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| **Year 8 Curriculum Overview [2023-2024]**  **Science** | | | | | | | |
| **Autumn Term** | **Knowledge & Understanding** | | | | **Literacy Skills**  **Opportunities for**  **developing**  **literacy skills** | **Employability Skills**  **[if any]** | **Assessment Opportunities** |
| **Composites** | **Components**  **[KEY concepts & subject specific vocab]** | | **Formal Retrieval**  **[if any]** |
| **HT1** | Waves and Pressure | * Compare transverse and longitudinal waves * Explain how sound needs a medium to travel * Explain the speed of sound in air, in water and in solids * Compare auditory range of humans and animals * Explain how ultrasonic waves are used ultra-sound * Know the waves of the EM spectrum * Calculate wave speed using velocity = frequency x wavelength * Describe the similarities and differences between light waves and waves in matter * Describe light waves travelling through a vacuum; speed of light * Investigate the transmission of light through materials through:   + Absorption   + Reflection at a surface   + Refraction * Describe how we see colour and the use of filters to project colours * Know what causes and compare the differences in pressure in liquids, solids and gases | | Do Now  MCQ’s | * Keywords in Do Now tasks * Keyword and definition * Encourage use of subject language [Speak like a Scientist] * Inclusive questioning using keywords * Write like a Scientist | Personal skills   * Thinking and problem solving * Working together and communicating * Attention to health and safety   Scientific Careers   * Audiologist * Studio Engineer * Sound Engineer | Formative  Assessments  Summative Assessment |
| **HT2** | Electricity and magnetism | * Know the difference in a conductor and an insulator * Define electric current, as measured in amperes * Compare and build series and parallel circuits * Explain behaviour of current in series and parallel circuits * Define potential difference, as measured in volts * Explain behaviour of potential difference in series and parallel circuits * Define resistance, as measured in ohms, as the ratio of potential difference (p.d.) to current * Identify differences in resistance between conducting and insulating components * Identify the power source in a circuit * Identify the effect of forces between charged objects of the same and of opposite charges (static) * Identify magnetic poles * Describe the causes of attraction and repulsion * Describe the shape of magnetic fields and how to draw them * Describe the Earth’s magnetism, compass and navigation * Explain the magnetic effect of a current on electromagnets | | Do Now  MCQ’s | * Keywords in Do Now tasks * Keyword and definition * Encourage use of subject language [Speak like a Scientist] * Inclusive questioning using keywords * Write like a Scientist | Personal skills   * Thinking and problem solving * Working together and communicating * Attention to health and safety   Scientific Careers   * Electrician * Engineer | Formative  Assessments  Summative Assessment |
| **Year 8 Curriculum Overview [2023-2024]**  **Science** | | | | | | | |
| **Spring**  **Term** | **Knowledge & Understanding** | | | | **Literacy Skills**  **Opportunities for**  **developing**  **literacy skills** | **Employability Skills**  **[if any]** | **Assessment Opportunities** |
| **Composites** | **Components**  **[KEY concepts & subject specific vocab]** | | **Formal Retrieval**  **[if any]** |
| **HT3** | The Periodic Table and Materials | * Describe a simple modern atomic model * Identify electrons, protons and neutrons from mass and charge values * Construct simple electron configuration diagrams * Observe and record how patterns in reactions can be predicted with reference to the Periodic Table (G1, G7 and G0) * Identify the varying physical and chemical properties of different elements from the groups metal and non-metals * Understand how compounds are formed and how their formula is written * Identify and compare exothermic and endothermic reactions * Know the test for simple gases * Complete word and symbol equations and balance if necessary * Understand and explain the reactions of metals with oxygen * Understand and explain the reactions of metals with acids * Understand and explain the reactions of metals with hydroxides * Understand and explain the reactions of metals with carbonates * Describe conservation of mass, changes of state and chemical reactions * Calculate proof of conservation of mass with use of secondary and primary data. | | Do Now  MCQ’s | * Keywords in Do Now tasks * Keyword and definition * Encourage use of subject language [Speak like a Scientist] * Inclusive questioning using keywords * Write like a Scientist | Personal skills   * Thinking and problem solving * Working together and communicating * Attention to health and safety   Scientific Careers   * Synthetic Chemist | Formative  Assessments  Summative Assessment |
