



Curriculum Map for Science Year 8

YEAR 8	Autumn 1		Autumn 2	
Topics	Matter	Organisms	Forces & Electromagnets	Reactions 1
Substantive Knowledge - The Knowledge and Concepts Taught By The Teacher	<ul style="list-style-type: none">Periodic TableElements and Their SymbolsAtoms and CompoundsWriting Chemical Formulae and State Symbols	<ul style="list-style-type: none">Gas Exchange and BreathingDrugs, Alcohol and SmokingFood Nutrients and Food TestsUnhealthy DietDigestive System	<ul style="list-style-type: none">Friction and DragSquishing and SquashingPressure in Gases, Solids and LiquidsMagnets and Magnetic FieldsElectromagnets and Their Uses	<ul style="list-style-type: none">Atoms in ReactionsTypes of Reactions: Combustion, Thermal DecompositionConservation of MassExothermic and Endothermic Reactions
Disciplinary Knowledge - The Knowledge Scientists Need So They Can Collect, Understand and Evaluate Scientific Evidence	<ul style="list-style-type: none">The history of the periodic table and how it was discovered.The principles underpinning the Mendeleev Periodic Table.Understand the role of a theories.	<ul style="list-style-type: none">Development and history of drugs to treat diseases.Abuse of various drugs.	<ul style="list-style-type: none">Development of Hooke's law on elastic.History of Newton's laws of motions and how these have changed over time.	<ul style="list-style-type: none">Discovery of fuels and their extraction processes.Application of energy in medical and biotechnology usage.
Skills	<ul style="list-style-type: none">Representing chemical reactions using formulae and using equations.Balance a symbol equation.	<ul style="list-style-type: none">Judge whether the conclusion is supported by the data.Developing hypothesis.Prepare a table with space to record all measurements.Carry out a method carefully and consistently.	<ul style="list-style-type: none">Identify patterns in data and present data.Identify further questions arising from investigations.Make and explain a conclusion.Manage risks and hazards in practicals.	<ul style="list-style-type: none">Comparing and analysing data on fuels.Design a table for data gathered.Manage risks and hazards in practicals.
Links To Prior Learning	<ul style="list-style-type: none">Particle Theory of MatterMetals and Non- MetalsTypes of ReactionsBoiling PointsChange of States of Matter	<ul style="list-style-type: none">Diets, Drugs and ExerciseFunction of TeethDigestive System BasicsEating HealthyEnergy	<ul style="list-style-type: none">Contact and Non-Contact ForcesBalanced and Unbalanced ForcesParticle Theory	<ul style="list-style-type: none">Metals and Non - Metals 9 - Year 7Writing Word Equations - Year 8

			<ul style="list-style-type: none"> Gas Pressure Upthrust, Magnets 	
Literacy/ Numeracy	<ul style="list-style-type: none"> Use appropriate units and correct chemical nomenclature. Using correct case alphabets when writing symbols. Using models to explain theory. Calculating percentages and proportions. 	<ul style="list-style-type: none"> Identify a pattern in data from a results table or bar chart. Calculating mean. Use the measuring instrument correctly. Drawing graphs. 	<ul style="list-style-type: none"> Drawing and interpreting line graphs. Comprehension of text regarding forces and pressure. Rearrangement of equations to calculate pressure. Targeted vocabulary instruction of tier2/3 key words. 	<ul style="list-style-type: none"> Comparing pros and cons of fuels. Targeted vocabulary instruction of tier2/3 key words. Etymology and morphology of key words. Calculating masses using addition and subtraction.
Cross Curricular	<ul style="list-style-type: none"> Elements in Materials - Technology Compounds Used in Food - Food Technology Displaying Data - Maths Writing Reports - English Drawing Models - Art 	<ul style="list-style-type: none"> Drug and Alcohol Abuse- Moral, Social and Ethical Issues Asthma and Other Respiratory Diseases No Smoking Campaign Nutrients in Food - Technology Drawing Graphs and Calculating Mean - Maths 	<ul style="list-style-type: none"> Magnets as Materials - Technology Electromagnets Used in Trains/Earphones/Cell Phones - Engineering Electromagnets in Loudspeakers/Cell Phones - Technology Forces and Their Uses - Technology 	<ul style="list-style-type: none"> Ice Pack in Treating Pains Climate Change and Global Warming - Geography Types of Fuels - Geography Ethical and Social Issues of Burning Fuels Energy Generation - Engineering and Technology Use of Fuels - Foods and Technology Writing a Speech - English
Assessment	<ul style="list-style-type: none"> Low stake quizzes and mini checkpoints End of unit summative test <p>ASSESSMENT 1: ORGANISMS AND MATTER</p>		<ul style="list-style-type: none"> Low stake quizzes and mini checkpoints End of unit summative test <p>ASSESSMENT 2: FORCES, ELECTROMAGNETS AND REACTIONS</p>	

