



Science at Beckford



We believe that Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

- THIS CURRICULUM MAP IS TO BE USED IN CONJUNCTION WITH THE A.S.E. PLANNING MATRICES AND OGDEN TRUST RESOURCES

Aim to ensure all pupils:

- develop **scientific knowledge and conceptual understanding** through the specific disciplines of biology, chemistry and physics
- develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the **uses and implications** of science, today and for the future.

YEAR 5	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer	
Topic Title	SHACKLETON	ANCIENT GREECE	SPACE	SPACE	BRITAINS DIFFERENT CULTURES AFTER INVASION	ANGLO SAXONS/VIKINGS/NORMANS
Science Unit	Properties and changes of materials	Animals including humans	Forces	Earth and Space	All living things	
Knowledge	<p>Pupils should be taught to:</p> <p>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Use knowledge of solids, liquids and</p>	<p>Pupils should be taught to:</p> <p>Describe the changes as humans develop from birth to old age.</p>	<p>Pupils should be taught to:</p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>Pupils should be taught to:</p> <p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system Describe the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky</p>	<p>Pupils should be taught to:</p> <p>Understand how environments change over time and that these changes can be a threat to living things if they cannot adapt and survive.</p>	

	<p>gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>					
All living things	<p>I can observe and name parts of a flower.</p> <p>I can explain how pollen and seeds</p>	<p>I can name and explain functions of parts of a flower.</p> <p>I can describe the</p>	<p>I can explain why it is important to use a number of seeds or plants in an investigation</p>	<p>I can describe the life process of reproduction in some plants and animals by studying</p>	<p>I can compare, contrast and explain the differences in the life cycles of a</p>	

	are dispersed. I can suggest some conditions to test when investigating germination	processes of pollination, fertilisation, seed dispersal and germination.	into growth or germination. I can explain why living things need to reproduce if the species is to survive.	my local environment over the course of the year.	mammal, an amphibian, an insect and a bird	
Animals including Humans	I recognise some stages in the development of humans.	I can recognise the stages in the growth and development of humans.	I can describe the changes as humans develop from birth to old age.			
Properties and Changes in Materials	I can compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. I can give reasons, based on evidence from comparative and fair tests, for the particular uses	I can describe the differences between solids, liquids and gases. I can describe and explain the difference between melting and dissolving giving everyday examples of each. I know that gases flow from place to place and that air is a mixture of gases. I know that liquids evaporate to form gas. I can make clear	I can name some materials that will dissolve in water. I understand that although it is not possible to see a dissolved solid it remains in the solution. I know that solids can be recovered from a solution by evaporation. I can explain that when solids dissolve they can break up so small they can pass through the holes in filter paper.	I use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I can demonstrate that dissolving, mixing and changes of state are reversible changes. I can classify some changes as reversible and some as irreversible. Under what conditions will	I can explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. I understand that some irreversible changes make new and useful materials. I can use evidence	

	<p>of everyday materials, including metals, wood and plastic.</p> <p>Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains? They might compare materials in order to make a switch in a circuit.</p>	<p>distinctions between the properties of solids, liquids and gases.</p> <p>I know that some materials need to be heated to a very high temperature in order to melt or evaporate.</p>	<p>I can identify several factors that affect the rate at which a solid dissolves.</p> <p>How does temperature affect how quickly sugar dissolves?</p>	<p>water evaporate quickly?</p>	<p>to explain that in some cases the new materials made are gases.</p> <p>I understand the formation of a gas signifies an irreversible change.</p> <p>Use burning candles to show irreversible change taking place. Model the gas from a blown out candle can be relit. A gas has been formed in the melting and evaporation of candle wax and it is this that burns. Introduce safety and fire triangle. What are the factors that affect the burning candle?</p>	
Earth and Space	<p>I know that the Earth, Sun and Moon are spherical in shape.</p> <p>I can observe and</p>	<p>I can describe the movement of the Earth, and other planets, relative to the Sun in the</p>	<p>I know that the rotation of the Earth causes shadows to change through the day</p>	<p>I know the Moon orbits the Earth.</p> <p>I know that a moon is a celestial body that orbits a</p>	<p>I understand that the appearance of the Moon changes over 28 days due to it's orbiting of</p>	

