



Bramford
PRIMARY SCHOOL

Science Long Term Plan

Autumn 1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Theme	Use of Everyday Materials	Animals Including Humans - Growth	Animals Including Humans – What Makes Us?	Animals Including Humans – Food and Digestion	Changes Of Materials	Evolution And Inheritance
Skills	<ul style="list-style-type: none"> • Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties. • Explore and experiment with a wide variety of materials. • Identifying and classifying • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Describe the simple physical properties of a variety of everyday materials. • Observing closely using simple equipment • Performing simple tests 	<ul style="list-style-type: none"> • Understand that animals, including humans, have offspring that grow into adults. • Discovering how seeds are formed by observing the different stages of plant life cycles over a period of time. (The National Curriculum only covers the life cycle of plants and not animals.) • Asking relevant questions and using different types of scientific enquiries to answer them. • Noticing patterns. • Gathering and recording data to help in answering questions. • Describe what happens to us as we grow older. • Use observations and ideas to suggest answers to questions. 	<ul style="list-style-type: none"> • Identify that humans and some animals have skeletons and muscles for support, protections and movement. • Reporting on findings from enquiries, including oral and written explanations, or presentation of results and conclusions. • Using straight forward scientific evidence to answer questions, or to support their findings. 	<ul style="list-style-type: none"> • Describe the basic functions of the main parts of the digestive system in humans • Animals, including humans (non-statutory) - be introduced to the main body parts associated with the digestive system, for example: mouth, tongue, teeth, oesophagus, stomach, and small and large intestine. • Gathering and recording data in a variety of ways to help in answering questions. • Identify the different teeth in humans and their simple functions. • Group and classifying things, conducting a comparative and fair test • Setting up practical enquiries • Identify that animals, including humans, need the right type and amount of nutrition, and that they cannot make their own food, they get nutrition from what they eat. • Asking relevant questions • Construct and interpret a variety of food chains, identifying producers, predators and prey • Identifying differences, similarities or changes related to simple scientific ideas and processes 	<ul style="list-style-type: none"> • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Compare and group together everyday materials on the basis of their properties including their hardness, solubility, transparency, conductivity and response to magnets. • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Take measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings. • 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. • Report and present findings from enquiries, share your conclusions. • Identifying chemical changes. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Identify scientific evidence that has been used to support or refute ideas or arguments. • Use existing knowledge to identify physical and chemical processes. 	<ul style="list-style-type: none"> • Identify how animals and plants are adapted to suit their environment in different ways, and that adaptation may lead to evolution, and find out more about how living things on Earth have changed over time, and find out about the work of palaeontologists such as Mary Anning, and about how Charles Darwin and Alfred Wallace developed their ideas on evolution. • Identify scientific evidence that has been used to support or refute ideas or arguments • 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 that offspring normally vary and are not identical to their parents. • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
Key Content	<ul style="list-style-type: none"> • Widely used materials • Why materials are chosen for specific tasks • Everyday uses of magnets • Materials that attract magnets • Magnetic poles • Man-made and natural materials 	<ul style="list-style-type: none"> • Life cycle of birth, growth, reproduction and death • Reproduction and growth in animals • How humans grow by looking at how babies grow into adults • Stages of life from adulthood to old age • Inherited characteristics 	<ul style="list-style-type: none"> • The skeleton • Tendons and Ligaments • How skeletons are used for support, protection and movement 	<ul style="list-style-type: none"> • Salivary glands and taste buds • Different types of teeth • Intestines • Food pyramids • Vitamins and minerals • Food chains and natural cycles 	<ul style="list-style-type: none"> • Filtering, sieving and evaporating • Dissolving • Irreversible changes • Permanent chemical changes • Physical and chemical change • Elements, compounds and mixtures 	<ul style="list-style-type: none"> • How adaptations help animals and plants survive • Natural selection • Offspring • Genetic modification • Charles Darwin

	<ul style="list-style-type: none"> Identifying magnets in objects/object hunt 	<ul style="list-style-type: none"> Life cycle of a frog Life cycle of a butterfly 				
