



NOTTINGHAM BRITISH SCHOOL – CURRICULUM DEVELOPMENT 2019



Year 8 - Science

	October Assessment	December Assessment	March Assessment	June Assessment	Age Related Expectation By the end of the year every student will be able to
	<p><u>Biology-Exploring the human skeleton</u></p> <ul style="list-style-type: none"> Identify bones of the human skeleton Describe the roles of the skeleton Describe the roles of tendons, ligaments, joints and muscles Compare different joints within the human skeleton Describe antagonistic muscles and explain how antagonistic muscles bring about movement Know some medical problems with the skeletal system and describe treatments for some skeletal system problems <p><u>Biology-Understanding how our muscles get energy</u></p> <ul style="list-style-type: none"> Recall the equation for respiration and describe what it 	<p><u>Chemistry-Acids and Alkalis</u></p> <ul style="list-style-type: none"> Recognise acids and alkalis used in everyday life Describe what all acids and alkalis have in common Evaluate the hazards that acids and alkalis pose Use indicators to identify acids and alkalis Analyse data from different indicators Compare the effectiveness of different indicators Describe what the pH scale measures Measure and record pH values Describe examples of neutralisation Recall the equation for a neutralisation reaction Name examples of salts 	<p><u>Ecology and ecosystems</u></p> <ul style="list-style-type: none"> Describe how food webs are made up of a number of food chains Make predictions about factors affecting plant and animal populations Analyse and evaluate changes in a food web Describe ways in which organisms affect their environment Describe examples of the interdependence of organisms Explain why prey populations affect predator populations Describe the impact of low pollination on fruit production Explain why 	<p><u>Biology Variation</u></p> <ul style="list-style-type: none"> Explain the difference between continuous and discontinuous variation Investigate variation within a species Evaluate the importance of genetic and environmental variation to the survival of the organism Explain the process of selective breeding Evaluate the importance of selective breeding, and explore the ethical issues involved Describe how variation causes competition for resources, and 	<ul style="list-style-type: none"> 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. 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



