wavelength, absorption, specific heat capacity, joule, cell cycle, mitosis, mitotic, genetic, gene, characteristic, chromosome, differentiate, stem cell, adult stem cell, cloning, embryonic, zygote, therapeutic cloning, reactive, reactivity, transition elements, alkali metals, universal indicator, halogens, displacement reactions, trend.	Renewable, biofuel, carbon-neutral, nuclear fuel, reactor core, hydroelectric, national grid, geothermal energy, tissues, organs, organ systems, digestive system, enzymes, molecules, carbohydrates, lipids, fatty acids, glycerol, denatured, proteins, amino acids, catalysts, metabolism, active site, amylase, amino acids, fatty acids, lipase, carbohydrase, bile, states of matter, particle theory, covalent bonding,	Static electricity, electric field, protons, neutrons, ion, line of force, repel, electrons, charge, current, amperes, coulombs, diode, resistance, potential difference, series, parallel, volts, component, ohm's law, thermistor, light-emitting diode (LED), light-dependent resistor (LDR), circuit, plasma, red blood cells, white blood cells, platelets, haemoglobin, arteries, veins, capillaries, double circulatory system,	Alternating current, direct current, live wire, neutral wire, step-up transformer, step-down transformer, oscilloscope, fuse, three-pin plug, communicable disease, infectious, non-communicable disease, microorganisms, pathogen, virus, bacteria, binary fission, culture medium, agar gel, mutation, vaccines, hygiene, sexually transmitted diseases (STD), fungal, protists, vector,	Density, volume, irregular, physical changes, conservation of mass, melting, boiling, freezing, latent heat, internal energy, pressure, specific latent heat of fusion, specific latent heat of vaporisation, joule, carcinogens, ionising radiation, correlation, causal mechanism, benign tumours, malignant tumour cells, cancer, nicotine, carbon monoxide, obesity, type 2 diabetes, electrolysis, electrolyte,

	<p>partially permeable membrane, osmosis, isotonic, hypertonic, hypotonic, dilute, turgor, plasmolysis, active transport, ventilated, alveoli, stomata, atoms, elements, groups, periods, compounds, atomic nucleus, electrons, protons, neutrons, periodic table, reactants, products, word equation, symbol equation, balanced, law of conservation of mass, state symbols, aqueous solutions, filtration, distillation, crystallisation, chromatography, biofuel, atomic number, mass number, ion, particle, isotopes, electronic shells, noble gases.</p>		<p>ionic bonding, giant structure, giant lattice, intermolecular forces, polymers, giant covalent structures, delocalised electrons, fullerenes, metallic bonding, alloys, nanoscience, nanoparticles.</p>	<p>coronary, atria, vena cava, pulmonary, ventricles, aorta, statins, artificial pacemaker, intercostal muscles, trachea, bronchioles, bronchi, bronchus, diaphragm, thorax, abdomen, epidermal, palisade mesophyll, spongy mesophyll, stomata, guard cells, vascular bundle, photosynthesis, xylem, phloem, translocation, molecules, transpiration, estimating, potometer, relative atomic masses, relative formula masses, mole, Avogadro constant, limiting reactant, percentage yield, theoretical, atom economy, sustainable, concentration, titration, end point.</p>	<p>phagocytosis, secrete, chlorosis, herbivores, antibacterial, antibiotics, ores, oxidised, oxidation, reduced, reduction, reactivity series, displacement reactions, half-equations, ionic equation, electrolysis, neutralisation, formulae, acid, alkali, carbonate, salt, bases, pH scale, neutral, equilibrium.</p>	<p>electrode, anode, cathode, inert, half-equations, electrons, ions, reduction, oxidation, brine.</p>
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Reading and Oracy	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.	Literacy based activities, such as summarising passages of text, or keyword bingo.
Numeracy	Energy equations, magnification equations, atomic radius equations	Energy equations, exponential multiplication	Addition and subtraction of electrons	Electricity equations, chemical calculations, such as molecular formula and moles	Electricity equations	Plotting graphs.
Opportunities						
Careers	Engineer, cell biologist, quantum chemist	Cell biologist, geneticist, researcher	Renewable energy consultant, nutritionist, molecular scientist, chemist	Engineer, electrician, researcher, disease specialist	Engineer, electrician, researcher, disease specialist	Engineer, electrician, researcher, disease specialist
SMSC including British Values, Culture and Diversity	<ul style="list-style-type: none"> Group practical work. Take the views and opinions of others into account. Take turns and instructions from others. Work as a team. Discuss findings. Offer support and advice to others. 	<ul style="list-style-type: none"> Group practical work. Take the views and opinions of others into account. Take turns and instructions from others. Work as a team. Discuss findings. Offer support and advice to others. 	<ul style="list-style-type: none"> Considering the environment. Scientific developments may give rise to moral dilemmas. Understanding that science has a major effect on the quality of our lives. Take the views and opinions of others into account. Take turns and instructions from others. 	<ul style="list-style-type: none"> Group practical work. Understanding that science has a major effect on the quality of our lives. Take the views and opinions of others into account. Take turns and instructions from others. 	<ul style="list-style-type: none"> Group practical work. Understanding that science has a major effect on the quality of our lives. Scientific discoveries as a part of our culture. Scientific discoveries of other cultures. Scientific discoveries by a wide range of men and women 	<ul style="list-style-type: none"> Group practical work. Understanding that science has a major effect on the quality of our lives. Scientific discoveries as a part of our culture. Scientific discoveries of other cultures. Scientific discoveries by a wide range of men and women

