

Science	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	<p>Working scientifically What is Science, Hypothesis and variables, Methods, Results tables, data and graphs, magnesium and acids experiment</p> <p>Energy Systems and Energy Stores, Energy Transfers, Useful & Wasted Energy, Conservation of Energy, Comparing Amounts of Energy in Food</p> <p>Particle theory The Particle Model, Changes of State, Conservation of Mass, Temperature and Energy, Melting and Boiling Points, Temperature Scales, Heating and Cooling, Thermal Conduction, Convection, Evaporation and Energy</p>	<p>The cell Animal cells, Plant cells, Cell specialisation in animals, cell specialisation in plants, microscopes, magnification and unit conversions, microscope practical, cell organisation, stem cells</p> <p>Cells, Tissues & Systems Organisation, organ systems in animal and plants, skeletons and joints, muscles and movement, nervous system, digestive system</p> <p>The Atom Atoms, Elements and Compounds, Atomic Structure, Dalton's Model, Thomson's Model, Rutherford's Model, Bohr's Model and Beyond, Chemical symbols and the periodic table</p>	<p>Balanced & Unbalanced Forces What is a Force, Contact and Non-Contact Forces, Gravitational Forces, Galileo's Experiment, Balanced Forces, Unbalanced Forces</p> <p>Reproductive Systems Sexual and asexual reproduction, male and female reproductive organs, menstrual cycle, puberty, fertilisation, development of a foetus, healthy birth, Flower structure, Pollination, Pollination tubes and fertilisation, Seed dispersal</p>	<p>Elements & the periodic table Elements and compounds, representing elements and compounds, diagrams, the periodic table, metals and non-metals, the development of the periodic table</p> <p>Electricity & Magnetism Magnets, Magnetic fields, Drawing Magnetic Fields, Electromagnetism, Charge, Basic Circuits, Electrical Conduction, Electricity and Circuits</p>	<p>Electricity and magnetism Building and drawing circuits, series and parallel circuits, energy in circuits, energy stores and pathways.</p> <p>Interdependence Roots and stem, The leaf, diffusion in leaves and roots, ecosystems, food chains, food webs, Impact of humans, adaptations in cold, dry and tropical climates, adaptations in predators and prey</p>	<p>Separating mixtures Chemical and physical changes, mixtures and pure substances, solutions, filtration, evaporation, distillation, chromatography</p> <p>Space Scale of the universe, the solar system, discovering the solar system, our solar system, rotation and orbits, gravity</p> <p>Earth & Climate Earth's structure, Plate tectonics, Constructive plate boundaries, Igneous rocks, Erosion and weathering, Sedimentary rocks, Metamorphic rocks, Rock cycle, Volcanoes</p>
Year 8	<p>Respiration Aerobic respiration in animals, anaerobic respiration in animals and yeast, investigation respiration</p> <p>Acids and Alkalis Chemical and physical changes, understanding chemical reactions, writing chemical word equations, the pH scale, acids and alkalis, neutralisation reactions</p> <p>Speed & Newton's Laws Newton's laws, speed, speed investigation, distance/time graphs</p>	<p>Transport Diffusion, the respiratory system, breathing, effects of smoking, the heart, blood vessels, blood transfusions and transplants, transport in plants</p> <p>Particle theory Using particles to describe matter, density, density calculations, pressure in solids and fluids, explaining why objects float, convection, conduction and radiation.</p> <p>Electronic structure Electron shells, electronic configuration</p>	<p>Atoms and Bonding Bonding introduction, ionic bonding, covalent bonding, metallic bonding</p> <p>Health and Disease Health & Disease, Pathogens, Communicable Diseases, Non-Communicable Diseases, Body Defences, Immune System, Herd Immunity, Vaccines, Drugs and Alcohol</p>	<p>Health and Disease Vaccination, antibiotics, plant diseases, drugs and alcohol</p> <p>Rates of reactions Endothermic and exothermic reactions, exothermic reaction practical, surface area and rates, temperature investigation, concentration, activation energy and catalysts</p>	<p>Electricity Current, Potential Difference, Resistance, Series and Parallel Circuits, Brightness in series and parallel circuits, current and potential difference in series and parallel circuits, Kirchoff's Laws, Thermistors, LDRs</p> <p>Biodiversity Introduction to ecology, biotic and abiotic factors, biodiversity, deforestation, global climate change, water cycle, carbon cycle, ecological sampling, problems with plastics</p>	<p>Reactivity series Chemical reaction, Reactivity Series, Displacement Reactions, Displacement Reactions Practical, Metal and Acid Reactions, Acid and Alkali Reactions</p> <p>Waves Oscillations and transverse waves, longitudinal waves, sound waves, ultrasound, reflection, refraction, lenses and the eye</p>
