

Curriculum Overview | Science 2022-23




































What will my child learn in Science?

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 7	<p>Working scientifically Skills: Ask scientific questions Plan investigations Record, analyse and evaluate data Safe laboratory practices</p> <p>Particles and their Behaviour The particle model Changes of state Diffusion Gas pressure Skill: Record and interpret Observations</p>	<p>Forces Introduction to forces Drag and air resistance Forces at a distance Skill: Hooke's law And line graph drawing</p> <p>Cells Observing cells Types of cells Movement of substances Unicellular organisers Skill: Microscopy</p>	<p>Elements, atoms and compounds State and explain the different properties of EMC Write an interpret chemical formulae Skill: Chemical literacy</p> <p>Structure and function of body systems Levels of organisation Gas exchange and breathing Skeleton and movement Skill: Record measurements and evaluate data</p>	<p>Light Reflection Refraction The eye Colour Skill: Using models</p> <p>Reactions Types of reaction Combustion Thermal decomposition Conservation of mass Exothermic and endothermic Skill: Writing word equations Analyse results</p> <p>Science week</p>	<p>Sound Introduction to waves Loudness and pitch Detecting sound Ultrasound and echoes Skill: Application to industry Scenarios</p> <p>Acids and alkalis Indicators and pH Neutralisation Making salts Skill: Accurate scientific technique</p>	<p>Reproduction Adolescence Reproductive systems Fertilisation Development of foetus Menstrual cycle Flowers and pollination Germination and seeds Skill: Devise and undertake a scientific investigation</p> <p>Review of learning</p>
Year 8	<p>Periodic table Metals and non-metals Groups and periods Elements of groups 1, 7 and 0 Skill: Identifying patterns in data</p> <p>Health and lifestyle Nutrients and test Diet and digestion Enzymes Drugs, alcohol, and smoking Skill: Evaluating risks</p>	<p>Energy Food and fuels Energy and temperature Transfers and resources Energy and power Skill: Using equations</p> <p>Separation techniques Solutions and solubility Filtration Evaporation and distillation Chromatography Skill: Accurate scientific technique</p>	<p>Space The solar system The earth and moon</p> <p>Metals and acids Metals with water and oxygen Displacement Extraction Skill: Interpreting and writing symbol equations</p>	<p>Adaptation and inheritance Competition Types of variation Inheritance Natural selection Extinction Skill: Analysing and Presenting data</p> <p>Science week</p>	<p>Electricity and magnetism Current/potential difference Series and Parallel Resistance Magnets inc. Electromagnets Skill: Evaluating models</p> <p>The Earth/Cycles Rock and carbon cycle Climate change Potable water Recycling Skill: Debating</p>	<p>Motion and pressure Speed and motion graphs Pressure in three states Turning forces Skill: Interpreting graphs</p> <p>Ecosystem processes Photosynthesis Leaves, plant minerals Types of respiration Skill: Observation and data collection</p> <p>Review of learning</p>
Year 9	<p>Structure of the Atom Electronic structures Isotopes Skill: Chemical literacy</p> <p>Cells and transport Prokaryote and Eukaryotes Transport into cells Cell division Skill: Microscopy</p>	<p>Motion and forces Vectors and scalars Resultant forces Newton's laws Skill: Reproducing results</p> <p>Chemical bonding Ionic and Covalent bonding Metallic structure Balancing equations The mole Skill: Chemical calculations</p>	<p>Genetics and inheritance The structure of DNA Variants and phenotypes Alleles and inheritance Skill: Calculating probability</p> <p>Energy stores Efficiency Thermal energy Evaluation of energy resources Skill: Scientific communication</p>	<p>Exchange surfaces Efficient exchange Circulatory system and heart Analysing respiration</p> <p>Electricity Investigating resistance Power and transferring energy Electrical safety and plugs Skill: Rearranging equations</p> <p>Science week</p>	<p>Evolution Natural selection Examples of evolution Skills: Recognising patterns</p> <p>Electrolysis Reactivity Products of electrolysis Skills: Predicting outcomes</p> <p>Waves The EM spectrum Dangers of the EM spectrum</p>	<p>Acids and alkalis Preparation of a sulfate Reactions with carbonates Factors effecting rates of reaction Skills: Accurate scientific technique</p> <p>Photosynthesis Factors Minerals and absorption Transport around the plant Adaptations</p>

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What will my child learn in Combined science?

