

## Science – Year 7

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Year 7</b>	<p><b>Topic: Particles</b></p> <p><b>Knowledge:</b>                      Scientific equipment                      Hazards and risks                      Using Bunsen burners</p> <p>Particle model – states of matter Brownian motion (EXT)                      Particle model- advantages and disadvantages (EXT)                      Changes of state                      Melting and Boiling points                      Expansion and contraction (EXT)                      Diffusion, osmosis, active transport</p> <p>Atoms and elements                      Compounds and mixtures                      Symbols and formulae                      Structure of an atom</p> <p><b>Assessment:</b>                      Pre and post assessment at the start and end of term based on Particles (50 marks &amp; 50 minutes)</p>	<p><b>Topic: Types of reaction</b></p> <p><b>Knowledge:</b>                      Physical and Chemical reactions                      Pure substances and solubility                      Rates of dissolving                      Filtration                      Crystallisation (linking to evaporation)                      Simple Distillation                      Chromatography</p> <p>Acids and Alkalis                      Indicators                      Neutralisation</p> <p>The periodic table – structure                      History of the periodic table                      Metals and non-metals                      Alloys (EXT)                      Ceramics, Polymers, Composite</p> <p><b>Assessment:</b>                      Pre and post assessment at the start and end of term based on Types of Reaction (50 marks &amp; 50 minutes)</p>	<p><b>Topic: Forces</b></p> <p><b>Knowledge:</b>                      Identifying forces – contact vs non-contact                      Balanced and unbalanced forces                      Resultant force                      Newton’s Laws (EXT)                      Hooke’s Law- practical and graph skills (EXT)                      Friction- advantages and disadvantage                      Streamlining- everyday examples and linked to particles                      Moments (EXT)                      Speed calculations                      Distance-time graph                      Velocity-time graph</p> <p>Gravity, weight and mass                      Solar system                      Day and night                      Seasons                      Galaxies and universe                      Light year</p> <p><b>Assessment:</b>                      Pre and post assessment at the start and end of term based on Forces (50 marks &amp; 50 minutes)</p>	<p><b>Topic: Energy</b></p> <p><b>Knowledge:</b>                      Different types of energy stores                      Energy in food                      Energy transfers                      Sankey diagrams (EXT)                      Efficiency calculations</p> <p>Heating and thermal equilibrium                      Conduction, convection and radiation                      Preventing heat loss- practical skills</p> <p>Renewable and non-renewable                      Renewables- advantages and disadvantages                      Nuclear energy                      Calculations: power and energy costs</p> <p><b>Assessment:</b>                      Pre and post assessment at the start and end of term based on Energy (50 marks &amp; 50 minutes)</p>	<p><b>Topic: Interdependence and cells</b></p> <p><b>Knowledge:</b>                      Living things: MRS NERG 5                      Kingdoms and classes                      Classification and keys                      Food chains                      Food webs                      Pyramids of numbers                      Pyramids of biomass (EXT)                      Environment and habitats                      Competition                      Sampling techniques (EXT)</p> <p>Animal cells                      Plant cells                      Prokaryotic vs eukaryotic                      Microscopes                      Microscope calculations (EXT)                      Specialised cells                      Stem cells                      Cells, tissues, organs, systems</p> <p>Assessment: Pre and post assessment at the start and end of term based on Interdependence and cells (50 marks &amp; 50 minutes)</p>	<p><b>Topic: Reproduction and Variation</b></p> <p><b>Knowledge:</b>                      humans and plants                      Gametes – humans and plants                      Fertilisation in humans                      Pregnancy and gestation                      Effect of maternal lifestyle                      Menstrual cycle                      Pollination and seed dispersal                      Quantitative investigations of dispersal mechanisms</p> <p>Genetic and environmental variation                      Genetic cross diagrams (EXT)                      Genetic diseases and sexual determination (EXT)</p> <p>Variation                      Adaptation                      Natural Selection                      Selective Breeding                      Endangered species and extinction                      Biodiversity                      Extremophiles (EXT)</p>

						<p><b>Assessment:</b> Pre and post assessment at the start and end of term based on Reproduction and variation (50 marks &amp; 50 minutes)</p> <p>End of Year assessment (June/July) Year 7 topics only 3 x 30-minute papers (biography, chemistry, physics) Each paper is 30 marks Extension paper available (high demand questions only) – 30 minutes and 30 marks</p>
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