

Year 8, Subject Curriculum Overview



	Autumn Term 1 Science Exam Skills Respiration, Food and Digestion	Autumn Term 2 Inheritance and Selection Energy Changes	Spring Term 1 Plants, Photosynthesis and Food Metals and Their Reactions
Overview of Scheme of Learning	<p>Science Exam Skills</p> <ul style="list-style-type: none"> - What is a variable? - To be able to identify the dependent, independent and control variables for a given experiment. - Be able to include the correct variables in a plan. - To understand that a conclusion must reference both the dependent and independent variables. - Give a conclusion for a set of experimental results. - Be able to use information given to make comparisons. - Know what an evaluation is and suggest ways to improve scientific methods to improve reliability. - Be able to identify which type of graph needs to be drawn with the data given. - Be able to correctly draw a graph with the correct scale and units. - Correctly identify which data set goes on which axis. - Understand that in science a line of best fit can be a curve and be able to confidently draw one. - To be able to recognise anomalies and know what to do with them. 	<p>Inheritance and Selection</p> <ul style="list-style-type: none"> - To be able to explain the term Heredity. - Describe why we are similar to our parents and siblings but not identical. - Understand that it is DNA that is passed from parent to offspring. - Describe the structure of DNA – using the terms Double Helix and Bases. - Understand how to use a family tree to show the inheritance of features and illnesses in a family. - Explain the difference between continuous and discontinuous variation. - Be able to correctly identify which graph type to use to display continuous or discontinuous data. - Be able to define the term species with examples. - Define that an adaptation is something that enables an organism to survive in its' environment. - Describe the adaptations of a number of different plant and animal species and how they improve the chances of survival. - Explain what selective breeding is. 	<p>Plants, Photosynthesis and Food</p> <ul style="list-style-type: none"> - Be able to write the full word equation for photosynthesis. - Explain that plants create their own food from photosynthesis. - Describe the reactants of the Photosynthesis reaction and where they come from. - Name the parts of a leaf and what they do. - Explain the importance of the stomata for gaseous exchange and transpiration. - Explain what transpiration is and how it occurs. - Describe why transpiration is important and what factors affect its' rate. - Carryout an investigation into the Glucose and Starch content of leaves. - Understand the tests for starch and glucose and how to do them. - Recap the uses of Glucose in a plant. - Explain the term pesticide. - Be able to explain the issues to the environment of using certain pesticides and how they affect the food chain. - Known what biological pest control is and its benefits and pitfalls.



