



Year 6 – Electricity

| Lesson Intention | National Curriculum Reference | Scientific Enquiry | Rocket Words | Resources |
|---|--|--|---|---|
| Describe the parts of an electric circuit | Use recognised symbols when representing a simple circuit in a diagram | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | symbol circuit circuit diagram battery wires | <i>Series circuit equipment including bulbs, wires, switches, buzzers, cells etc, pen, pencil, ruler</i> |
| Explore voltage and its effect on an electrical circuit | Associate the brightness of a bulb or the volume of a buzzer with the number and voltage of cells used in the circuit | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | electricity current voltage voltmeter brightness | <i>Series circuit equipment - including cells and voltmeters, high voltage bulbs, batteries and wires, pen, pencil, ruler</i> |
| Apply knowledge to identify and correct problems in a circuit | Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit | Reporting and presenting 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 | blown resistor variable resistor LED dimmer switch | <i>Laptops/iPads with circuit builder, (alternatively electrical components - wires, batteries, bulbs, resistors, voltage meter etc), pens, pencil, ruler</i> |
| Investigate what affects the output of a 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 | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Using test results to make predictions to set up further comparative and fair tests | output variable fair test control test systematically | <i>Series circuit equipment including bulbs, wires, switches, buzzers, cells etc, pen, pencil, ruler</i> |
| Build a set of traffic lights | 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 | 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 | synchronised traffic light signal sensor timer-based | <i>For each set of traffic lights: stiff card, wires and crocodile clips, 1.5V LEDs (green, red and yellow) - caution as higher voltages may break the LEDs, 2x 1.5V batteries, paperclips, tin foil, drawing pins, split pins, pen, pencil, ruler</i> |
| Apply knowledge of conductors and insulators | 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 | Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate | closed electric circuit indicating conductor insulator resistor | <i>Example electric circuit games, 1 thick corrugated cardboard base approximately 25 cm x 25 cm (to be prepared in advance), pencil, battery holder and cells (Ideally zinc chloride), switch, bulb holder & bulb rated for the same voltage as the battery, 2x resistor, buzzer rated for the same voltage as the battery, 6 crocodile leads, wire for the loop, conductive metal for the loop, Insulating material for handle, timer/stopwatch</i> |



Year 6 – Light

| Lesson Intention | National Curriculum Reference | Scientific Enquiry | Rocket Words | Resources |
|---|--|---|---|---|
| Explore how light travels | Recognise that light appears to travel in straight lines | Record data and results of increasing complexity using scientific diagrams and labels Identifying scientific evidence that has been used to support or refute ideas or arguments | light eye light source symbol scientific diagram | <i>Torch, cardboard tube/a section of hosepipe/paper, card, hole punch, pen, pencil</i> |
| Explore reflection | 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 | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | reflected prediction fair test variable table | <i>Torch, white card, mirror, tin foil, jumper/cardigan, carrier bag (try to choose materials which are similar in colour), pen, pencil</i> |
| Explore reflection and explain how it can be used to help us see | 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 | Identifying scientific evidence that has been used to support or refute ideas or arguments | periscope angle mirror line of sight utilise | <i>Torch, cereal box, mirrors, scissors, sticky tape, ruler, pencil</i> |
| Investigate how shadows can change | Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | shadow block opaque transparent translucent | <i>Multilink, board marker, whiteboard, torch, ruler, pen, pencil</i> |
| Investigate how we can show why shadows have the same shape as the object that casts them | Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them | Reporting and presenting 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 | plan sun shade real life problem rotate direction | <i>Modelling clay, torch, cocktail sticks, materials for making a screen, pen, pencil, ruler</i> |
| Investigate how we see objects | 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 | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | optical phenomena disperse spectrum refraction | <i>Water, washing up liquid, straw, glass container, salt, bowl, paper, red, green and blue pens, coloured filters, pencil</i> |



Year 6 – Animals including humans

| Lesson Intention | National Curriculum Reference | Scientific Enquiry | Rocket Words | Resources |
|---|--|--|---|--|
| Understand the function of the heart and its role in the circulatory system | Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | circulatory system atrium ventricle vessel valves | <i>Pipe cleaners, plasticine, craft materials, colouring pencils, mini whiteboards, pen, pencil</i> |
| Identify and compare blood vessels | Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood | Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate | vessel artery vein capillary microscope | <i>Water (with dye), disposable paper cups, modelling clay, nail/cocktail stick, pen, pencil, stopwatch</i> |
| Explore blood | Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | blood plasma platelet white blood cell red blood cell | <i>Protractor, ruler, pen, pencil, compass, computers, mini whiteboards</i> |
| Learn how the body transports water and nutrients | Describe the ways in which nutrients and water are transported within animals, including humans | Identifying scientific evidence that has been used to support or refute ideas or arguments | absorb diffusion osmosis concentration nutrients | <i>Demonstration: 2 eggs, water, sugar, 2 glasses, gummy bears, different liquids (milk, cola/soda, distilled water, sugar, salt), beakers/cups/test tubes, pen, pencil, ruler</i> |
| Investigate what affects your heart rate | Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | diet exercise heart rate BPM pulse | <i>Timers/stopwatches, heart rate monitors (if possible), PE equipment and attire, foods chosen by children</i> |
| Learn about the impact of drugs and alcohol on the body | Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function | Reporting and presenting 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 | drug painkiller stimulant depressant hallucinogens | <i>Pen, pencil, colouring pencils, coloured paper, computers</i> |