					<p>in many different cultures.</p> <ul style="list-style-type: none"> • Take the views and opinions of others into account. • Take turns and instructions from others. • Scientific discoveries have come from other cultures. • Religious beliefs often compete with scientific understanding. 	<p>in many different cultures.</p> <ul style="list-style-type: none"> • Scientific discoveries have come from other cultures. • Religious beliefs often compete with scientific understanding.
Relationship and Sex Education and Health Education	Students learn to support each other in a safe and respectful way.	Students learn to support each other in a safe and respectful way.	Students learn to support each other in a safe and respectful way.	Students learn about sexually transmitted diseases, and how these are spread.	Students learn about drugs that are used for health benefits, and the prevention of serious disease.	Students learn about serious diseases such as cancer, and how these can impact health.
Enrichment Activities	Astronomy club and Science club.					

Year 10 Science Curriculum Sequence						
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Big idea/Theme	Electric circuits	Electricity in the home	Radioactivity	Forces in balance	Motion	The human nervous system
Big idea/Theme	Organising animals and plants	Communicable diseases	Preventing and treating disease	Non-communicable diseases	Photosynthesis	Respiration
Big Idea/Theme	Chemical calculations	Electrolysis	Energy changes	Rates and equilibrium	Crude oil and fuels	
Knowledge that needs to stick	<ul style="list-style-type: none"> Describe electric current Compare series and parallel circuits Calculate molecular masses Calculate moles 	<ul style="list-style-type: none"> Describe relationships between current, potential difference, and resistance Describe communicable diseases and their treatments and prevention Describe electrolysis Calculate half-equations 	<ul style="list-style-type: none"> Describe density Calculate the half-life of a radioactive isotope Describe how to prevent the spread of diseases Describe exothermic and endothermic reactions 	<ul style="list-style-type: none"> Describe how to represent forces Define the term resultant force Calculate the effect of resultant forces Describe the effect of lifestyle choices on health Describe factors affecting the rates of reactions 	<ul style="list-style-type: none"> Define the term momentum Calculate the momentum of an object before and after a collision Describe the process of photosynthesis Describe how plants use glucose produced via photosynthesis Describe how a range of products are obtained from crude oil 	<ul style="list-style-type: none"> Describe homeostasis Describe reflex actions Describe the difference between anaerobic and aerobic respiration
Demonstration of Knowledge (Assessment)	PAGs. Levelled feedback tasks. End of unit tests.			End of unit tests. Practice Mock paper 1.	PAGs/Levelled feedback tasks. End of unit tests.	PAGs./Levelled feedback tasks. End of Year test