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 10	<p>Health, disease and Development of medicines Non-communicable diseases Pathogens and The Immune Response Drugs </p> <p>States of matter and Atomic structure Separating techniques Core Prac- Chromatography </p> <p>Radioactivity Types of radiation Core Prac- GM tube  Half-life and decay Dangers of radioactivity </p>	<p>Key concepts in Biology Microscopic calculations Types of cell Bacteria  Enzyme Action Transport including osmosis Key concepts core pracs- Microscopes Enzyme activity Osmosis in potato chips</p> <p>Periodic table and Chemical calculations Masses and empirical formulae </p> <p>Motion and forces Acceleration  Velocity/time graphs </p>	<p>Motion and forces Core prac- $F=MA$ Momentum  Stopping distances</p> <p>Cells and control Mitosis  The nervous system Neurotransmission</p> <p>Bonding and types of Substances Properties of Ionic and Covalent compounds Molecular compounds Allotropes of carbon  Properties of metals Bonding models </p>	<p>Conservation of energy Stored energies </p> <p>Genetics Meiosis  DNA extraction  Mutation and variation </p> <p>Acids and alkalis Different types of Indicator Bases and salts Core pracs- Preparing copper sulphate Investigating neutralisation Solubility rules </p>	<p>Waves including Light And the EM spectrum Wave speeds Core prac- Investigating waves And refraction  EM dangers Using long/short wavelengths</p> <p>Natural selection and Genetic modification  Evidence for human evolution Darwin's theory</p> <p>Electrolysis and Metals Core prac- Electrolysis Ores, Reactivity Oxidation and Reduction Life cycle assessments  Dynamic Equilibrium </p>	<p>AP2 Revision and mocks</p> <p>The Particle models Forces and matter  Density Energy and changes in state Gas temperature and pressure Core practicals- Investigating densities  Investigating water Investigating springs </p> <p>Ecosystems and materials Cycles  Biotic and Abiotic factors Core prac- Quadrats and Transects Parasitism and mutualism Preserving biodiversity Carbon and nitrogen cycles</p>
Year 11	<p>Groups in the periodic Table and rates of reactions  Groups 1,7,0 and reactivity Activation energy Exothermic and endothermic Core prac- Rates of reaction</p> <p>Electricity and Circuits Core practical- Electrical Circuits and resistance  Transferring energy and power Electricity in the home</p> <p>Plant structures and Functions  Core prac: Photosynthesis Absorbing water and minerals Transpiration and translocation</p>	<p>Fuels  Fractional distillation Alkane homologous series Complete and incomplete Combustion Pollution</p> <p>Exchange and transport In Animals  Efficient exchange Heart and circulatory system Mocks and Revision Cellular respiration Core prac: Respiration rates</p> <p>Magnetism and the motor effect  Magnets and magnetic fields Electromagnetic induction Transformers and energy</p>	<p>Animal coordination, Control and Homeostasis Hormones  Metabolic rate The menstrual cycle Glucose control and diabetes</p> <p>Earth and atmospheric Science The Earth's early atmosphere Climate change </p> <p>Mocks and revision</p>	<p>Review of learning</p> <p>Review of core practical Key concepts and past papers</p>		

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What will my child learn in Triple science: Biology?