Year 9	<p>Genetics The gene, inheritance, selective breeding, cloning, Darwin's theory, natural selection, fossils, extinction</p> <p>Periodic Table and Bonding Mendeleev Periodic Table, Modern Periodic Table, The periodic table and atomic structure, Covalent Bonding, Ionic Bonding, Metallic Bonding, Giant Covalent Structures, Trends in Group 1, Halogens, Noble Gases, Transition Metals</p>	<p>Moments & Hooke's Law Moments and turning forces, Hooke's law, elasticity</p> <p>Photosynthesis Photosynthesis, tissues for photosynthesis, investigating photosynthesis, limiting factors, glucose</p>	<p>Quantitative chemistry Conservation of mass, chemical formula balancing chemical equations, equations, relative atomic and formula mass, moles</p> <p>Cosmology Universe and The Solar System, Life cycle of stars, Nuclear fusion, the expanding universe, the Big Bang</p>	<p>Biology Focus The cell Animal and plant cells, Aerobic and anaerobic respiration, Exercise and oxygen debt, Cardiac output and exercise Organisation, Health and diseases Spreading pathogens, Communicable diseases, immunity, Non-communicable diseases, Cardiovascular disease Enzymes Lock and key theory, Enzymes and food, Factors affecting enzymes, Effect of pH on enzyme activity</p>	<p>Chemistry Focus States of Matter Separation Techniques Filtration & Crystallisation Chromatography Distillation Law of Conservation of Mass Reactivity Series Displacement reactions Acids & Alkalis Acids & Metals & Metal Carbonates Rates of Reactions Rates of Reaction: concentration Electrolysis introduction Neutralisation of calcium hydroxide with hydrochloric acid</p>	<p>Physics Focus Energy stores and transfer Efficiency, Work done Forces Force fields Electricity Static electricity, Current electricity Resistance Motion Speed, Distance-time graph Forces and motion Resultant force, Effect of forces on objects e.g springs Density</p>
Year 10	<p>Key concepts in Biology Microscopes, plant and animal cells, core practical on microscopes, specialised cells, Inside bacteria, Enzymes and nutrition, enzyme action, enzyme activity. States of matter Describing the three states of matter Methods of separating and purifying Mixtures, filtration and crystallisation, paper chromatography, distillation, separation of inky water, drinking water</p> <p>Structure of the atom The structure of the atom, atomic number and mass number, isotopes Elements and the Periodic table Elements and the periodic table, atomic number and the periodic table, electronic configurations, periodic table Motion Vectors and scalars, Distance/time graphs, Acceleration, Velocity time graphs</p> <p>Forces and Motion Resultant force, Newton's First Law, Mass and weight, Newton's second law, Core practical, Newton's third law</p>	<p>Key concepts in Biology Enzyme activity, core practical on pH and enzyme activity, transporting substances, core practical on osmosis in potatoes</p> <p>Ionic Bonding Ionic Bonds Ionic lattices Properties of ionic compounds</p> <p>Covalent bonding Formation of covalent bonds, examples</p> <p>Molecular Compounds Examples of molecular compounds, allotropes of carbon, properties of metals, bonding models Conservation of Energy Energy stores and transfers Energy efficiency, keeping warm, stored energy, non-renewable resources, renewable resources</p>	<p>Cells and Control Mitosis, growth in plants, growth in animals, stem cells, the nervous system, neurotransmission speeds</p> <p>Acids and alkalis Acids, alkalis and indicators, looking at acids, bases and salts, core practical to make copper sulphate crystals</p> <p>Acids and alkalis Alkalis and balancing equations, core practical investigating neutralisation, alkalis and neutralisation, reactions of acids with metals and carbonates, solubility Waves Describing waves, wave speeds, core practical investigating waves, refraction</p> <p>The EM spectrum Electromagnetic waves, core practical investigating refraction, the electromagnetic spectrum, using long and short wavelengths, EM radiation dangers</p>	<p>Genetics Meiosis, DNA, DNA extraction and alleles, inheritance, gene mutation, variation Calculations involving masses Masses and empirical formulae, conservation of mass, moles</p> <p>Electrolytic process Electrolysis, core practical on the electrolysis of copper sulphate using carbon and graphite rods</p> <p>Radioactivity Atomic models, inside