

Year 9						
	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Topic	Growth and differentiation Matter and energy	Electrical energy	Periodic table	Earths resources	Sound and waves Photosynthesis	Acceleration
Key concepts	Stem cells Cell transport Conservation of atoms Combustion	Electric charge Potential difference	Periodic patterns Subatomic particles	Reactivity series Potable water Life cycle assessment	Wave properties Transverse and longitudinal Refraction Photosynthesis Transpiration and translocation	Velocity Acceleration Resultant forces
Knowledge & Understanding Milestones	Describe what stem cells are Give some applications of stem cells Explain the process and results of mitosis Explain and apply knowledge of cell transport processes. Explain what happens to mass during both physical changes and chemical reactions. Understand why it may appear that mass may be lost or gained	Describe the shape of electric force fields Explain how to use a voltmeter to measure potential difference Measure the resistance of a component Recall and use the formula to calculate resistance	Draw the atomic structure of the first 20 elements Describe the development of the periodic table Describe the patterns of the periodic table	Explain the types of materials that can be obtained from the earth and the issues that are involved in obtaining them. Understand the reactivity series role in obtaining metals from ores and its general use in chemistry. Explain the processes involved in obtaining potable water. Compare a range of synthetic materials, their uses, preparation and impacts on the environment.	Recall and use the wave equation formula Describe the differences between longitudinal and transverse sound waves Explain how sound wave echoes can be used to measure distances underwater Give a description into how to measure the speed of sound Explain some of the dangers to hearing	Compare speed as a scalar quantity to velocity as a vector quantity. Use a formula to calculate acceleration. Use and interpret velocity-time graphs to represent motion. More able will be able to calculate acceleration from these graphs. Use and rearrange a formula for uniform acceleration.

<p>Careers input</p>	<p>Research Biomedical science</p> <p>Research Chemist - Conservation of Mass, Chemical Engineer – Conservation of Mass; Development Chemist - Conservation of Mass; Balancing Chemical Equations, Statistician - Chemical Measurements</p>	<p>Electrical Energy, Electrician</p>	<p>Chemical analyst</p>	<p>Mining Engineer; Metal Production; Environmental Scientist; Development Scientist; Manufacturing Scientist; Life Cycle Analyst.</p>	<p>Audiologist, Hearing Loss Prevention Officer</p> <p>Horticulture, Farming.</p>	<p>Engineering.</p>
<p>Links (prior knowledge, future knowledge)</p>	<p>In subject: Prior: Animals, including humans (Y5/6) Reproduction (Y7) Changing substances (Y7) Reactants and Products (Y8) Future: Genetics (Y9) Controlling reproduction (Y10) Controlling reactions (Y10) Making substances (Y11)</p>	<p>In subject: Prior: Electricity (Y5/6) Future: Home Electricity (Y10) Outside of subject: Maths - Rearranging equations Use of standard form</p>	<p>In subject: Prior: Properties and changes of materials (Y5/6) Substances and particles (Y7) Elements and compounds (Y8) Future: Structure and Bonding (Y10) Outside of subject: Art - Transition metals and colour Maths - Subtraction</p>	<p>In subject: Prior: Rocks (Y8) Future: Atmosphere (Y10) Materials (Y11) Outside of subject: Geography - Rock Cycle , Potable Water, Recycling and uses of materials and obtaining materials Resistant materials - Polymers, Ceramics, composites</p>	<p>In subject: Prior: Sound (Y4) Plants (Y3) Respiration (Y8) Future: Electromagnetic Radiation (Y10) Cycling materials (Y11) Outside of subject: Music - Pitch and Frequency Geography - Changing</p>	<p>In subject: Prior: Contact forces (Y7) Speed (Y8) Future: Newton's Laws (Y10) Outside of subject: Maths - Rearranging formula.</p>

	<p>Outside of subject: Maths - Percentage change Drawing line graphs (not straight lines of best fit)</p> <p>Maths - Percentage; Graph skills; Calculating Means</p>		<p>History - Scientific developments</p>		<p>Landscapes of the UK (year 9)</p> <p>Geography- Farming methods.</p>	
Key Vocabulary	<p>Stem cells, diffusion, osmosis, active transport, turgid, flaccid, isotonic, hypotonic, hypertonic, surface area</p> <p>Physical, dissolving, evaporation, sublimation, distillation, conservation, composition</p>	<p>Field, voltmeter, potential difference, resistance, component, charge, current.</p>	<p>Atoms, protons, neutrons, electrons, shells, energy levels, isotope, reactivity.</p>	<p>Reactivity, displacement, oxidation, extraction, reduction, redox, ionic, resources, sustainable, recycling, polymer, ceramic, composite, potable, life cycle.</p>	<p>Longitudinal, transverse, echo, refractions, frequency, vibration, pitch.</p> <p>Photosynthesis, starch, limiting factors, horticulture, carbohydrates, light intensity, glucose</p>	<p>Speed, velocity, scalar, vector, acceleration</p>
Review & Assessment Dates (including opportunities for retrieval practice)	<p>Tests after modules POAE – Evaluation task marked</p> <p>Evaluating. Knowledge of data analysis.</p>	<p>Test after module</p>	<p>Test after module POAE – Evaluation task marked</p> <p>Evaluating. Knowledge of using evidence to</p>	<p>Test after module POAE – Obtaining task marked</p> <p>Obtaining evidence. Knowledge of data analysis.</p>	<p>Test after module</p>	<p>Test after module</p>

	Millar – Learning a relationship.		develop explanations.	Millar – Learn a fact. Using evidence to prove a theory.		
			Millar – Identify a phenomena. Learn a fact.			