Suggested outcomes	<ul style="list-style-type: none"> Identifying materials and investigating where they come from Identifying which material is best suited for different jobs Mr Moody's Bad Day challenge Magnetism test Observing attraction and repulsion activity Build a bridge challenge 	<ul style="list-style-type: none"> Life cycle of a chicken collage Measuring height of class Life cycle and growth collage Arm length investigation Silver surfers - design an activity which will help an elderly person use the internet Inheritance patterns - class audit A dog's life - identifying features dogs may inherit Create a life cycle of a frog Butterfly craft 	<ul style="list-style-type: none"> Making a model of the skeleton Bendy bones experiment Make a model of a hand Voluntary muscles test 	<ul style="list-style-type: none"> Blindfold taste test Egg staining experiment Modelling the digestive system Food audit - draw your pyramid Analysing food packaging Food chain pyramid Longest food chain challenge 	<ul style="list-style-type: none"> Separating a mixture practical experiment and write up Dissolving sugar challenge Chemical reaction or not? - experiment to test the different reactions from various liquids Cupcake challenge Chemical changes written activity Chemical or physical change written activity Making models of elements, compounds and mixtures 	<ul style="list-style-type: none"> Adaptation activities Mr Men Inheritance activity Galapagos Finches experiment
Vocabulary	<p>identify, classify, equipment, observe, perform, test, build, magnet, magnetic force, pull, motor, microphone, wood, plastic, paper, can, material, property, fabric, metal, glass, iron, nonmagnetic, magnetic, steel, copper, north pole, south pole, magnetic field, repel, attract, suspension bridge, cable, man-made material, natural material,</p>	<p>relevant questions, scientific enquiry, patterns, gather, record, data, describe, identify, classify, birth, growth, reproduction, death, life cycle, reproduction, live birth, hatched, growth, pregnancy, growth spurt, child, teenager, adult, elderly, adulthood, appearance, fragile, middle age, old age, amphibian, frog, frogspawn, tadpole, absorb, metamorphosis, caterpillar, chrysalis, larva, butterfly</p>	<p>Model, explain, report, conclude, present, scientific ideas, observe, discuss, involuntary muscles, voluntary muscles, biceps, triceps, hamstring muscle, skeleton bones, skull, x-ray machine, rib cage, tendons, cartilage, ligament, tendon</p>	<p>gather, record, group, classify, conduct a comparative and fair test, practical enquiry, relevant questions, simple scientific ideas and processes, saliva, salivary glands, taste buds, digest, bitter, incisors, canines, chew, molars, dentist, small intestine, large intestine, stomach, appendix, nutrient, food pyramid, natural sugar, dairy product, meat, fruit and vegetables, vitamin A, vitamin B, vitamin C, vitamin D, mineral, producer, consumer, decomposer, wheat, soda bread</p>	<p>report and present findings, enquiry, conclusion, knowledge, measurements, accuracy, precision, repeat readings, laboratory processes, support or refute ideas, scientific evidence, bicarbonate of soda, irreversible, permanent, burning, activate, physical change, chemical change, rust, iron oxide, properties, solution, dissolve, solute, saturated, solvent, separate, method, filter, sieve, evaporate, bond, molecule, product, reaction, atom, compound, element, mixture, helium, methane</p>	<p>Support or refute ideas, scientific ideas, scientific evidence, recognising and controlling variables, adaptation, desert, actus, environment, fossils, species, evolution, offspring, DNA, Chales Darwin, habitat, ancestor, natural selection, extinct</p>
Challenge	<ul style="list-style-type: none"> Can you give a reason as to why one material is more suited for a task than another? Are you able to identify everyday uses of magnets around the home? Can you conduct a fair test and work out the results? 	<ul style="list-style-type: none"> Can you explain some stages of growth in some animals? Can you compare old age with childhood and adulthood? Can you explain why we can take characteristics off both parents? Can you explain the similarities and differences between the life cycle of a frog and the life cycle of a plant? 	<ul style="list-style-type: none"> Can you give examples of which bones protect your bodies? Can you explain why particular bones protect your body? Can you discuss how tendons and ligaments work with our joints to aid movement? Can you explain the function of some of the bones in our body? 	<ul style="list-style-type: none"> Can you explain a way to test our taste buds? Can you explore the impact of diet on dental hygiene? Can you evaluate your own diet and make suggestions for improvements? Can you describe the impact different vitamins and minerals have on our bodies? 	<ul style="list-style-type: none"> Can you explain how a separation method works and evaluate the process? Can you explain what factors affect a chemical change? Can you identify when a physical or chemical change is happening and justify your response? 	<ul style="list-style-type: none"> Can you suggest some other examples of adaptations from living things? Can you compare human inheritance to other animals?