Year 6 – Living things and their habitats

| Lesson Intention | National Curriculum Reference | Scientific Enquiry | Rocket Words | Resources |
|---|--|--|---|---|
| Classify living organisms | Give reasons for classifying plants and animals based on specific characteristics | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar and line graphs | classify microorganism fern living organism conifer | <i>Class presentation, liquorice allsorts, A3 paper and pens</i> |
| Understand the kingdoms of life | Give reasons for classifying plants and animals based on specific characteristics | Identifying scientific evidence that has been used to support or refute ideas or arguments | kingdom mrs gren cell multicellular unicellular | <i>Class presentation, a plant and research materials</i> |
| Classify living things using the Linnaean system | 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 | Identifying scientific evidence that has been used to support or refute ideas or arguments | Carl Linnaeus classification Latin species domain | <i>Class presentation and research devices</i> |
| Identify the characteristics of different types of microorganisms | 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 | Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | microorganism bacteria fungi virus protozoa | <i>Class presentation, mould growing investigation, slices of bread, sealable sandwich bags, water, sticky labels and marker pens</i> |
| Investigate asexual reproduction through spore dispersal | 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 | Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate | plant microscopic fungi mycelium ecosystem | <i>Class presentation, large mushrooms, clamp stands, clamps, string, cocktail stick to make a hole, plain paper, hairspray and a ruler</i> |
| Classify and describe a living organism | 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 | Reporting and presenting 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 | classify microorganism living organism habitat reproduction | <i>Class presentation, A3 paper, felt tips/colouring pencils and research materials</i> |



Year 6 – Evolution and inheritance

| Lesson Intention | National Curriculum Reference | Scientific Enquiry | Rocket Words | Resources |
|--|---|--|---|--|
| Understand how offspring vary and are not identical to their parents | Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents | Reporting and presenting 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 | offspring characteristic inherit variation environmental | <i>Class presentation, handout, pen</i> |
| Learn about animal adaptations | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Reporting and presenting 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 | adaptation habitat climate nutrition feature | <i>Class presentation, handout and research tools such as books or the internet</i> |
| Learn about plant adaptations | Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution | Reporting and presenting 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 | nutrients epiphytes toxic predators pollinate | <i>Class presentation, handout and research tools such as books and the internet</i> |
| Explore what we can learn from fossils | Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago | Identifying scientific evidence that has been used to support or refute ideas or arguments | fossil Mary Anning Palaeontologist ichthyosaurus Jurassic coast | <i>Class presentation, handout and research tools such as books or the internet (optional)</i> |
| Explore the theory of evolution | Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago | Identifying scientific evidence that has been used to support or refute ideas or arguments | Charles Darwin evolved extinct natural selection theory | <i>Class presentation, coloured pencils, handout and research tools such as books or the internet (optional)</i> |
| Explore human evolution | Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago | Identifying scientific evidence that has been used to support or refute ideas or arguments | ancestor tools primate Homo sapien Neanderthal | <i>Class presentation, handout and research tools such as books or the internet (optional)</i> |



Year 6 – Looking after the environment

| Lesson Intention | National Curriculum Reference - Scientific Enquiry | Rocket Words | Resources |
|---|--|---|--|
| Learn about climate change | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | weather climate prevent global warming climate change | <i>2L plastic bottle, permanent marker, sticky tape, skewers/plastic straws, rulers, scissors, thermometer, coloured paper, colouring pens/pencils</i> |
| Explore ways to reduce how much rubbish is sent to landfill | Reporting and presenting 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 | recycle landfill rubbish biodegrade council | <i>Classroom bin (full!), rubber gloves, computer/tablets for research, pen, pencil</i> |
| Explore ways to reduce energy consumption | Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | net zero renewable non-renewable greenhouse gases emissions | <i>Clipboards, pencils, calculators, computers/tablets for research</i> |
| Explore what happens when fuels are burnt | Reporting and presenting 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 | industrial revolution fossil fuel coal combustion fuel | <i>Candle, matches, metal spoon, computers/tablets for research, pen, pencil</i> |
| Explore the outcomes of COP26 | Identifying scientific evidence that has been used to support or refute ideas or arguments | COP sustainability conference pledge subsidy | <i>Computers/tablets, pen, pencil</i> |
| Compare data associated with the weather | Using test results to make predictions to set up further comparative and fair tests | species sensitive natural disaster habitat vulnerable | <i>Computers/tablets, temperature and rainfall data collected + comparison data, graph paper, pen, pencil</i> |