

Learning Programme – KS3 Science

2nd Year Science: Autumn Term

Topic/ Content	Objectives/Skills Success Criteria (Developing/Secure/Excellent)	Homework	Assessment	Stretch & Challenge (Thirst for Learning)	GCSE Spec Ref:
<p>1. Biology: Circulatory System</p>	<p>Levels of organisation (Organelles-Organisms) D identify examples of cells, tissues, organs and organ systems. S describe the order of hierarchy of organisation in a multicellular organism, recalling the definition for each term. E explain why multicellular organisms need organ systems to survive, explaining how the organs in these systems work together to perform a particular function.</p> <p>Blood Vessels D describe what is meant by a double circulatory system. S identify the main structures within the circulatory system (specifically the three blood vessels). E explain the structure and function of blood vessels.</p> <p>Blood D identify the main components of blood. S describe the function of blood components. E compare the adaptations of RBCs and the RBCs of sufferers of sickle cell anaemia (and suggest how stem cells could be used to treat SCA).</p> <p>Structure of the Heart D identify the main structures within the heart. S describe how blood flows through the heart. E explain how the heart (cardiac muscle) gains its own blood supply.</p> <p>Heart disease and treatment D describe the different ways the heart could become damaged. S describe how treatments can be used to treat heart disease (stents, artificial valves, artificial hearts etc).</p>	<p>1 x assessed homework task DSE success criteria provided.</p>	<p>1 x progress check (exam question practice). DSE success criteria provided.</p>		<p>OCR Gateway B1.3a B2.2a B2.2c B2.2d B2.2e</p>

	<p>E discuss the advantages and disadvantages of these treatments for heart disease.</p> <p>Respiratory system-breathing and ventilation D identify the main structures of the respiratory system. S describe how breathing allows air to move into and out of the lungs. E describe how a model can be used to represent ventilation in the respiratory system, evaluating any limitations the model has.</p> <p>Gas exchange D identify the where gas exchange occurs. S describe how and explain why gas exchange occurs. E explain how parts of the respiratory system are adapted for gas exchange.</p> <p>Respiration D state the word equation for aerobic respiration. S state the balanced symbol equation for aerobic respiration. E describe how the reactants and products involved in aerobic respiration move into cells/leave the body.</p> <p>Effect of exercise D identify the effects of exercise on the body. S describe the effects of exercise on the body by linking these effects to respiratory system and circulatory system. E explain the effects of exercise on the respiratory system and circulatory system by linking these effects to aerobic respiration.</p> <p>Effect of exercise-practical (OCR GCSE PAG 6)* D identify a suitable way to take measurements of fitness (effect of exercise). S design and carry out an investigation on the effect of exercise on heart rate/breathing rate. E increase sample size by collaborating with other groups and explain why a large sample size is required.</p>				
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	<p><i>* Students will work through the Working Scientifically using AQA GCSE ISA 2017: Body Temperature.</i></p> <p>Smoking and health D identify what is contained within cigarettes that make them harmful. S describe and explain the effects of smoking on health (linking to the respiratory and circulatory system). E discuss possible methods of giving up smoking/alternatives to smoking cigarettes.</p>				
2. Chemical Reactions	<p>Atoms and Elements D state what atoms and elements are and the difference between the two. S use the Periodic table to identify the chemical symbols of different elements. E describe the subatomic structure of atoms and use the Periodic table to work out the subatomic structure of different elements.</p> <p>Periodic Table D state the names of the vertical columns and horizontal rows in the Periodic table. S state what the groups and periods of the Periodic table tell you about elements. E use data to describe trends in physical properties of elements in the Periodic table.</p> <p>Compounds and Mixtures (inc. naming compounds) D state what compounds and mixtures are. S compare the properties of compounds and mixtures. E state the number and types of atoms that make up named compounds and state the names of particular compounds based on their chemical formula.</p>	<p>1 x assessed homework task DSE success criteria provided.</p>	<p>1 x progress check (exam question practice). DSE success criteria provided.</p>		<p>AQA 4.4.1.2 4.4.2.1 4.5.1</p>

	<p>Physical and Chemical changes D describe the characteristics of chemical reactions. S compare chemical reactions to physical changes. E carry out experiments and determine whether these are chemical reactions/physical changes based on their characteristics.</p> <p>Chemical equations-balancing equations D state what is meant by the conservation of mass. S balance simple chemical equations. E balance complex chemical equations (with brackets).</p> <p>Conservation of mass D state the law of conservation of mass. S balance chemical equations so that the number of atoms of each element is the same on both sides. E explain why in experiments the mass of products does not always equal the mass of reactants.</p> <p>Exothermic and endothermic D state what an exothermic and an endothermic reaction is. S describe what is happening in exothermic and endothermic reactions to cause temperature changes. E use experimental data and/or observations to distinguish exothermic and endothermic reactions.</p> <p>Endothermic reactions: Sports injury packs* D identify a factors that may affect the change in temperature when a salt is dissolved in water. S design and carry out an experiment to investigate a factor that affects the change in temperature when a salt is dissolved in water. E analyse results to draw a conclusion and evaluate method of collecting results.</p> <p><i>* Students will work through the Working Scientifically topics using AQA GCSE ISA 2014: Sports Injury Packs</i></p>				
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	<p>Combustion D state the meaning of the term fuel and describe what is meant by combustion. S write word equations for the complete and incomplete combustion reactions of methane. E predict the products of combustion reactions of a given reactant.</p> <p>Thermal decomposition D state what thermal decomposition is. S write word equations for decomposition reactions. E predict the products of thermal decomposition reactions of a given reactant.</p> <p>Metals D state physical and chemical properties of metals and non metals. S name the substances formed when metals and non metals react with oxygen. E describe an oxidation reaction with a word equation and particle diagram.</p> <p>Displacement and reactivity series D state what a displacement reaction is. S describe how the reactivity series is used E place an unfamiliar metal into the reactivity series based on observations of its reactions.</p> <p>Metal-acid reactions D state what is formed when metals react with acids and how hydrogen can be tested. S compare the reactions of different metals with different acids. E describe a metal-acid reaction with a word equation and particle diagram.</p> <p>Metal carbonates-acid reactions D state what is formed when metal carbonates react with acids and how carbon dioxide can be tested.</p>				
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	<p>S compare the reactions of different metal carbonates with different acids. E describe a metal carbonate-acid reaction with a word equation and particle diagram.</p> <p>Metal oxides-acid reactions D state what is formed when metal oxides react with acids. S compare the reactions of different metal oxides with different acids. E describe a metal oxide-acid reaction with a word equation and particle diagram.</p>				
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The homework highlighted in red or green is used when forming judgements/interim grades. The final grades are based on the one off end of unit assessment. Tasks highlighted in green will be self or peer assessed with marks recorded. Tasks highlighted in red will be teacher assessed with diagnostic feedback provided.