Autumn 2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Theme	Exploring Everyday Materials	Animals Including Humans – Keeping Healthy and Clean	Animals Including Humans – Diet and Health	States of Matter	Changes of Materials	Living Things And Their Habitats
Skills	<ul style="list-style-type: none"> • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Identifying and classifying. • Gathering and recording data to help in answering questions. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Observing closely using simple equipment • Explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties. • Explore and experiment with a wide variety of materials. • Classifying materials • Performing simple tests 	<ul style="list-style-type: none"> • Find out about and describe the basic needs of animals, including humans, for survival (water, food, air). • Identifying the needs of humans. • Describe the importance of exercise, eating the right amount of different types of foods and hygiene. • Use different types of scientific enquiry to gather and record data. • Identify that animals, including humans, need the right types and amount of nutrients, and that they cannot make their own food; they get their nutrients from what they eat. • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Observing closely, using simple equipment. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. • Sorting and classifying 	<ul style="list-style-type: none"> • Describe the importance of exercise, eating the right amount of different types of foods, and hygiene. • Observing closely, using simple equipment. • Animals cannot make their own food; they get nutrition from what they eat. • Asking relevant questions and using different types of scientific enquiries to answer them. 	<ul style="list-style-type: none"> • Compare and group materials together, according to whether they are solids, liquids or gases. • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • States of matter (non-statutory) - observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Reporting on findings from enquiries, including oral and written explanations, displays, or presentations of results and conclusions. • To describe and explain findings from an evaporation investigation, and grouping and classifying a variety of different materials. 	<ul style="list-style-type: none"> • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Compare and group together everyday materials on the basis of their properties including their hardness, solubility, transparency, conductivity and response to magnets. • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Take measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings. • 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. • Report and present findings from enquiries, share your conclusions. • Identifying chemical changes. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Identify scientific evidence that has been used to support or refute ideas or arguments. • Use existing knowledge to identify physical and chemical processes. 	<ul style="list-style-type: none"> • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs. • Give reasons for classifying plants and animals based on specific characteristics. • Planning different types of enquiries to answer questions including recognising and controlling variables where necessary. • 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, find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification. • Reporting and presenting findings from enquiries, including conclusions, casual relationships and explanations of and degree of trust in results, in oral and written forms such as displays or other presentations, identifying scientific evidence that has been used to support or refute ideas. • Grouping and classifying. • Record scientific data using diagrams.