	<ul style="list-style-type: none"> - Be able to calculate the mean, mode, and median averages. - Be able to identify the range for a set of data. - Practice writing a clear and concise step by step method that is easy to follow and includes units for amounts. - Can identify the key command words that appear in a question and what they mean. - Have an understanding of the difference between precision and accuracy. <p>Respiration, Food and Digestion</p> <ul style="list-style-type: none"> - Be able to name the 7 key food groups, foods that supply them and why they are necessary in a balanced diet. - What constitutes a balanced diet and what can wrong if it is unbalanced. - Know the parts of the Human digestive system, recognise them in a picture and be able to state their function. - To understand the definition of an enzyme, what they do and why they are vital to the digestive system. - Be able to name the groups of digestive enzymes and the reactions they support. - To understand what Aerobic respiration is, where it occurs in a cell and why it is important. 	<ul style="list-style-type: none"> - Describe how humans can use selective breeding to obtain the traits they require in a species. - Compare the pros and cons to selective breeding. - Have an understanding of the term Natural selection and how it occurs. - Be able to explain what extinction is and discuss some of the causes of it. - Understand the term Evolution and how it is different from the term Natural selection. - Explain what biodiversity is and why it is important to maintain it. - Be able to describe what a seed bank is. <p>Energy Changes</p> <ul style="list-style-type: none"> - Be able to name the types of energy stores and energy transfers. - Carryout an investigation into the stored energy in food. - Define the difference between heat and temperature (recap). - Explain what conduction is and how it occurs. - Explain what convection is and how it occurs. - Explain what radiation is. - Be able to identify where conduction, convection or radiation may be taking place. 	<ul style="list-style-type: none"> - Explain the term Herbicide. - Be able to describe the process of Eutrophication and the effects it has on the environment. - Describe how weeds compete for resources with the wanted crop. - Be able to design a building to provide the perfect growing conditions for a salad crop. - Justify your decisions by stating how it improves the crop. <p>Metals and their Reactions</p> <ul style="list-style-type: none"> - To be able to identify where metals are found on the periodic table and name the specific groups. - Describe the general properties of metals including melting and boiling points. - To understand the definition of the words Malleable and Ductile. - Describe how metals react with oxygen. - Be able to write a word equation for the reactions of metals with oxygen. - HT attempt to write a symbol equation for the reaction of a metal with oxygen. - Carryout experiments to look at the reactions of metals with acids. - Be able to write a word and possibly symbol equation for the reactions.
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	<ul style="list-style-type: none">- Can write the word equation for Aerobic respiration.- To understand what Anaerobic respiration is and how it is different from Aerobic.- Be able to explain why Anaerobic respiration cannot sustain the body for long.- To know the parts of the respiratory system and what their function is.- Describe how inhalation and exhalation occurs.- Explain how the lungs are adapted for gaseous exchange.- Describe how asthma, exercise and smoking effect gaseous exchange either positively or negatively.- Explain what the circulatory system is and name the parts of it.- Describe the structure of the heart and why a double circulatory system is beneficial.- Explain that plants also respire and gas exchange needs to occur.- Describe the process of gaseous exchange in a plant.- Explain that respiration in plants is fuelled by glucose from photosynthesis.- List the uses of glucose in a plant.	<ul style="list-style-type: none">- Identify ways to reduce heat loss through conduction, convection and radiation.- Understand what power is.- Be able to recall the equation triangle for power and use it in calculation questions.- Understand what a kilowatt/hour is and how it relates to paying for appliance use in the home.- Know what a Sankey diagram is.- Be able to draw a Sankey diagram from given data.- Explain what wasted energy is.- Be able to calculate the efficiency of an appliance using the equation.	<ul style="list-style-type: none">- Describe the observations that show a reaction is occurring.- Use the results of the reactions with acids to put the metals in order of reactivity.- Understand what the reactivity series is.- Be able to predict reactions based on the position of the metal in the reactivity series.- Be able to place the more common metals into the reactivity series along with carbon.- Explain the term Displacement.- Predict the results of displacement experiments by looking at the positions of the reactants in the reactivity series.- Describe how metals can be extracted from their ores.- Define the term Ore.- Be able to explain whether the metal can be extracted using carbon based on its' position on the reactivity series.- Be able to state the conditions needed for rusting to occur.- Be able to define the terms; ceramic, polymer and composite.
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Assessment Overview	Formative assessment in the form of extended levelled activity – Badger task Exam style questions at the end of each topic – either higher or foundation level.	Formative assessment in the form of extended levelled activity – Badger task Exam style questions at the end of each topic – either higher or foundation level.	Formative assessment in the form of extended levelled activity – Badger task Exam style questions at the end of each topic – either higher or foundation level.
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	Spring Term 2 Chemical Energetics and Resources Electricity and Magnetism	Summer Term 1 Earth Science Forces at Work	Summer Term 2 Science Investigations
Overview of Scheme of Learning	<u>Chemical Energetics and Resources</u> <ul style="list-style-type: none"> - What energy changes occur in reactions? - Uses of Endo and Exo - thermic reactions. - What is Thermal Decomposition? - What is Combustion and what are the products? - Practical: Investigating Fuels - The effects of Combustion and Pollution. - What are the Greenhouse effect and Global warming? - What are the effects of Climate change? - Earth as a source of resources. - Alternative fuels. <u>Electricity and Magnetism</u> <ul style="list-style-type: none"> - What is Static electricity? 	<u>Earth Science</u> <ul style="list-style-type: none"> - What is the structure of the Earth? - How are Igneous rocks formed? - What are the forms of weathering? - What is Erosion? - What are Sedimentary rocks and how are they formed? - What are fossils and how are they formed? - What do rock strata tell us about the Earth? - How are Metamorphic rocks formed? - What is the rock cycle? - How are rocks from other planets different? - What is the Earth's atmosphere made up of? <u>Forces at Work</u>	<u>Summer Investigations</u> <ul style="list-style-type: none"> - Teachers to choose a number of SC1 style investigations that pupils can plan and carryout which cover the following skills: <ol style="list-style-type: none"> 1. Choosing an investigation question 2. Writing a hypothesis 3. Writing a prediction 4. Identifying variables 5. Planning an experiment 6. Identifying Risks 7. Collecting data 8. Recording data 9. Interpreting Data Evaluating an experiment



	<ul style="list-style-type: none"> - What are the uses of Static electricity? - What is an electric field and what are their effects? - What are the magnetic poles? - What are magnetic fields? - How do magnetic fields affect an electric current? - What are charge and current and how do you measure them? - What happens to the current in a series and parallel circuit? - What happens to the potential difference in a series and parallel circuit? - What is resistance and how do you calculate it? 	<ul style="list-style-type: none"> - What are Contact Forces? - What are non-contact forces? - How does Hooke's Law help us? - How do forces make things move and accelerate? - What are Turning forces? - How do levers and moments work? - How are Work done and forces linked? - What is Pressure? - What is atmospheric pressure? - How is pressure in a liquid different? - How do Hydraulics work? 	
Assessment Overview	End of half term assessment 50 mins long. 70% will be new topic questions 30% will be knowledge recall from previous topics.	End of half term assessment 50 mins long. 70% will be new topic questions 30% will be knowledge recall from previous topics.	