

Year 9

Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Chemical reactions, exothermic/endothermic	Evolution and inheritance, natural selection	Magnets, electromagnets and static electricity	Energy	States of matter and Atomic structure	Cell biology
<i>Organising tables. Making predictions based on understanding. Selecting and applying scientific techniques. Health and safety, evaluating risks.</i>	<i>Understanding that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review</i>	<i>Making predictions. Presenting and recording data. Analysing data, using graphs.</i>	<i>Applying calculations, analysing data. Using SI units.</i>	<i>Understanding how scientific theories develop over time. Plan and carry out scientific enquiries. Accuracy and precision. Identifying variables. Chemical nomenclature. Calculating atomic number and mass</i>	<i>Understanding scientific understanding develops over time. Applying calculations, understanding and using SI units. using standard form. Presenting and recording data. Analysing data, using graphs.</i>
Materials <ul style="list-style-type: none"> the order of metals and carbon in the reactivity series the use of carbon in obtaining metals from metal oxides Chemical Reactions <ul style="list-style-type: none"> combustion, thermal decomposition, oxidation and displacement reactions what catalysts do. Energetics <ul style="list-style-type: none"> exothermic and endothermic chemical reactions (qualitative). representing chemical reactions using formulae and using equations 	Genetics and evolution Inheritance, chromosomes, DNA and genes <ul style="list-style-type: none"> heredity as the process by which genetic information is transmitted from one generation to the next a simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model differences between species the variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection changes in the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and 	Static electricity <ul style="list-style-type: none"> separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects the idea of electric field, forces acting across the space between objects not in contact. Magnetism <ul style="list-style-type: none"> magnetic poles, attraction and repulsion magnetic fields by plotting with compass, representation by field lines Earth's magnetism, compass and navigation the magnetic effect of a current, electromagnets, D.C. motors (principles only). 	Changes in systems <ul style="list-style-type: none"> energy as a quantity that can be quantified and calculated; the total energy has the same value before and after a change comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with movements, temperatures, changes in positions in a field, in elastic distortions and in chemical compositions using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes. Calculation of fuel uses and costs in the domestic context <ul style="list-style-type: none"> fuels and energy resources. Earth and atmosphere	The particulate nature of matter <ul style="list-style-type: none"> the properties of the different states of matter (solid, liquid and gas) in terms of the particle model, including gas pressure changes of state in terms of the particle model. The periodic Table <ul style="list-style-type: none"> the varying physical and chemical properties of different elements Atoms, elements and compounds <ul style="list-style-type: none"> a simple (Dalton) atomic model differences between atoms, elements and compounds chemical symbols and formulae for elements and compounds conservation of mass changes of state. 	Cells and organisation <ul style="list-style-type: none"> cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts the similarities and differences between plant and animal cells the role of diffusion in the movement of materials in and between cells the structural adaptations of some unicellular organisms the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms. Matter <ul style="list-style-type: none"> diffusion in liquids and gases driven by differences in concentration

	<p>reproduce, which in turn may lead to extinction</p> <ul style="list-style-type: none">• the importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.		<ul style="list-style-type: none">• the production of carbon dioxide by human activity and the impact on climate.	<p>Pure and impure substances</p> <ul style="list-style-type: none">• the concept of a pure substance• mixtures, including dissolving• diffusion in terms of the particle model• simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography• the identification of pure substances.	
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