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 10	Key concepts in Biology Microscopic calculations Types of cell Bacteria Enzyme Action Calorimetry Transport including osmosis Key concepts core pracs- Microscopes Enzyme activity Osmosis in potato chips Food tests	Cells and control Mitosis The nervous system Neurotransmission The eye The brain Brain scanning	Genetics Meiosis DNA extraction Mutation and variation DNA transcription And translation Sex-linked disorders	Natural selection and Genetic modification Evidence for human evolution Darwin's theory Start Health and Disease	Health, disease and Development of medicines Non-communicable diseases Pathogens and The Immune Response Drugs Core prac- Aseptic Technique Plant diseases Monoclonal antibodies	Plant structures and Functions Core prac: Photosynthesis Absorbing water and minerals Transpiration and translocation Plant hormones
Year 11	Animal coordination, Control and Homeostasis Hormones Metabolic rate The menstrual cycle Glucose control and diabetes Thermoregulation Osmoregulation The kidney	Exchange and transport In Animals Efficient exchange Heart and circulatory system Mocks and Revision Cellular respiration Core prac: Respiration rates Fick's law	Ecosystems and materials Cycles Biotic and Abiotic factors Core prac- Quadrats and Transects Parasitism and mutualism Preserving biodiversity Carbon and nitrogen cycles Trophic levels Food security Indicator species	Review of learning Review of core practical Key concepts and past papers		












What will my child learn in Triple science: Chemistry?

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 10	States of matter and Atomic structure Separating techniques Core Prac- Chromatography 	Bonding and types of Substances Properties of Ionic and Covalent compounds Molecular compounds Allotropes of carbon Properties of metals Bonding models   Acids and alkalis Different types of Indicator Bases and salts Core pracs- Preparing copper sulphate Investigating neutralisation Solubility rules	Periodic table and Chemical calculations Masses and empirical formulae  Electrolysis and Metals Core prac- Electrolysis Ores, Reactivity Oxidation and Reduction Life cycle assessments Dynamic Equilibrium  Quantitative analysis Atom economy Percentage yield and Theoretical yield  Core prac- Titration	Transition metals Oxidation of metals Electroplating Alloys  Chemical and fuel cells Hydrogen-oxygen fuel cells Evaluating fuels 	Qualitative analysis Testing for ions Flame tests Dynamic equilibria Haber process Predicating rate of Attainment 	Fuels Fractional distillation Alkane homologous series Complete and incomplete Combustion Pollution  Earth and atmospheric Science The Earth's early atmosphere Climate change 
Year 11	Groups in the periodic Table and rates of reactions Groups 1,7,0 and reactivity Activation energy Exothermic and endothermic Core prac- Rates of reaction 	Polymers and alcohols Polymerisation Addition polymerisation Problems with polymers Naturally occurring polymers Formulae of alcohols Carboxylic acids Core prac- Combustion of alcohols 	Bulk surface Properties and Nanoparticles Sizes and properties Uses and risks 	Review of learning Review of core practical Key concepts and past papers		

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What will my child learn in Triple science: Physics?

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Year 10	Motion and forces Acceleration Velocity/time graphs Core prac- $F=MA$ Momentum Stopping distances Calculations for breaking distances 	Waves including Light And the EM spectrum Wave speeds Core prac- Investigating waves And refraction EM dangers Using long/short wavelengths Calculating depth from wave velocity Transmission and absorption Ultra and infrasound And their uses Core prac: Thermal energy 	Astronomy Changes in the solar System Steady state and big bang Red shift and other evidence Evolution of stars Telescopes 	Radioactivity Types of radiation Core prac- GM tube Half-life and decay Dangers of radioactivity Medical uses of radioactivity Nuclear power Fission and fusion 	Forces and matter Elastic and inelastic distortion Core prac- Investigating springs Pressure in fluids Pascals Depth and density	Static Electricity Common electrostatic Phenomena Uses and dangers Electric field including shape And direction 
Year 11	Electricity and Circuits Core practical- Electrical Circuits and resistance Transferring energy and power Electricity in the home 	Magnetism and the motor effect Magnets and magnetic fields Electromagnetic induction Transformers and energy Alternators and dynamos Turns ration equation 	The Particle models Density Energy and changes in state Gas temperature and pressure Core practicals- Investigating densities Investigating water Net force of gas pressure Calculating pressure  	Review of learning Review of core practical Key concepts and past papers		