# NOTTINGHAM BRITISH SCHOOL – CURRICULUM DEVELOPMENT 2019

## Year 7 Science

| Strand | October Assessment | December Assessment | March Assessment | June Assessment | Age Related Expectation<br>By the end of the year every student will be able to …. |
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| | **Biology-cells**<br>• Explain the differences between animal and plant cells<br>• record evidence using a microscope<br>• Classify specialised cells as animal or plant cells<br>• Explain the structure and function of specialised cells using models.<br>• Recognise different types of unicellular organisms<br>• describe differences in unicellular organisms<br>• compare and contrast the features of unicellular organisms.<br>• Describe the process of diffusion and its relation to the cell<br>• plan a fair test investigation to explore the factors affecting diffusion; explain how the different factors | **Chemistry- Mixing, dissolving and separating (continued)**<br>• Use filtration to Separate a soluble substance from water<br>• Separate a soluble substance from water<br>• form crystals from solutions<br>• explain solubility<br>• Use distillation to separate substances<br>• Explain why distillation can purify substances.<br>• Use chromatography to separate dyes.<br>**Physics-Forces and their effects**<br>• Recognise different examples of forces<br>• list main types of force<br>• Represent forces using arrows. | **Biology-Eating, drinking and breathing**<br>• Describe the components of a healthy diet<br>• examine the importance of each component of a healthy diet<br>• Describe how we use energy from food<br>• compare the energy requirements of people of different ages and lifestyles<br>• analyse numerical data about energy contents of foods.<br>• Describe and explain the physical effects of obesity and starvation<br>• Identify the causes and effects of some deficiencies in the diet deficiencies<br>• Identify the organs of the human digestive system | **Chemistry-Elements, compounds and reactions (continued)**<br>• Explain what is meant by a compound; recognise how compounds are formed and named; interpret the ratio of atoms and formula of compounds.<br>• Use a simple model to show the differences between atoms and molecules; use models to represent compounds.<br>• Make observations during chemical reactions; write word equations to demonstrate chemical changes; explain chemical changes using a model. Use symbols and models to describe a chemical reaction.<br>• Describe oxidation; recognise the effects of oxidation; use data to support conclusions.<br>• Describe the composition | • Pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility<br>• 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<br>• Evaluate risks.<br>• Ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience<br>• Make predictions using scientific knowledge and understanding<br>• Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate<br>• Use appropriate techniques, apparatus, and materials during fieldwork and laboratory |

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| | speed up or slow down diffusion.<br>• Define the terms tissues, organs and organ systems;<br>• Explain the organisational structure in multicellular organisms<br>**Biology-Reproduction in plants**<br>• Describe the structure and function of parts in the flowering plant<br>• evaluate the differences between wind-pollinated and insect-pollinated plants.<br>• Describe the processes of pollination and fertilisation<br>• analyse and present data on the growth of pollen tubes<br>• explain factors that affect the growth of pollen tubes.<br>• Recognise the variety of different structures shown by different seeds<br>• Describe the need for plants to disperse | • Differentiate between contact and non contact forces<br>• Measure forces using newtonmeters<br>• Explain difference between mass and weight.<br>• Identify and describe the effects of forces of different sizes and directions<br>• describe the effects of balanced and unbalanced forces; explain the significance of balanced and unbalanced forces on a moving object.<br>• predict and explain the changes caused by forces<br>• explain the concept of force pairs (action and reaction).<br>• Identify the force of friction between two objects<br>• describe the effects of friction<br>• Describe | • explain the role of digestion<br>• Describe what is meant by chemical and physical digestion<br>• explain how teeth and saliva are adapted to digestion<br>• Describe the roles of the oesophagus, stomach, intestine and pancreas in digestion<br>• Explain how the structure of each of the organs is adapted to its function.<br>• Describe the mechanism of breathing in and out<br>• evaluate a model of breathing<br>• calculate changes in pressure and explain how these help us breathe.<br>• Describe the features of the human gas exchange system<br>• Describe the composition of air; | and uses of carbonate compounds; recognise and explain thermal decomposition reactions; identify carbon dioxide.<br>• Observe and explain mass changes; use scientific terms and simple models to explain chemical processes.<br>**Physics-Forces and Motion**<br>• List the factors involved in defining speed; explain a simple method to measure speed; use the speed formula.<br>• Gather relevant data to describe a journey, Use the conventions of a distance–time graph, Display the data on a distance–time graph<br>• Interpret distance–time graphs to learn about the journeys represented<br>• Explore static situations in which objects are held in equilibrium and the nature of the forces involved<br>• Explore dynamic situations which may involve equilibrium<br>• Describe the forces acting on a see-saw; understand that the forces turn about | work, paying attention to health and safety<br>• Make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements<br>• Apply sampling techniques.<br>• Apply mathematical concepts and calculate results<br>• present observations and data using appropriate methods, including tables and graphs<br>• Interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions<br>• Present reasoned explanations, including explaining data in relation to predictions and hypotheses<br>• Evaluate data, showing awareness of potential sources of random and systematic error<br>• Identify further questions arising from their results.<br>• understand and use SI units and IUPAC (International Union of Pure and Applied Chemistry) chemical nomenclature |