Links to key stage 3/ prior knowledge needed	Working scientifically.	Working scientifically.	Working scientifically.	Working scientifically.	Working scientifically.	Working scientifically.	
Skill set development	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	
Key Vocabulary (Tier 2/ Tier 3)	Static electricity, electric field, protons, neutrons, ion, line of force, repel, electrons, charge, current, amperes, coulombs, diode, resistance, potential difference, series, parallel, volts, component, ohm's law, thermistor, light-emitting diode (LED), light-dependent resistor (LDR), circuit, plasma, red blood cells, white blood cells, platelets, haemoglobin, arteries, veins, capillaries, double circulatory system, coronary, atria, vena cava, pulmonary, ventricles, aorta, statins, artificial pacemaker, arteries, veins, capillaries, double circulatory system, coronary, atria, vena cava, pulmonary, ventricles, aorta, statins, artificial pacemaker,	Alternating current, direct current, live wire, neutral wire, step-up transformer, step-down transformer, oscilloscope, fuse, three-pin plug, plasma, red blood cells, white blood cells, platelets, haemoglobin, arteries, veins, capillaries, double circulatory system, coronary, atria, vena cava, pulmonary, ventricles, aorta, statins, artificial pacemaker, intercostal muscles, trachea, bronchioles, bronchi, bronchus, diaphragm, thorax, abdomen, epidermal, palisade mesophyll, spongy mesophyll,	Radioactivity, alpha radiation, beta radiation, gamma radiation, Geiger counter, plum pudding model, Bohr's model, isotopes, emission, neutron emission, radioactive decay, penetrating power, ionisation, irradiated, radioactive contamination, count rate, half-life, nuclear fission reactor, chain reaction, nuclear fission, nuclear fusion, vaccination, vaccine, herd immunity, antibiotics, bacterial, penicillin, preclinical testing, clinical trials, placebo, hybridomas, monoclonal antibodies.	Displacement, vector, scalar, magnitude, force, driving force, friction, resultant force, moment, load, effort, force multiplier, centre of mass, suspended equilibrium, principle of moments, parallelogram of forces, carcinogens, ionising radiation, correlation, causal mechanism, benign tumours, malignant tumour cells, cancer, nicotine, carbon monoxide, obesity, type 2 diabetes, reactant, product, collision theory, activation energy, catalyst, climate change, reversible reactions, litmus, endothermic,	Displacement, vector, scalar, magnitude, force, driving force, friction, resultant force, moment, load, effort, force multiplier, centre of mass, suspended equilibrium, principle of moments, parallelogram of forces, carcinogens, ionising radiation, correlation, causal mechanism, benign tumours, malignant tumour cells, cancer, nicotine, carbon monoxide, obesity, type 2 diabetes, reactant, product, collision theory, activation energy, catalyst, climate change, reversible reactions, litmus, endothermic,	Gradient, velocity, displacement, acceleration, deceleration, stationary, constant, tangent, photosynthesis, glucose, endothermic reaction, adaptation, limiting factors, chloroplasts, chlorophyll, cellulose, starch, nitrates, proteins, lipids, hydrocarbons, mixture, fractions, distillation, alkanes, saturated hydrocarbons, general formulae, crude oil, flammable, oxidised, combustion, cracking, thermal decomposition, alkene, double bond,	Homeostasis, receptors, stimuli, effectors, coordination, neurones, nerves, sensory neurones, nervous system, motor neurones, relay, reflex, reflex arc, cerebral cortex, cerebellum, medulla, stimulating, suspensory ligaments, ciliary muscles, iris, cornea, sclera, retina, defect, myopia, hyperopia, aerobic respiration, exothermic reaction, respiration, aerobic respiration, mitochondria, cristae, glycogen, glucagon, fatigue, anaerobic respiration, oxygen

	intercostal muscles, trachea, bronchioles, bronchi, bronchus, diaphragm, thorax, abdomen, epidermal, palisade mesophyll, spongy mesophyll, stomata, guard cells, vascular bundle, photosynthesis, xylem, phloem, translocation, molecules, transpiration, estimating, potometer, relative atomic masses, relative formula masses, mole, Avogadro constant, limiting reactant, percentage yield, theoretical, atom economy, sustainable, concentration, titration, end point.	stomata, guard cells, vascular bundle, photosynthesis, xylem, phloem, translocation, molecules, transpiration, estimating, potometer, electrolysis, electrolyte, electrode, anode, cathode, inert, half-equations, electrons, ions, reduction, oxidation, brine.		exothermic, hydrated, anhydrous, dynamic equilibrium.	unsaturated hydrocarbon.	debt, lactic acid, metabolism.
Reading and Oracy	Literacy based activities, such as summarising passages of text, or keyword bingo.					
Numeracy	Electricity equations, chemical calculations, such as molecular mass, and moles	Electricity equations, half-equations	Plotting graphs, half-life calculations, energy equations	Plotting graphs, motion equations, force equations, rates of reaction equations	Plotting graphs, motion and force equations	Surface area calculations