| **HT4** | Chemical Reactions and the Environment | * Order metals and carbon in the reactivity series * Investigate the use of carbon in obtaining metals from metal oxides * Investigate combustion, thermal decomposition, oxidation and displacement reactions * Describe the composition of the Earth * Describe the model structure of the Earth * Understand the rock cycle and the formation of igneous, sedimentary and metamorphic rocks * Describe the carbon cycle * Describe the composition of the atmosphere * Explain how fossils fuels are formed * Understand the production of carbon dioxide by human activity and the impact on climate * Understand Earth as a source of limited resources and the efficacy of recycling | | Do Now  MCQ’s | * Keywords in Do Now tasks * Keyword and definition * Encourage use of subject language [Speak like a Scientist] * Inclusive questioning using keywords * Writing a method * Write like a Scientist | Personal skills   * Thinking and problem solving * Working together and communicating * Attention to health and safety   Scientific Careers   * Synthetic Chemist | Formative  Assessments  Summative Assessment |
| **Year 8 Curriculum Overview [2023-2024]**  **Science** | | | | | | | |
| **Summer**  **Term** | **Knowledge & Understanding** | | | | **Literacy Skills**  **Opportunities for**  **developing**  **literacy skills** | **Employability Skills**  **[if any]** | **Assessment Opportunities** |
| **Composites** | **Components**  **[KEY concepts & subject specific vocab]** | | **Formal Retrieval**  **[if any]** |
| **HT5** | Energy from Food | * Describe the content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and explain why each is needed * Understand the difference in balanced and unbalanced diets and explain the consequences of poor diet * Calculate energy released from different food groups * Know the tissues and organs of the human digestive system, including adaptations to enable efficient digestion * Know which enzymes are used in digestion * Describe the reactants in, and products of, photosynthesis, and a word summary for photosynthesis * Investigate the rate of photosynthesis in different conditions * Explain the adaptations of leaves for photosynthesis * Explain the role of leaf stomata in gas exchange in plants * Identify that roots absorbed water for a plant * Explain the transportation system in plants * Explain transpiration and translocation in detail * Describe tests for starch in a leaf | | Do Now  MCQ’s | * Keywords in Do Now tasks * Keyword and definition * Encourage use of subject language [Speak like a Scientist] * Inclusive questioning using keywords * Write like a Scientist | Personal skills   * Thinking and problem solving * Working together and communicating   Scientific Careers   * Dietitian * Nutritionist * Personal trainer * Medical careers | Formative  Assessments  Summative Assessment |
| **HT6** | Keeping Healthy | * Know the subcellular structures of a cell * Understand the order of and organism – cells, tissues, organ, organ systems * Sequence the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume * Describe the structure and functions of the gas exchange system in humans, including adaptations to function * Link the heart to the circulatory system and its role in oxygen transport * Describe the structure and functions of the human skeleton, to include support, protection, movement and making blood cells * Describe the role of aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life * Identify communicable and non-communicable diseases * Explain how communicable diseases are caused by pathogenic microorganism * Know how antibiotics work * Understand human defences and how vaccinations are created and used * Identify how lifestyle choices can impact human health | Do Now  MCQ’s | | * Keywords in Do Now tasks * Keyword and definition * Encourage use of subject language [Speak like a Scientist] * Inclusive questioning using keywords * Writing a method * Write like a Scientist | Personal skills   * Thinking and problem solving * Working together and communicating * Attention to health and safety   Scientific Careers   * Medical careers * Physiotherapist * Personal trainer | Formative Assessments Summative Assessment |