Science
Year 6

Units	Evolution and Inheritance	Electricity	Light	Animals Including Humans	Living Things and Their Habitats	Looking After Our Environment	Science Fair

National Curriculum:

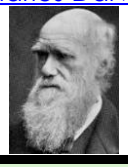
- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.
- Give reasons for classifying plants and animals based on specific characteristics.
- Identify and name the main parts of the human circulatory system, and describe 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.
- 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 lead to evolution.
- 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 straight lines to explain why shadows have the same shape as the objects that cast them.
- 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.

Working scientifically

Statutory requirements

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

Unit Link	**Evolution and Inheritance** 	**Electricity** 	**Light** 	**Animals Including Humans** 	**Living Things and Their Habitats** 	**Looking After Our Environment(optional)** 	**Science Fair Entry Enquiry Focus**
Scientist	Charles Darwin 	M.Stanley Whittingham 	Ibn Alhazen 	Donald Palmer 	Carl Linnaeus 	Tanisha Williams 	
Area Focus	Biology	Physics	Physics	Biology	Biology	Biology	
Enquiry Approach	Identifying, Grouping and Classifying Research Pattern Seeking	Identifying, Grouping and Classifying Comparative/Fair Testing Problem Solving	Identifying, Grouping and Classifying Comparative/Fair Testing Problem Solving	Identifying, Grouping and Classifying Comparative/Fair Testing	Identifying, Grouping and Classifying Research Comparative/Fair Testing Observations Over Time Problem Solving	Observations Over Time Research Pattern Seeking	
Resources	Pictures of 3 cross-bred dog families	Series circuit equipment including: Wires Bulbs	Torch cardboard tube card hole punch white card	Pipe cleaners Plasticine craft materials, whiteboards dye	liquorice allsorts plant slices of bread sealable sandwich bags	2L plastic bottle permanent marker sticky tape skewers/plastic straws	

		Switches buzzers cells high voltage bulbs voltmeter (or circuit builder on laptops) Whiteboards Card paper Crocodile clips LEDs: green/red/yellow 1.5v batteries Paperclips Tinfoil Drawing pins Split pins Battery holders	mirror tin foil jumper/cardigan carrier bag light meter/data logger cereal box multilink Plasticine cocktail sticks	disposable cups modelling clay nail/cocktail stick stopwatch protractor compass 2 egg sugar 2 glasses gummy bears, different liquids: (milk, cola/soda, distilled water) salt beakers/cups/test tubes Heart rate monitors PE equipment Variety of food	sticky labels marker pens felt tips	thermometer coloured paper full classroom bin rubber gloves calculators candles matches spoons temperature and rainfall data	
Key Concepts	The diversity of organisms, living and extinct, is the result of evolution	Energy makes things happen and can be seen by its effects (light, sound, electricity); it can be transferred but is not used up	Energy makes things happen and can be seen by its effects (light, sound, electricity); it can be transferred but is not used up	There is a relationship between structure and function Living things have characteristics and requirements for life, growth and health	Living and non-living things can be grouped in a variety of ways	Living and non-living things can be grouped in a variety of ways	
Knowledge	**Lesson 1: Understand how offspring vary and are not identical to their parents** I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	**Lesson 1: Describe the parts of an electrical circuit** I can use recognised symbols when representing a simple circuit in a diagram. **Lesson 2: Explore voltage and its effect on an electrical circuit**	**Lesson 1: Explore how light travels** I can recognise that light appears to travel in straight lines. **Lesson 2: Explore reflection** I can use the idea that light travels in straight lines to explain that objects are seen because they give out	**Lesson 1: Understand the function of the heart and its role in the circulatory system** I can identify and name the main parts of the human circulatory system and describe the functions of the heart.	**Lesson 1: Classify living organisms** I can give reasons for classifying animals based on specific characteristics. **Lesson 2: Understand the kingdoms of life** I can give reasons for classifying plants and animals based on specific characteristics.	**Lesson 1: Learn about climate change** I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar and line graphs. **Lesson 2: Explore ways to reduce how much rubbish is sent to landfill**	