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	<p>shows</p> <ul style="list-style-type: none"> • Explain the importance of respiration • Describe some experimental evidence for respiration • Describe where in the cell respiration takes place • Explain how mitochondria are adapted for respiration • Describe what is meant by anaerobic respiration • Explain why some sports involve more aerobic or more anaerobic respiration • Explain what is meant by oxygen debt • Describe some evidence to show that anaerobic respiration produces carbon dioxide • Construct a method to show what is produced in anaerobic respiration • Describe some applications of 	<ul style="list-style-type: none"> • Describe the uses of common salts • Predict the reactants used in and the salts made by different neutralisation reactions • Describe and explain the reaction between acids and metals • Compare the reactivity of different metals • Describe the reaction between acids and carbonates • Explain the reaction between acids and carbonates • Write word equations for the reactions between acids and carbonates • Explain the terms fuel and combustion • Recall what is needed for combustion • Analyse the fire triangle and apply it to putting out fires • Describe how combustion can cause acid rain • Describe the effects 	<p>artificial pollination is used for some crops</p> <p><u>Human impact on the environment</u></p> <ul style="list-style-type: none"> • Evaluate the risks of monoculture on world food security • Explain ideas about habitat destruction • Describe some effects of human activity on the environment • Explain why a range of species is endangered • Analyse and evaluate recommend solutions for species survival • Explain how toxins enter and accumulate in food chains • Evaluate the advantages and disadvantages of using pesticides • Describe the composition of our atmosphere • Explain why the atmosphere has changed 	<p>drives natural selection</p> <ul style="list-style-type: none"> • Evaluate the importance of Darwin’s work • Explain that chromosomes are made of genes containing DNA, and describe the structure of DNA • Assess the work of Watson, Crick, Wilkins and Franklin on DNA structure • Identify that, at fertilisation, one chromosome in each pair comes from each parent • Explain how fertilisation results in each new individual being genetically unique • Explain how some genetic disorders arise • Define cloning and describe some natural cloning processes • Explain how organisms may be artificially cloned • Explore ethical 	<ul style="list-style-type: none"> • 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. • 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. • 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
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	<p>fermentation</p> <ul style="list-style-type: none"> Describe some similarities and differences between aerobic and anaerobic respiration <p><u>Biology-Understanding the importance of plants</u></p> <ul style="list-style-type: none"> Identify the importance of plants to life on Earth Identify the reactants and products of photosynthesis Identify the factors that can affect photosynthesis Relate the function of the leaf to its structure and the types of cell Describe how stomata control gas exchange Explain how gas exchange occurs in leaves Analyse how stomata density is affected by different conditions Explain how water and minerals move through a plant Identify the minerals essential to healthy plant growth 	<p>of acid rain</p> <ul style="list-style-type: none"> Explain the effects of acid rain <p><u>Physics- Pressure</u></p> <ul style="list-style-type: none"> Explain how pressure can be applied on a solid surface Identify the factors that determine the size of pressure on a solid Calculate the size of pressure exerted Describe and explain how pressure in a liquid alters with depth Explain why some objects float and others sink Relate floating and sinking to density, displacement and upthrust Explore how the pressure in a gas varies with height Explain the implications of this changing pressure Give examples of how pressure affects our lives Explain how pressure is used and 	<ul style="list-style-type: none"> Describe examples of human activity that cause air pollution Explain the effects of smog, acid rain and damage to the ozone layer Describe and explain the effects of global warming Describe the carbon cycle Explain how human activity increases the amount of carbon in the atmosphere Explain what is meant by a 'carbon footprint' Describe examples of recycling Explain the benefits and limitations of recycling schemes Compare the efficiency of recycling methods <p><u>Chemistry-Obtaining useful materials</u></p> <ul style="list-style-type: none"> Recognise how abundant common ores are in the Earth Explain how ores are 	<p>issues around artificial cloning</p> <ul style="list-style-type: none"> Compare and contrast asexual and sexual reproduction <p><u>Physics-Light Waves</u></p> <ul style="list-style-type: none"> Describe the movement of waves in water Understand reflection of waves <p>Understand superposition of waves</p> <ul style="list-style-type: none"> Describe light as travelling in waves Understand the similarities and differences between water waves and light waves Explain the frequency of a wave Describe how light passes through different materials Understand how light can be absorbed by materials Explain the difference between diffuse scattering and specular reflection 	<p>statistical techniques.</p>
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	<ul style="list-style-type: none">• Explain the effects of a deficiency in essential minerals <p><u>Chemistry-The particle theory</u></p> <ul style="list-style-type: none">• Describe the properties of solids• Relate the properties and behaviour of solids to the particle model• Compare different properties of liquids and gases• Relate the properties and behaviour of liquids and gases to the particle model• Recognise changes of state as being reversible changes• Use scientific terminology to describe changes of state• Explain changes of state using the particle model and ideas of energy transfer Identify how heat affects the arrangement and movement of particles• Use the particle model to explain the effects of heat on expansion	<p>managed</p> <p><u>Physics- Electricity and magnetism</u></p> <ul style="list-style-type: none">• Recognise the effects of static charge• Describe how static charge can be generated and explain static charge in terms of electron transfer• Apply an understanding of static electricity to various situations• Explain how static electricity can be useful and can be dangerous• Describe and draw circuit diagrams• Explain what is meant by current• Explain how materials allow current to flow• Describe what the voltage does in a circuit• Explain voltage using different analogies• Explain what resistance is and how it affects the circuit	<p>extracted from the Earth</p> <ul style="list-style-type: none">• Use evidence to identify the reactivity series of metals• Represent reactions using formulas and equations• Represent and explain displacement reactions using formulas and equations• Make inferences about reactivity from displacement reactions• Represent displacement reactions with carbon and metal oxides using formulas and equations• Explain how copper, lead and zinc are extracted from their ores• Calculate the yield of the extraction process• Describe examples of endothermic reactions• Compare the energy changes during exothermic and	<ul style="list-style-type: none">• Describe the ray model of light• Explain how the direction of light rays can be changed• Explain how a pinhole camera and the eye work• Describe light as a way of transferring energy• Give examples of chemical and electrical effects when materials absorb light• Explain changes that happen when materials absorb light• Describe how a spectrum can be produced from white light• Compare the properties of light of different frequencies• Explain how light of different wavelengths can be split and recombined <p><u>Physics- energy transfer</u></p> <ul style="list-style-type: none">• Describe the ways in which energy is	
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	<ul style="list-style-type: none">• Investigate and identify the relationship between voltage and current• Investigate and explain current and voltage in series and parallel circuits• Explain the circuits in our homes <p><u>Physics- Electricity and magnetism (continued)</u></p> <ul style="list-style-type: none">• Explain magnetic attraction and repulsion• Predict the effects of arrangements of magnetic poles• Describe magnetic fields• Explain the shape, size and direction of magnetic fields• Describe what an electromagnet is• Investigate the factors affecting the strength of electromagnets• Describe different applications of electromagnets• Describe the magnetic effect of a current and how this	endothermic reactions	<p>stored</p> <ul style="list-style-type: none">• Describe the ways that energy can be transferred from one store to another• Recognise what energy is and its unit; describe a range of energy transfers using simple diagrams; use a Sankey diagram as a model to represent simple energy changes.• Describe the warming and cooling of objects• Recognise what we mean by temperature; describe how temperature differences lead to energy transfer; explain the difference between heat and temperature.• Explain the relationship between energy transfer and temperature change	
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		is applied to D.C. motors		<ul style="list-style-type: none">• Compare the transfer of energy by conduction, convection and evaporation and radiation.• Investigate factors affecting evaporation• Explain the differences between boiling and evaporation using the particle model• Explain that energy is not a material and can be neither created nor destroyed• Recognise situations where work is done; describe the relationship work done = force \times distance; apply the equation for work done to different situations.• Describe what is meant by 'rate of energy transfer'• Recall and use the correct units for	
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				<p>rate of energy transfer</p> <ul style="list-style-type: none">• Calculate quantities of energy transferred when change happens• Describe the information a typical fuel bill provides• Explain and use the units used on a fuel bill• Explain how the cost of energy used can be calculated•	
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