Rayner Stephens HIGH SCHOOL

Year 7 - Science						
Curriculum intent	In year 7 learners will begin to develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics. They will start to develop an 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 this learners will lay the foundations needed to become equipped with the scientific knowledge required 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	**Cells-** Learners will use a range of investigative techniques to understand how organisms rely on cells to carry out life processes. **Movement -** Learners will look at hierarchical organisation of multicellular organisms and the biomechanics of how these organ systems interact to create movement. **Particle model:** Learners will use a range of investigative techniques to	**Speed -** Learners will make measurements of distance and time in order to plot a distance-time graph, analyse it and use it to calculate speed. Learners will compare the motion of two objects and calculate their relative speeds and they will discover how the resultant force on an object affects its speed and direction. **Gravity**- Learners will understand how forces make things change: their speed, direction and/or shape of an object. **Interdependence -** Learners will learn	**Metals and Non-Metals-**Learners will learn about different types of materials, their properties and why they are suitable for their uses. **Acids & Alkalis-** Learners will understand the difference between acids & alkalis and how to make salts using acids and alkalis during neutralisation reactions. **Voltage, Resistance and Current -** Learners will learn the symbols and function of the various circuit components, and use a range of	**Variation**- Learners will look at how variation is caused by differences in the genomes, lifestyles and environments of the individuals. They will also look at how organisms reproduce and pass on their characteristics. **Reproduction**- Learners will look at the main reproductive organs and their function, what happens during puberty, menstruation and pregnancy. .	**Earth's Structure -** Learners will look at the structure of the Earth, how magma and lava create the properties found in igneous rocks and the effects of weathering and erosion on sedimentary rocks over time. **The Universe**- Learners will understand how the Earth fits into the solar system and the magnitude of the universe.	**Energy Costs and Energy Transfers-** Learners will understand the value of energy, how it is transferred between objects and can be used in physical processes and mechanisms. **Sound-**Learners will use a range of investigative and modelling techniques to understand how sound behaves **Light:** Learners will use a range of investigative techniques to understand how light travels and

	understand how solids, liquids and gases behave in different conditions. They will look at what gas pressure is and how you can increase and decrease it. Learners will calculate density and use their knowledge to say whether objects float or sink. **Separating Mixtures**- Learners will look at what a pure substance is and how to identify them. They will also learn what a mixture is and the different methods used to separate them.	about feeding relationships within a community of organisms. **Plant reproduction -** Learners will learn about reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal. They will also learn about how insect pollination is important to human food security.	investigative techniques to understand how voltage, current and resistance varies in circuits.			how it behaves when it travels through different mediums.

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<tr><td>Skills</td><td colspan="6">The following skills will be developed throughout the whole of year 7 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.</td></tr>
<tr><td>Assessments</td><td>End of half term test & HFL'S</td><td>End of half term test & HFL'S</td><td>End of half term test & HFL'S</td><td>End of half term test & HFL'S</td><td>End of half term test & HFL'S</td><td>End of half term test & HFL'S</td></tr>
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Enrichment	Trip to Science and Industry Museum Lab Rats