Key Content	<ul style="list-style-type: none"> • Materials • Physical properties of materials • Grouping materials together • Opaque or transparent materials • Wilbur and Orville Wright 	<ul style="list-style-type: none"> • Needs of animals including humans, for survival • How animals obtain their food from other animals • Importance of nutrition for animals • Exploring packed lunches 	<ul style="list-style-type: none"> • Keeping healthy through diet • Tim Peake 	<ul style="list-style-type: none"> • Comparing solids, liquids and gases • The effect temperature has on changing state • Diluting and dissolving • Evaporation and condensation • The water cycle • Freezing and melting 	<ul style="list-style-type: none"> • Filtering, sieving and evaporating • Dissolving • Irreversible changes • Permanent chemical changes • Physical and chemical change • Elements, compounds and mixtures 	<ul style="list-style-type: none"> • Classifying living things • Kingdoms of life • Carl Linnaeus • Different classes of vertebrates • Soil habitats • Different types of fungi

	<ul style="list-style-type: none"> Absorbent and non-absorbent materials 	<ul style="list-style-type: none"> The importance of exercise, a healthy diet, and hygiene How to keep healthy through daily exercise 				
Suggested outcomes	<ul style="list-style-type: none"> Sorting materials into a large Venn Testing properties of materials Sorting materials Opaque/transparent investigation Paper aeroplane testing Aeroplane drag challenge Absorbency test 	<ul style="list-style-type: none"> Model/draw/write about a habitat which shows what their animals need versus wants Collage showing the foods that come from different animals Eat well food survey Design a balanced lunch box or picnic Exercise log 	<ul style="list-style-type: none"> Food diary Design a menu for space 	<ul style="list-style-type: none"> Matter models Drying investigation Make a bubble wand The evaporation challenge Water cycle display Freezing wax experiment 	<ul style="list-style-type: none"> Separating a mixture practical experiment and write up Dissolving sugar challenge Chemical reaction or not? - experiment to test the different reactions from various liquids Cupcake challenge Chemical changes written activity Chemical or physical change written activity Making models of elements, compounds and mixtures 	<ul style="list-style-type: none"> Create a classification key Mould growing investigation Classification challenge - researching the five kingdoms of life Classify animals Delving in the dirt research and poster The best soil writing activity Produce spore prints from large mushrooms
Vocabulary	<p>sort, group, predict, observe, test, investigate, glass, plastic, metal, cardboard, wood, twist, transparent, opaque, sponge, squeeze, light, flexible, float, sink, rigid, translucent, clear, transparent, frosted, opaque aeroplane, flight, Wilbur Wright, Orville Wright, design, sponge, absorb, mom-absorbent</p>	<p>record, data, identify differences, identify similarities, scientific ideas, observe closely, sorting, classifying, simple comparative tests, water, food, air, needs, survival, nutrition, vitamins, balanced diet, protein, carbohydrate, portion, food groups, balanced diet, ingredients, exercise, hygiene, healthy eating, allergy, farm, goat, nutrient, red meat, white meat, exercise, active, target, equivalent, pedometer</p>	<p>Explain, report, present, discuss, nutrition, vitamins, balanced diet, protein, carbohydrates food groups, ingredients</p>	<p>scientific ideas and processes, similarities and differences, systematic and careful observations, accurate measurement, standard units, thermometers, data loggers, explanations, conclusions, state of matter, particle, volume, matter, bond, temperature, degrees Celsius, melting point, boiling point, thermometer, dissolve, dilute, soluble, solvent, solute, evaporation, condensation, absorb, heat, water vapour, water cycle, precipitation, transpiration, surface run off, groundwater, melting, freezing, sublimation, deposition, reversible</p>	<p>report and present findings, enquiry, conclusion, knowledge, measurements, accuracy, precision, repeat readings, laboratory processes, support or refute ideas, scientific evidence, bicarbonate of soda, irreversible, permanent, burning, activate, physical change, chemical change, rust, iron oxide, properties, solution, dissolve, solute, saturated, solvent, separate, method, filter, sieve, evaporate, bond, molecule, product, reaction, atom, compound, element, mixture, helium, methane</p>	<p>relate, classify, produce, compare, research, explore, describe, identify, support or refute arguments, line graphs, bar graphs, scatter graphs, classification keys, scientific diagrams, recognise and control variables, casual relationships, degree of trust, group, similarities, classify, spore, microorganism, seed, similarities, multicellular, unicellular, kingdom, cell, MRS NERG, Latin, genus, Carl Linnaeus, class, species, vertebrate, coldblooded, amphibian, reptile, mammal, carbon dioxide, microorganism, plant, oxygen, microscopic, mycelium, fungi, mushrooms, yeasts, hyphae</p>
Challenge	<ul style="list-style-type: none"> Can you explain why some materials are better for making things than others? Can you explain why some objects are made from more than one material? Can you make predictions about the properties of some materials? Can you suggest the uses and qualities of different materials? 	<ul style="list-style-type: none"> Can you explain how meat is a protein and explain its importance in growing a strong and healthy body? Can you evaluate the results of your eat well food survey and explain what it shows about the health and diet of survey participants? Can you understand the difference between fresh, pre-cooked and processed foods? Can you make conclusions based on the results of your fatty crisps test? 		<ul style="list-style-type: none"> Can you describe the arrangement of particles in each state of matter? Can you explain examples of diluting and dissolving in everyday life? Can you explain how the rate of evaporation is different in different materials? Can you illustrate what is happening to the particles when something freezes and melts? 	<ul style="list-style-type: none"> Can you explain how a separation method works and evaluate the process? Can you explain what factors affect a chemical change? Can you identify when a physical or chemical change is happening and justify your response? 	

