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 6	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic Title	EVOLUTION AND ADAPTATION	BATTLE OF BRITAIN	NATURAL DISASTER	NATURAL DISASTER	Silk Road	Silk Road
Science Unit	Evolution and inheritance	Electricity	Light	How and why do we classify plants and animals.	Animals including humans	Animals including humans SRE
Knowledge	Pupils should be taught to: Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may	Pupils should be taught to: Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches Use recognised symbols when representing a simple circuit in a diagram**.**	Pupils should be taught to: recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes use the idea that light travels in	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics	**Pupils should be taught to:** Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans.	**Pupils should be taught to:** Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans.

	lead to evolution.		straight lines to explain why shadows have the same shape as the objects that cast them			
Living things and their habitats	I am able to group a wide selection of different animals into groups according to their characteristics.	I can use the terms, vertebrate, fish, amphibian, bird, mammal, reptile, invertebrate, insects, arachnids, worms, flowering and non- flowering, when grouping living things.	I can use classification keys to group living things and give reasons for my choices.	I can use a branching database to identify an unknown plant or animal.	I can research the work of scientists such as Carl Linnaeus to find out how they developed classification keys.	
Animals including Humans	I can identify and name the main parts of the human circulatory system. I understand that when I exercise my heart beats faster to take blood more rapidly to the muscles that need it.	I can make careful, repeated measurements of pulse rates and record my findings in a graph. I can explain what my graph shows and use the patterns to draw conclusions.	I can explain what the effect of diet and exercise are on our health. I can list ways of making healthy lifestyle choices.	I can give examples of harmful and helpful effects of drugs on our body.	I can investigate the role of blood in our body as a transporter of nutrients and oxygen around the body. I can find out how other animals transport water and nutrients around their bodies.	I can research the work of scientists such as Jenner and Pasteur, finding out how their discoveries improved people's health.
Evolution and inheritance	I can my knowledge of skeletons and the evidence of fossils to develop	I know that living things produce offspring of the same kind but are	I can investigate how some plants have adaptations that allow them to	I can describe how animals from different habitats are suited to their	I can research the lives of Charles Darwin, Mary Anning and Alfred Wallace, looking at how they	

	my understanding of how living things have evolved over millions of years.	not usually identical to their parents.	live in a particular habitat.	habitats. I can describe how, over time, some animals have developed special features that allow them to survive in their habitat.	developed their ideas on evolution.	
Light	I can investigate how light behaves using reflections and shadows. I can explain patterns in my results.	I understand that light travels from a source and know that light sources are seen when light from them enters the eyes	I can draw diagrams with lines and arrows to show how we see things when light is reflected from them.	I can explain the difference between the shadows and reflection in terms of the path of light.		
Electricity	I can investigate what happens to a buzzer or bulb when I change the number of cells in a circuit.	I can predict what will happen when I add different components to a circuit.	I can draw and label an electrical circuit diagram using recognised symbols.			
Skills	**Planning enquires**. Children should plan different types of enquiry to answer questions. **Identifying variables**. Children should recognize and control variables where necessary. **Secondary sources.** Children should recognize when secondary sources will be most useful to research their ideas and begin to separate opinion from fact**.** **Using equipment**. They should choose the most appropriate equipment. Children should take measurements, using a range of scientific equipment with increasing accuracy and precision. **Collecting data.** They should make their own decisions about what observations to make, what measurements to use, and how long make them for. **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). **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. **Making Improvements**. They should use their results to identify when further tests and observations might be needed					
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 vari where necessary.
W S Obtaining and Presenting Evidence	I can gather and record data to help in answering questions.	I can gather, record, classify and present data in a variety of ways to help in answering questions.	I can record findings using scientific language, drawings, labelled diagrams, keys, bar charts, and tables	I can take measurements, using a range of scientific equipment, with increasing accuracy and precision.	I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs.	

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.	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 evi that has been used to suppo refute ideas or arguments.
Working Scientifically Ideas and evidence	I can ask questions and recognise that they can be answered in different ways.					
W S Planning Experimental Work	I can identify and classify. I can perform tests using simple 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 vari where necessary.
W S Obtaining and Presenting Evidence	I can gather and record data to help in answering questions.	I can gather, record, classify and present data in a variety of ways to help in answering questions.	I can record findings using scientific language, drawings, labelled diagrams, keys, bar charts, and tables	I can take measurements, using a range of scientific equipment, with increasing accuracy and precision.	I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs.	