	describe how shadows change as the Sun appears to move across the sky.	solar system. I know the 8 planets of our solar system and their order from the Sun.	and causes the Sun to appear to be moving I can use the idea of the Earth's rotation to explain day and night. I understand that it is only daylight on the side of the Earth facing the sun.	planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).	the earth.	
Forces	I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.	I know that friction is a force. I can describe some ways friction can be increased between solid surfaces.	I can describe some of the factors that increase air and water resistance. I can measure forces using a forcemeter. I know that force is measured in Newtons.	I can identify the effects of air resistance, water resistance and friction, acting between moving surfaces. I can identify when frictional forces are helpful. I can name situations when frictional forces resist motion.	I understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. I can research the use of these devices through history and design and make an artefact that uses levers, pulleys, gears and/or springs and explore their	

					effects.	
Skills	<p>Planning enquires. Children should plan different types of enquiry to answer questions.</p> <p>Identifying variables. Children should recognize and control variables where necessary.</p> <p>Secondary sources. Children should recognize when secondary sources will be most useful to research their ideas and begin to separate opinion from fact.</p> <p>Using equipment. They should choose the most appropriate equipment. Children should take measurements, using a range of scientific equipment with increasing accuracy and precision.</p> <p>Collecting data. They should make their own decisions about what observations to make, what measurements to use, and how long make them for.</p> <p>Recording. They should choose how to record data. Children should record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. They should report and present findings from enquires, including conclusions, causal relationships and explanations of results (in oral and written forms).</p> <p>Analysing data. Children should use test results to make predictions to set up further comparative and fair test. They should use models to describe scientific ideas. They should identify scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Making Improvements. They should use their results to identify when further tests and observations might be needed</p>					
Working Scientifically Ideas and evidence	I can ask questions and recognise that they can be answered in different ways.	I can ask relevant questions and using different types of scientific enquiries to answer them.	I can use models to describe scientific ideas..	I can use test results to make predictions to set up further comparative and fair tests		
W S Planning Experimental Work	I can identify and classify. I can perform tests using equipment, observing closely.	I can set up practical enquiries, comparative and fair tests making accurate and careful observations.	I can take accurate measurements using standard unit.	I can use a range of equipment, for example thermometers and data loggers.	I can plan different types of scientific enquiries to answer questions.	I recognise and control variables wh necessary.
W S	I can gather and	I can gather,	I can record			

Obtaining and Presenting Evidence	record data to help in answering questions.	record, classify and present data in a variety of ways to help in answering questions.	findings using scientific language, drawings, labelled diagrams, keys, bar charts, and tables			
W S Considering Evidence and Evaluating	I can use my observations and ideas to suggest answers to questions	I can use results to draw conclusions and suggest improvements	I can suggest new questions and predictions for new values in my results. I can identify differences, similarities or changes using my knowledge of scientific ideas and processes. .			
W S Obtaining and Presenting Evidence	I can gather and record data to help in answering questions.					
W S Considering Evidence and Evaluating	I can use my observations and ideas to suggest answers to questions	I can gather, record, classify and present data in a variety of ways to help in answering	I can record findings using scientific language, drawings, labelled diagrams, keys,	I can take measurements, using a range of scientific equipment, with increasing accuracy	I can record data and results of increasing complexity using scientific diagrams and	

		questions.	bar charts, and tables	and precision.	labels, classification keys, tables, bar and line graphs.	
		I can use results to draw conclusions and suggest improvements	I can suggest new questions and predictions for new values in my results. I can identify differences, similarities or changes using my knowledge of scientific ideas and processes. .	I can use straightforward scientific evidence to answer questions or to support their findings	I can report and present findings from enquiries, including conclusions, causal relationships and explanation of results, in oral and written forms such as displays and other presentations.	I can identify scientific evidence that has been used to support or refute ideas and arguments.