	Lesson 2: Learn about animal adaptations I can identify how animals are adapted to suit their environment in different ways and that adaptation may lead to evolution. **Lesson 3: Learn about plant adaptations** I can identify how plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. **Lesson 4: Explore what we can learn from fossils.** I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. **Lesson 5: Explore human evolution** I can recognise that humans have changed over time.	I can associate the brightness of a bulb or the volume of a buzzer with the number and voltage of cells used in the circuit. **Lesson 3: Apply knowledge to identify and correct problems in a circuit** I can apply my knowledge of voltage to identify and correct problems in a circuit. **Lesson 4: Investigate what affects the output of a circuit** I can 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. **Lesson 5: Build a set of traffic lights** I can apply my understanding of electrical components and circuits to design a product.	or reflect light into the eye. **Lesson 3: Explore reflection and explain how it can be used to help us see** I can 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. **Lesson 4: Investigate how shadows can change** I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **Lesson 5: Investigate how we can show why shadows have the same shape as the object that casts them** I can use the idea that light travels in straight lines to explain why shadows change.	**Lesson 2: Identify and compare blood vessels** I can identify and name the main parts of the human circulatory system and describe the functions of the blood vessels. **Lesson 3: Explore blood** I can identify and name the main parts of the human circulatory system and describe the functions of the blood. **Lesson 4: Learn how the body transports water and nutrients** I can describe the ways in which nutrients and water are transported within animals, including humans. **Lesson 5: Investigate what affects your heart rate** I can recognise the impact of diet and exercise on the way my body functions. **Lesson 6: Learn about the impact of drugs and alcohol on the body** I can recognise the impact of drugs and lifestyle on the way my body functions.	**Lesson 3: Classify living things using the Linnaean system** I can explain how different organisms can be classified using the Linnaean system. **Lesson 4: Identify the characteristics of different types of microorganisms** I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms. **Lesson 5: Classify and describe a living organism** I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including plants and animals.	I can report and present findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations. **Lesson 3: Explore ways to reduce energy consumption** I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar and line graphs. **Lesson 4: Explore what happens when fuels are burnt** I can report and present findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations. **Lesson 5: Compare data associated with the weather** I can use test results to make predictions to set up further comparative and fair tests.	
Skills	**Lesson 1:**	**Lesson 1:**	**Lesson 1:**	**Lesson 1:**	**Lesson 1:** Recording data, results and findings	**Lesson 1:** Observing and Measuring	Recording data, results and findings

	Interpreting and Communicating Results **Lesson 2:**  Making Predictions **Lesson 3:**  Interpreting and Communicating Results **Lesson 4:**  Observing and Measuring **Lesson 5:**  Interpreting and Communicating Results	Recording data, results and findings **Lesson 2:**  Making Predictions **Lesson 3:**  Interpreting and Communicating Results **Lesson 4:**  Setting up tests **Lesson 5:**  Recording data, results and findings	Recording data, results and findings **Lesson 2:**  Setting up tests **Lesson 3:**  Evaluating **Lesson 4:**  Observing and Measuring **Lesson 5:**  Interpreting and Communicating Results	Recording data, results and findings **Lesson 2:**  Observing and Measuring **Lesson 3:**  Recording data, results and findings **Lesson 4:**  Setting up tests **Lesson 5:**  Evaluating **Lesson 6:**  Interpreting and Communicating Results	**Lesson 2:**  Interpreting and Communicating Results **Lesson 3:**  Interpreting and Communicating Results **Lesson 4:**  Setting up tests **Lesson 5:**  Interpreting and Communicating Results	**Lesson 2:**  Interpreting and Communicating Results **Lesson 3:**  Recording data, results and findings **Lesson 4:**  Interpreting and Communicating Results **Lesson 5:**  Observing and Measuring	 Observing and Measuring  Setting up tests  Making Predictions.  Evaluating  Interpreting and Communicating Results  Asking Questions
Vocabulary	offspring characteristic variation environmental inherited adaptation camouflage climate	circuit circuit diagram component battery cell electricity voltage brightness	symbol light source scientific diagram eye light reflected mirror bounce	valves ventricle atrium circulatory system vessel microscope capillary vein	process of elimination living organism characteristic classify taxonomy multicellular kingdom	global warming prevent climate climate change weather rubbish council biodegrade	

	arid nutrition toxic pollinate epiphytes photosynthesis nutrients fossil extinct relative palaeontologist prehistoric ancestor Neanderthal Homo sapiens Bipedal Descended primate	current series circuit LED resistor blown filament coil variable output fair test control systematically signal synchronised sensor insulative conductive	surface direction angle periscope line of sight utilise block shadow translucent opaque transparent plan rotate direction sun shade real-life problem	artery blood plasma red blood cell white blood cell platelet diffusion absorb osmosis concentration nutrient exercise BPM - beats per minute heart rate pulse drug painkiller hallucinogen depressant stimulant	cell unicellular mrs gren classification domain species Carl Linnaeus Latin Protozoa microorganism fungi virus bacteria reproduction habitat	recycle landfill non-renewable emissions greenhouse gases renewable net zero combustion coal fossil fuel fuel industrial revolution sustainability natural disaster vulnerable species sensitive habitat	
Career Links	Geneticist	Electrical engineer	Optician	Cardiac coach	Ecologist	Oceanographer	