Opportunities						
Careers	Electrician, engineer, quantum chemist, molecular chemist	Medical, electrician, engineer	Medical, radiologist, researcher	Engineer, chemist	Engineer, botanist, chemist, oil refinery researcher	Medical, physiotherapist, sports scientist
SMSC including British Values, Culture and Diversity	<ul style="list-style-type: none"> Group practical work. Team working skills and taking responsibility. Work as a team. Discuss findings. Offer support and advice to others. 	<ul style="list-style-type: none"> Scientific discoveries as a part of our culture. Scientific discoveries of other cultures. Scientific discoveries by a wide range of men and women in many different cultures. Scientific discoveries have come from other cultures. Religious beliefs often compete with scientific understanding. 	<ul style="list-style-type: none"> Scientific discoveries as a part of our culture. Scientific discoveries of other cultures. Scientific discoveries by a wide range of men and women in many different cultures. Scientific discoveries have come from other cultures. Religious beliefs often compete with scientific understanding. 	<ul style="list-style-type: none"> Scientific discoveries as a part of our culture. Scientific discoveries of other cultures. Scientific discoveries by a wide range of men and women in many different cultures. Scientific discoveries have come from other cultures. Religious beliefs often compete with scientific understanding. 	<ul style="list-style-type: none"> Considering the environment. Scientific developments may give rise to moral dilemmas. 	<ul style="list-style-type: none"> Group practical work. Team working skills and taking responsibility. Work as a team. Discuss findings. Offer support and advice to others.
Relationship and Sex Education and Health Education	Students learn to support each other in a safe and respectful way.	Students learn about sexually transmitted diseases, and how these are spread.	Students learn about drugs that are used for health benefits, and the prevention of serious disease.	Students learn about serious diseases such as cancer, and how these can impact health.	Students learn about the Earth's resources and how lifestyle choices can affect this, and lead to health problems, and global issues.	Students learn about the respiratory system and what is required to keep the body healthy in relation to respiration, Impact of exercise
Enrichment	Astronomy club and Science club.					

Year 11 Science Curriculum Sequence

Big Question:						
	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Big idea/Theme	Motion	Force and motion	Wave properties	Electromagnetic waves	Electromagnetism	External exams
Big idea/Theme	Variation and evolution	Organising an ecosystem	Biodiversity and ecosystems	The human nervous system	Hormonal coordination	External exams
Big Idea/Theme	Chemical calculations	Electrolysis	Chemical analysis	The Earth's atmosphere	The Earth's resources	External exams
Knowledge that needs to stick	<ul style="list-style-type: none"> Define the term momentum Calculate the momentum of an object before and after a collision Describe DNA, chromosomes, genes, and alleles Calculate molecular masses Calculate moles 	<ul style="list-style-type: none"> Define the term momentum Calculate the momentum of an object before and after a collision Define the term elasticity Calculate the extension of a spring Describe adaptations of organisms Describe the carbon, nitrogen and water cycle Describe electrolysis 	<ul style="list-style-type: none"> Describe how to measure waves Describe what happens when waves go from one medium to another Define the term global warming Describe the effects of global warming Describe how chemical tests can be used to identify unknown substances 	<ul style="list-style-type: none"> Describe electromagnetic waves Describe how waves carry information Describe homeostasis Describe reflex actions Describe how human activity is affecting the Earth's atmosphere 	<ul style="list-style-type: none"> How the strength of a magnetic field is measured Describe how hormones control responses Describe the menstrual cycle and the hormones involved Describe thermoregulation in animals Describe how we are seeking to make sustainable use of the Earth's resources 	

		<ul style="list-style-type: none"> Calculate half-equations 				
Demonstration of Knowledge (Assessment)	PAGs. Levelled feedback tasks. End of unit tests.	PAGs. Levelled feedback tasks. End of unit tests. Mock practice – paper 1.	PAGs. Levelled feedback tasks. End of unit tests.	PAGs. Levelled feedback tasks. End of unit tests. Mock practice – paper 2.	PAGs. Levelled feedback tasks. End of unit tests.	External exams
Links to key stage 3/ prior knowledge needed	Working scientifically.	Working scientifically.	Working scientifically.	Working scientifically.	Working scientifically.	
Skill set development	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	Working scientifically. Modelling. Representing data. Gathering evidence.	
Key Vocabulary (Tier 2/ Tier 3)	Gradient, velocity, displacement, acceleration, deceleration, stationary, constant, tangent, gene, DNA, chromosome, allele, dominant, recessive, natural selection, mutation, selective breeding, genetic engineering, genetically modified, tissue culture, cloning, relative atomic masses, relative formula masses, mole, Avogadro constant,	Acceleration, inertia, velocity, mass, weight, terminal velocity, gravitational field, newton, thinking distance, braking distance, stopping distance, momentum, conservation of momentum, collisions, safety, elasticity, spring constant, directly proportional, limit of proportionality, organism, ecosystem, biomass, producers, relationships,	Mechanical waves, electromagnetic waves, transverse waves, longitudinal waves, oscillation, parallel, amplitude, wavelength, frequency, reflection, refraction, ultrasound, echo, seismic, biodiversity, population, pollution, acid rain, smog, deforestation, greenhouse effect, global warming, seasonal, geographical, endangered,	Electromagnetic spectrum, frequency, transverse, optical fibres, internal reflection, infrared, microwaves, radio waves, carrier waves, ultraviolet, X-rays, contrast medium, charge-coupled device (CCD), reflection, real image, virtual image, specular reflection, diffuse reflection, refraction, opaque, transparent, translucent, convex lens, principal focus,	Electromagnetism, magnetic field, induced magnetism, solenoid, electromagnet, motor effect, magnetic flux density, Fleming's left hand rule, split-ring commutator, generator effect, alternator, dynamo, transformer, hormones, endocrine system, insulin, adrenalin, pituitary gland, antidiuretic hormone, follicle stimulating hormone, ovaries, oestrogen,	

