

| Year 7 | | | | | | |
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| | Half Term 1 | Half Term 2 | Half Term 3 | Half Term 4 | Half Term 5 | Half Term 6 |
| Topic | Science skills HSW Energy transfers Electric circuits | Cells | Substances and particles | Contact forces Changing substances | Gravity Reproduction | Light |
| Key concepts | Energy model Wasted energy Heat and temperature Electric current Resistance | Cell structure Specialised cells | Particle model Substances and mixtures Solutions | Balanced or unbalanced Friction Density Chemical change Neutralisation pH scale | Weight Gravitational force Solar system Sexual and asexual Menstrual cycles Embryo development | Reflection Colour |
| Knowledge & Understanding Milestones | Compare energy from different foods and relate this to diet. Use the relationship between energy and power to calculate quantities in a variety of units (J, kJ, kWh) Measure current in circuits using an ammeter Construct series and parallel circuits Describe electricity as the flow of charge | Draw, label and give the functions of cell organelles. Discuss a range of specialised cells Use microscopes effectively Prepare microscope slides. | Describe the different states of matter and changes of state in terms of the particle model Apply the particle model to explain diffusion and density. Explain the difference between pure substances, mixtures and formulations Explain different mechanisms that can be used to separate mixtures. | Describe and calculate density. Draw forces using force arrow. Calculate resultant forces. Describe Upthrust. Describe the effect of forces on objects. Calculate work done using the formula $W=Fs$. Have an understanding of different types of chemical reactions Understand how chemical reactions change the properties of substances | Explain why we get day and night and the seasons, based on the model of Earth rotating and having an axis tilted to its plane of orbit around the Sun Describe why the gravitational field is different for different planets Calculate the weight of an object, given its mass and the gravitational field strength Explain what a star is and recall that our Sun | Students should be able to draw ray diagrams for reflection and refraction. Students should be able to describe what lenses can do to rays of light. Students should recall the order of colours in the visible spectrum. Students should be able to describe how certain colours can be transmitted by different coloured filters Students should be able to give a |

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| | Recall the symbol circuits used for electrical components | | | Place acids and alkalis on the pH scale Understand what indicators do Plan a neutralisation reaction | is only one star in our Galaxy, which is only one of billions of galaxies Recall that a light year is a measure of distance Have an understanding of reproduction, especially in humans | description about the magnitude of the speed of light. |
| Scaffolding for SEND to ensure quality first teaching. | Foundation worksheets on Exp sci Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual coding, Knowledge organisers. SEN tests | Foundation worksheets on Exp sci Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual coding, Knowledge organisers. SEN tests | Foundation worksheets on Exp Sci. Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual coding, Knowledge organisers. SEN tests | Foundation worksheets on Exp Sci. Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual coding, Knowledge organisers. SEN tests | Foundation worksheets on Exp Sci. Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual coding, Knowledge organisers. SEN tests | Foundation worksheets on Exp Sci. Differentiated questioning, TFW, Recall quizzes, Vocab introduction, Dual coding, Knowledge organisers. SEN tests |
| Careers input | Dietician, electrician Electrical Engineering, Electricians | Microbiology | Food chemist Chemical engineering Pharmaceutical analyst | Engineering Analytical Chemist, Pharmacist | Space technology Gynaecologist, Plant Breeder | Optometrist, Advert designers |
| Links (prior knowledge, future knowledge) | In subject: Prior: Animals including humans (Y5/6) Electricity (Y5/6) | In subject: Prior: Animals including humans (Y5/6) Future: | In subject: Prior: Properties and changes of materials (Y5/6) Future: | In subject: Prior: Properties and changes of materials (Y5/6) Properties and changes of materials (Y5/6) | In subject: Prior: Earth and space (Y5/6) Animals including humans (Y5/6) | In subject: Prior: Light (Y5/6) Future: Sound & Waves (Y9) Outside of subject: |

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| | <p>Future: Heating and cooling (Y8)</p> <p>Electrical Energy (Y8) Home Electricity (Y10)</p> <p>Outside of subject: Food tech – nutritional content</p> <p>Maths - Ratios, Rank order</p> | <p>Growth and differentiation (Y10)</p> <p>Outside of subject: Maths - Re-arranging equations</p> | <p>Growth and differentiation (Y9) Elements and Compounds (Y8)</p> <p>Outside of subject: Food tech - Formulations (Emulsifiers) Maths - Calculating density (Division)(units)</p> | <p>Future: Speed (Y8) Velocity and acceleration (Y9) Newton's laws (Y10)</p> <p>Reactants and Products (Y8) Matter and Energy (Y9) Controlling Reactions (Y10) Making a Substance (Y11)</p> <p>Outside of subject: Maths – Using and re-arranging equations</p> <p>Maths – bar graphs</p> | <p>Future: Magnetism (Y8)</p> <p>Genetics (Y9) Menstrual cycle (Y10)</p> <p>Outside of subject: Maths - Graphs, algebra</p> <p>Maths – Graphs, Measuring</p> | <p>Maths - Measuring angles with protractors</p> |
| Key Vocabulary | <p>Energy, transfer, power, electricity</p> <p>Current, ammeter, series, parallel, charge, symbols, components, electricity, resistance.</p> | <p>Cell, nucleus, mitochondria, chloroplast, cytoplasm, cell membrane, cell wall, chloroplasts, resolution, magnification.</p> | <p>Particle, diffusion, density, mixtures, formulations, theory, pressure, impure, evaporation, filtering, distillation, chromatography, saturated.</p> | <p>Density, force, resultant, friction, upthrust, scalar, vector, streamlining, pressure</p> <p>Acid, alkali, pH, neutralisation, chemical, physical, atoms, indicators.</p> | <p>Fields, gravity, mass, weight, axis, galaxy, star, seasons.</p> <p>Reproduction, life cycle, pollination, puberty, menstrual cycle, pregnancy.</p> | <p>Reflection, refraction, spectrum, lenses, transmitted, absorbed, filters.</p> |
| Review & Assessment Dates (including opportunities for retrieval practice) | <p>Test (HT2) POAE – Evaluation task marked Measuring and evaluation</p> | <p>Test (HT2) POAE – planning task marked Knowledge of apparatus</p> | <p>Test (HT4) POAE task - assessed for planning strand Knowledge of apparatus, planning.</p> | <p>Test (HT4) POAE – Analysis task marked Measuring and analysis of data</p> | <p>Test (HT6) POAE – Analysis task marked Measuring and analysis</p> | <p>Test (HT6) POAE – Planning task marked Planning. Knowledge of methods.</p> |

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| | <p>Millar: Concept</p> | <p>(microscope) and planning.</p> <p>Millar- Identify objects, learn a fact</p> | <p>Millar – Identify phenomena</p> | <p>Millar – Learn a relationship</p> <p>POAE – Planning task marked Planning, methods.</p> <p>Millar – learning a concept.</p> | <p>Millar – Learn a relationship</p> <p>POAE – observation task marked Measuring and observation</p> <p>Millar – Identify a phenomena</p> | <p>Millar – Identify a phenomena.</p> |
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