YEAR 8	Spring 1		Spring 2	
Topics	Earth	Energy	Genes	Waves
Substantive Knowledge - The Knowledge and Concepts	<ul style="list-style-type: none"> Global Warming The Carbon Cycle Climate Change Extracting Metals 	<ul style="list-style-type: none"> Work, Energy and Machines Energy and Temperature Energy Transfer: Particles Energy Transfer: Radiation 	<ul style="list-style-type: none"> Natural Selection and Charles Darwin Extinction and Preserving Biodiversity 	<ul style="list-style-type: none"> Sound waves, water waves and energy Radiation and energy Modelling waves

Taught By The Teacher	<ul style="list-style-type: none"> Recycling 	and insulation	<ul style="list-style-type: none"> DNA and Genetics Genetic Modification 	
Disciplinary Knowledge - The Knowledge Scientists Need So They Can Collect, Understand and Evaluate Scientific Evidence	<ul style="list-style-type: none"> Exploring evidence that suggest global warming caused by human activity is causing climate change. History of recycling materials and its importance. History and development of renewable resources. 	<ul style="list-style-type: none"> History of the atom regarding radiation and energy. Steam engines and other machines history in thermodynamics. Development of methods to prevent heat loss by conduction, convection, and radiation. 	<ul style="list-style-type: none"> DNA history and discovery. Role of different scientists in the discovery of DNA and its model. Darwin theory of evolution-ethical, social, and moral issues. Understand how scientific ideas have changed over time. 	<ul style="list-style-type: none"> History of the discovery of waves and the EM spectrum. Development of technologies such as ultrasounds and microphones.
Skills	<ul style="list-style-type: none"> Identify a pattern in data from results tables, line graphs or bar charts. Evaluation of implications of climate change, recycling etc. Identify features of a reaction that are hazardous. 	<ul style="list-style-type: none"> Collect data and analyse the link and patterns in data. Read values from a line graph. Select relevant data and do calculations. Identify potential sources of random and systematic error. 	<ul style="list-style-type: none"> Describe the role of a theory and use of evidence in supporting theories. Evaluate the evidence for claims. Using models to show inheritance and natural selection. Collaboration and team building. 	<ul style="list-style-type: none"> Add/use a diagram if it helps to make a concept clearer. Use of models in science to demonstrate waves. Suggest a scientific idea that might explain an observation.
Links To Prior Learning	<ul style="list-style-type: none"> Metals and Non-Metals Periodic Table Energy (Fuels) Photosynthesis 	<ul style="list-style-type: none"> Forces Particle Theory of Matter Change of States 	<ul style="list-style-type: none"> Cells Animal Adaptations 	<ul style="list-style-type: none"> Using Electromagnets Energy Electricity Generation
Literacy/ Numeracy	<ul style="list-style-type: none"> Calculating Mean Drawing and Interpreting Graphs Comparing Pros and Cons of Energy Resources Targeted Vocabulary Instruction of Tier2/3 Key Words Pie Charts and Percentages 	<ul style="list-style-type: none"> Write in a Style to Fit Purpose and Audience, Using Clear Language and Using Scientific Vocabulary Accurately Drawing and Interpreting Graphs Rearranging and Solving Equations 	<ul style="list-style-type: none"> Use Scientific Vocabulary Accurately Identifying Anomalies and Calculating Mean Construct Explanations for Observations Displaying Data Using Graphs Analysing and Summarising Reading for Comprehension 	<ul style="list-style-type: none"> Rearranging and Use of Equations to Calculate Wave Speed Develop the Written Report - Scientific Writing Write in a Style to Fit Purpose and Audience Defining Tier 2/3 Key Words
Cross Curricular	<ul style="list-style-type: none"> Global Warming and Climate Change - Geography Use of Recycled Material in DT, Product Design and 	<ul style="list-style-type: none"> Energy Transfers - PE Drawing Graphs and Calculating Mean - Maths Machine - Technology 	<ul style="list-style-type: none"> God and Nature of Life - Philosophy and Ethics Biodiversity - Geography Research and Choosing 	<ul style="list-style-type: none"> Light and Sound - Performing Arts Lighting in Photography - Media

	<ul style="list-style-type: none"> Textiles • Displaying Data (Pie charts and percentages) - Maths • Writing Reports - English • Recycling Campaign - PSHCE 	<ul style="list-style-type: none"> • Force Multipliers in Opening Food Cans - Food Technology 	<ul style="list-style-type: none"> God and Nature of Life - Philosophy and Ethics • Biodiversity - Geography • Research and Choosing Relevant Information - English/ IT 	<ul style="list-style-type: none"> • Dangers of Cooking in Microwaves - Food Technology
Assessment	<ul style="list-style-type: none"> • Low Stake Quizzes • End of Unit Summative Test <p>ASSESSMENT 3: EARTH AND ENERGY</p>		<ul style="list-style-type: none"> • Low Stake Quizzes • End of Unit Summative Test <p>ASSESSMENT 4: GENES AND WAVES</p>	