	limiting reactant, percentage yield, theoretical, atom economy, sustainable, concentration, titration, end point.	primary consumers, secondary consumers, decomposers, photosynthesis, respiration, combustion, decomposition, decay, recycling, electrolysis, electrolyte, electrode, anode, cathode, inert, half-equations, electrons, ions, reduction, oxidation, brine.	regeneration, emissions, trophic levels, biomass, faeces, pathogens, agricultural, sustainable, artificially, biotechnology, purity, analysis, mixture, formulations, pigment, binder, solvent, chromatography, chromatogram, retention factor, compound, ion, cation, carbonate, halide, anion, emission spectroscopy.	concave lens, diverging lens, focal length, magnification, homeostasis, receptors, stimuli, effectors, coordination, neurones, nerves, sensory neurones, nervous system, motor neurones, relay, reflex, reflex arc, cerebral cortex, cerebellum, medulla, stimulating, suspensory ligaments, ciliary muscles, iris, cornea, sclera, retina, defect, myopia, hyperopia, atmosphere, evolving, greenhouse gases, carbon footprint, incomplete combustion, nitrogen oxides, particulates, global dimming.	diabetes, thyroxine, adrenaline, ovulation, puberty, fertility, testosterone, menstrual, progesterone, contraception, intrauterine, abstinence, artificial, in vitro, tropism, phototropism, gravitropism, auxin, gibberellins, ethene, herbicides, finite, potable, bioleaching, life cycle assessment, blast furnace, recycle.	
Reading and Oracy	Literacy based activities, such as summarising passages of text, or keyword bingo.					
Numeracy	Plotting graphs. Calculating molecular mass, and moles.	Plotting graphs. Half-equations.	Wave speed equations.	Plotting graphs. Magnitudes of transverse waves.	Plotting graphs. Magnetic flux equations.	

Opportunities						
Careers	Engineer, researcher, marine biologist, ecologist, environmental scientist, chemist	Engineer, marine biologist, ecologist, environmental scientist, chemist	Astronomist, marine biologist, ecologist, environmental scientist, chemist	Astronomist, marine biologist, ecologist, environmental scientist, chemist, medical	Astronomist, marine biologist, ecologist, environmental scientist, chemist, medical	
SMSC including British Values, Culture and Diversity	<ul style="list-style-type: none"> Group practical work. Team working skills and taking responsibility. 	<ul style="list-style-type: none"> Considering the environment. Scientific developments may give rise to moral dilemmas. Group practical work. Understanding that science has a major effect on the quality of our lives. 	<ul style="list-style-type: none"> Considering the environment. Group practical work. Team working skills and taking responsibility. Understanding that science has a major effect on the quality of our lives. 	<ul style="list-style-type: none"> Considering the environment. Group practical work. Team working skills and taking responsibility. Understanding that science has a major effect on the quality of our lives. 	<ul style="list-style-type: none"> Considering the environment. Group practical work. Team working skills and taking responsibility. 	<ul style="list-style-type: none"> Offer support and advice to others.
Relationship and Sex Education and Health Education	Students learn to support each other in a safe and respectful way.	Students learn to support each other in a safe and respectful way.	Students learn to support each other in a safe and respectful way.	Students learn about the atmosphere and how lifestyle choices can affect this, and lead to health problems, and global issues.	Students learn about the Earth's resources and how lifestyle choices can affect this, and lead to health problems, and global issues.	Students learn to support each other in a safe and respectful way.
Enrichment Activities	Period 6 Science revision activities					