atoms, electrons and orbits, background radiation, types of radiation, radioactive decay, half-life, dangers of radioactivity</p> <p>Astronomy (Separate science only) The Solar System gravity and orbits, life cycles of stars, red shift, origin of the Universe</p>	<p>Natural Selection and genetic modification Evidence for human evolution, Darwin's theory, classification, Breeds and varieties, genes in agriculture and medicines</p> <p>Electrolytic process Products from electrolysis</p> <p>Obtaining and using metals The reactivity series, ores</p> <p>Obtaining and using metals Oxidation and reduction in metal extraction, life cycle assessment, recycling,</p> <p>Energy, forces doing work, forces and their effects Work and power, objects affecting each other, vector diagrams</p> <p>Forces and matter Bending and stretching, core practical investigating springs, extension and energy transfer</p> <p>Dynamic equilibrium calculations (Separate science only) Fertilisers and the Haber process, factors affecting equilibrium</p> <p>Transition metals and alloys (Separate science only) Transition metals, corrosion, electroplating, alloying, uses of metals and their alloys</p>	<p>Health, Disease and development Health and disease, non-communicable diseases, cardiovascular diseases, pathogens, spreading pathogens, physical and chemical barriers, the immune system, antibiotics Reversible reactions Reversible reactions Reversible reactions and Equilibria Dynamic equilibrium concept Electricity and circuits Electrical circuits, current and potential difference, current, charge and energy, resistance Electricity and circuits More about resistance, core practical investigating resistance, transferring energy Quantitative analysis (Separate science only) Yields, atom economy, concentrations, titrations and calculations</p> <p>Qualitative analysis (Separate science only) Flame tests and photometry Tests for positive ions Tests for negative ions</p> <p>Chemical cells and fuel cells (Separate science only) Chemical cells and fuel cells</p> <p>Static electricity (Separate science only) Charges and static electricity, uses and dangers of static electricity, electric fields</p>
Year 11	<p>Plant structures and their functions Photosynthesis, factors that affect photosynthesis, core practical on light intensity and photosynthesis, absorbing water and minerals, transpiration and translocation</p> <p>Groups in the periodic table Group 1, group 7, halogen reactivity, group zero Rates of reactions Determining rates of reactions, factors affecting reaction rates, core practical on investigating reaction rates Electricity and circuits Power, transferring energy by electricity, electrical safety Magnetism and the motor effect/electromagnetic induction Magnets and magnetic fields, electromagnetism, magnetic forces</p>	<p>Animal coordination, control and homeostasis Hormones, Hormonal control of metabolic rate, the menstrual cycle, hormones and the menstrual cycle, control and blood glucose, type 2 diabetes</p> <p>Rates of reactions Catalysts and activation energy, exothermic and endothermic reactions, energy changes in reactions. Magnetism and the motor effect/electromagnetic induction Transformers, Transformers and energy</p> <p>Particle model Particles and density Core practical investigating density</p>	<p>Exchange and transport in animals Efficient transport and exchange, the circulatory system, the heart, cellular respiration, core practical on respiration rates</p> <p>Fuels Hydrocarbons in crude oil, fractional distillation of crude oil, the alkane homologous series, complete and incomplete combustion, combustible fuels and pollution, breaking down hydrocarbons Particle model Energy and changes of state, energy calculations Polymers (Separate science only) Addition polymerization, polymer properties and uses, condensation polymerization, problems with polymers Alcohols and carboxylic acids (Separate science only) Ethanol production, alcohols, carboxylic acids</p>	<p>Ecosystems and material cycles Ecosystems, abiotic factors and communities, core practical on quadrats and transects, biotic factors and communities, parasitism and mutualism, biodiversity and humans, preserving biodiversity, the water cycle, the carbon cycle, the nitrogen cycle</p> <p>Earth and atmospheric sciences The early atmosphere, the changing atmosphere, the atmosphere today, climate change Particle model Core practical investigating water, gas temperature and pressure Bulk and surface properties (Separate science only) Comparing properties of materials, comparing uses of materials, nanoparticles</p>	Exams	Exams