YEAR 8	Summer 1		Summer 2	
Topics	Ecosystems	Reactions 2	Reactions	Embedding Key Skills for GCSE
Substantive Knowledge - The Knowledge and Concepts Taught By The Teacher	<ul style="list-style-type: none"> • Aerobic Respiration • Anaerobic Respiration • Biotechnology • Photosynthesis • Leaves • Plant Minerals 	<ul style="list-style-type: none"> • Chemical Reactions • Acids and Alkalis • Indicators and pH • Acid Strength • Neutralisation • Making Salts 	<ul style="list-style-type: none"> • More About Elements • Chemical Reactions of Metals and Non-Metals • Metals and Acids, Oxygen and Water • Metal Displacement Reactions 	<ul style="list-style-type: none"> • Revision for End of Year Exams • Project Research: The Earth Structure and Rocks • Research Skeletons in Different Organisms (fossils) • Redesigning the Door/See Saw Experiment (Badger)
Disciplinary Knowledge - The Knowledge Scientists Need So They Can Collect, Understand and Evaluate Scientific Evidence	<ul style="list-style-type: none"> • Use of biotechnological techniques to make foods (bread, beer, yogurt). • Development and changes made in biological processes. • New discovery or invention. 	<ul style="list-style-type: none"> • History of the discovery the pH scale and indicators. • History and development of properties of chemical reactions and substances. 	<ul style="list-style-type: none"> • History and development of properties of chemical reactions and substances. • The principles underpinning the Mendeleev Periodic Table. • Understand the role of a theories. 	<ul style="list-style-type: none"> • History and development in scientific research to solve problems or deepen scientific understanding. • Understanding the principles surrounding the scientific method.
Skills	<ul style="list-style-type: none"> • Identify two variables which may show a correlation. • HSW: Investigating factors affecting photosynthesis. • Develop the written report with scientific writing. • Ability to consider social, 	<ul style="list-style-type: none"> • Developing hypothesis. • Carry out a method carefully and consistently. • Develop practical skills in a science lab and complete a risk assessment. 	<ul style="list-style-type: none"> • Identifying risks and precautions in an experiment. • Develop practical skills in a science lab and complete a risk assessment. • Use appropriate units and 	<ul style="list-style-type: none"> • Design, evaluate, modify and improve a model. • Research Skills, Exam Techniques, Revision techniques. • Devise questions and plan variables.

	ethical and moral views.	<ul style="list-style-type: none"> Developing hypothesis. Carry out a method carefully and consistently. Develop practical skills in a science lab and complete a risk assessment. 	correct chemical nomenclature.	<ul style="list-style-type: none"> Presenting data (line, bar, pie charts). Use SI units (e.g. kg, g, mg; km, m, mm; kJ, J) and IUPAC chemical nomenclature unless inappropriate.
Links To Prior Learning	<ul style="list-style-type: none"> Plant and Animal Cells Movement of Substances Specialised Cells/ Microscopes Evaporation 	<ul style="list-style-type: none"> Atoms in Reactions Conservation of Mass Periodic Table Metals and Non-Metals 	<ul style="list-style-type: none"> Making Salts Chemical Reactions Periodic Table Acids and Alkalis 	<ul style="list-style-type: none"> CREST Awards - Year 7 Ecosystems Rocks Forces
Literacy/ Numeracy	<ul style="list-style-type: none"> Draw and use line graphs to show collected data. Calculating percentages and proportions. Use scientific vocabulary. Reading for comprehension. 	<ul style="list-style-type: none"> Use appropriate units and correct chemical nomenclature. Using correct case alphabets when writing symbols. Be able to use the pH scale to determine whether a substance is an acid or alkaline. 	<ul style="list-style-type: none"> Collecting data and data tables. Construct explanations for observations. Displaying data using graphs. Analysing and summarising. 	<ul style="list-style-type: none"> Project writing- write like a scientist. Articulate and present research findings from research project. Analysing and summarising. Displaying and presenting data. Selecting relevant data for calculations.
Cross Curricular	<ul style="list-style-type: none"> Respiration and Exercise - PE Baking/Wine Making - Food Technology Displaying Data - Maths Drawing Models - Art Debate Skills - English 	<ul style="list-style-type: none"> Preserving Food - Food Technology Acid Rain - Geography Mixtures and Emulsions - Art Displaying Data - Maths 	<ul style="list-style-type: none"> Elements in Materials - Technology Compounds Used in Food - Food Technology Displaying Data - Maths Writing Reports - English Drawing Models - Art 	<ul style="list-style-type: none"> Accurate Use of Internet - IT Comprehension and Summarising Information - English Draw and Present Graphs - Maths Draw and Colour a Model - Art Oral Presentation - Drama
Assessment	<ul style="list-style-type: none"> Low stake quizzes and mini checkpoints ASSESSMENT 5: ECOSYSTEMS AND REACTIONS 		<ul style="list-style-type: none"> End of year summative test END OF YEAR ASSESSMENT 	