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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 NowMCQ’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
 | FormativeAssessmentsSummative 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 NowMCQ’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
 | FormativeAssessmentsSummative 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 NowMCQ’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
 | FormativeAssessmentsSummative 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 NowMCQ’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
 | FormativeAssessmentsSummative 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 NowMCQ’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
 | FormativeAssessmentsSummative 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 NowMCQ’s | * Keywords in Do Now tasks
* Keyword and definition
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* 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 |