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| **Year 9 - Science** | | | | | | |
| **Curriculum intent** | During year 9 learners will consolidate the knowledge they have learnt so far in science, to further develop their scientific knowledge and conceptual understanding through the study of biology, chemistry and physics. Learners will deepen there understanding of the nature, processes and methods of science through different types of scientific enquiries that help them to answer scientific questions about the world around them. Through these learners will be given the opportunities to apply their scientific knowledge to understand the uses and implications of science, today and for the future. | | | | | |
| **Term** | **Autumn 1** | **Autumn 2** | **Spring 1** | **Spring 2** | **Summer 1** | **Summer 2** |
| **Knowledge** | **Growth & Differentiation -** Learners will use a range of investigativetechniques to understand how cells in different organisms vary and will model how substances are transported between cells in both unicellular and multicellular organisms.  **The Periodic Table -** Learners will look at the structure of the periodic table, and how an elements position in it can be used to work out is properties. They will also develop their knowledge of constructing word and symbol equations | **Acceleration –**Learners will use a range of investigativetechniques to understand how to identify vector and scalar quantities and then to calculate speed. | **Human Interaction –** Learners will study about Biodiversity on our planet, how carbon is recycled and calculate their carbon footprint. Learners will look at how human activities have affected the Earth’s atmosphere  **Chemistry of the Atom -** Learners will use a range of investigativetechniques to understand how certain factors can impact the rate of a reaction and how we can measure this. | **Heating -** Learners will use a range of investigative techniques to understand how the type of material influences the rate at which it heats and cools. | **Genetics -** Learners will use a range of investigative and modelling techniques to understand how DNA controls the structure and function of organisms.  **Using Resources** – Learners will explore the damages to Earth’s resources and learn about the importance of recycling and sustainability. | **Sound and waves -**Learners will use a range of investigative and modelling techniques to understand how sound behaves.  **Home electricity -**  Learners will use a range of investigativetechniques to understandhow reaction energy may be transferred to or from the surroundings and apply this to the efficiency of electrical appliances. |
| **Skills** | **The following skills will be developed throughout the whole of year 9 and will enable learners to build a deep understanding of science:**  **Scientific attitudes:**   pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility   understand 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   evaluate risks.  **Experimental skills and investigations:**   ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience   make predictions using scientific knowledge and understanding   select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate   use appropriate techniques, apparatus, and materials during fieldwork and laboratory work, paying attention to health and safety   make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements   apply sampling techniques.  **Analysis and evaluation:**   apply mathematical concepts and calculate results   present observations and data using appropriate methods, including tables and graphs   interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions   present reasoned explanations, including explaining data in relation to predictions and hypotheses   evaluate data, showing awareness of potential sources of random and systematic error   identify further questions arising from their results.  **Measurement:**   understand and use SI units and IUPAC (International Union of Pure and Applied  Chemistry) chemical nomenclature   use and derive simple equations and carry out appropriate calculations   undertake basic data analysis including simple statistical techniques. | | | | | |
| **Assessments** | End of half term tests & HFL’S | End of half term tests & HFL’S | End of half term tests & HFL’S | End of half term tests & HFL’S | End of half term tests & HFL’S | End of half term tests & HFL’S |
| **Enrichment** | Lab Rats Leaders-Opportunity to complete crest award  Trip to Manchester museum- Small group activities  Science career talks | | | | | |