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| | their seed<br>• Describe how fruits are used in seed dispersal<br>• compare evidence about seed dispersal by wind and by fruit formation<br>**Chemistry-Lab safety**<br>• Recognise and reduce risks when working in a laboratory<br>• Name and select appropriate equipment.<br>**Chemistry- Mixing, dissolving and separating**<br>• Recognise the difference between materials, substances and elements<br>• identify elements by their names and symbols<br>• explain what is meant by a chemically pure substance.<br>• Describe the atomic structure including electrons, protons and neutrons and draw the electronic configuration of several elements<br>• Explain the terms solvent, solution, | applications that make use of friction.<br>• Link frictional forces between surfaces to 'drag' between objects in a fluid<br>• discuss examples of frictional drag in air and in water; consider the effects of friction on sky divers.<br>• Explain the relationship between applied force and the change of shape of an object; investigate forces involved in compressing and stretching materials; identify applications for compressible and stretchable materials.<br>• Investigate the effects of applied forces on springs; generate data to produce a graph and analyse outcomes. | • explain how the features enable gases to be exchanged<br>• evaluate how well adapted the human gas exchange system is to its function.<br>• apply diffusion to our breathing system and ask questions to develop understanding.<br>• Describe and explain the physical effects of disease and lifestyle on the breathing system to include smoking and exercise.<br>• Describe the effects of smoking on the body, Explain the risks of smoking on the body, Examine the link between smoking and cancer<br>• Describe how our understanding of the effects of smoking has changed over time. | the fulcrum; explain how to balance different weights on a see-saw.<br>• State and use the law of moments; describe how turning forces can be increased; list some examples of levers used as force multipliers.<br>• Link the law of moments to the design of cranes; explain why counterweights are needed by cranes; investigate the lifting capacity of a crane.<br>**Physics-Sound**<br>• Describe how the pitch of a sound wave can be changed; apply the terms frequency, wavelength and amplitude to different waveforms.<br>• Describe what an echo is; describe how the speed of sound can be measured using echoes; calculate distances using ideas about echoes.<br>• Recognise how the speed of sound changes in different substances; use the particle model to explain why there are differences when sound travels through solids, | • Use and derive simple equations and carry out appropriate calculations<br>• Undertake basic data analysis including simple statistical techniques. |

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| | solute and soluble<br>• Identify factors that affect dissolving<br>• explain the difference between a dilute solution and a concentrated solution.<br>• | | **Chemistry-Elements, compounds and reactions**<br>• Navigate the Periodic Table and identify some of the elements; identify features of the Periodic Table and describe how it is organised; explain why the Periodic Table is useful.<br>• Interpret chemical symbols; explain what is meant by 'element' and 'atom'; work out the composition of different substances based on their names.<br>• Recognise the properties and uses of metals; identify differences between metals.<br>• Identify uses of common non-metals; describe the properties of non-metals. | liquids and gases.<br>• Recognise which materials affect the quality of sound; analyse the effects of different materials on sound waves; use ideas about energy transfer to explain how soundproofing works.<br>• Describe the structure and function of different parts of the ear; explain how the ear is able to hear and detect sounds. | |