Spring 1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Theme	Seasonal Changes	Everyday Materials	Forces And Magnets	Sound	Earth and Space	Animals Including Humans – Health
Skills	<ul style="list-style-type: none"> Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies. Observe and talk about changes in the weather and the seasons. Using observations and ideas to suggest answers to questions Work scientifically by making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change. Observe and talk about changes in the weather and the seasons. Performing simple tests Gathering and recording data to help in answering questions 	<ul style="list-style-type: none"> To make links between materials and how they are used. Identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper and cardboard, for a particular use. To test different materials to find out how absorbent they are. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. To use scientific words related to changing shape. Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting, and stretching. To test whether recycled materials are suitable to create musical sounds from. To recognise that different objects can have different properties, and to sort objects according to how their shapes can be changed. Performing simple tests. To compare balls to find out how bouncy they are. 	<ul style="list-style-type: none"> Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Reporting on findings from enquiries, including oral and written explanations, displays or presentation of results and conclusions. Observe how magnets attract or repel each other and attract some materials and not others; describe magnets as having two poles, predict whether two magnets will attract or repel each other; depending on which poles are facing. Making systematic and careful observations, using a range of equipment. Compare how things move on different surfaces. Using straightforward scientific evidence to answer questions or to support their findings. Notice that some forces need contact between two objects. Setting up simple practical enquiries, comparative and fair test 	<ul style="list-style-type: none"> Recognise that sounds get fainter as the distance from the source increases. Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including data loggers. Identify how sounds are made, associating some of them with something vibrating. Identifying differences, similarities or changes related to simple scientific ideas and processes; Setting up simple practical enquiries, comparative and fair tests. Find patterns between the pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of vibrations that produced it. Use knowledge to explain different phenomena. Recognise that vibrations from sounds travel through a medium to the ear. Using straightforward evidence to answer questions or to support their findings. Reporting on findings from enquiries, including oral and written explanation. Using results to draw simple conclusions. 	<ul style="list-style-type: none"> 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. Find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus. Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. Describe the Sun, Earth and Moon as approximately spherical bodies. Using test results to make predictions to set up further comparative and fair tests. Apply knowledge and understanding. Find out about the way that ideas about the solar system have developed. Reporting and presenting findings from enquiries, including conclusions, casual relationships of and degree of trust in results, in oral and written forms, such as displays and other presentations. To explain a natural process. 	<ul style="list-style-type: none"> 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.
Key Content	Weather types <ul style="list-style-type: none"> Clouds and rainfall Cold weather Keeping safe during thunderstorms How weather affects different places on Earth The four seasons 	<ul style="list-style-type: none"> Uses of everyday materials Why we use certain materials Squashing, bending, twisting and stretching materials Charles Macintosh John McAdam’s John Dunlop 	<ul style="list-style-type: none"> Understanding magnetism Different types of magnets Magnetic fields - law of magnetic attraction Magnetic needles Comparing how things move on different surfaces Different forces between two objects 	<ul style="list-style-type: none"> What causes sound Sound travel Speed of sound and speed of light comparison High and low pitched sounds Acoustics and how sound travels through solids, liquids and gases Ear protection 	<ul style="list-style-type: none"> Nicolaus Copernicus’ ideas about planetary motion Movement of the Earth in space Characteristics of the planets in our solar system Big Bang theory Gravitational force Causes of moon phases 	<ul style="list-style-type: none"> Consequences of an unhealthy lifestyle Different food groups and a balanced diet
Suggested outcomes	Become weather forecasters <ul style="list-style-type: none"> Become weather detectives Making a rain dance Cold weather collage Bad weather role play 	<ul style="list-style-type: none"> Bouncy balls experiment Material, source, product activity Making recycled music instruments 	<ul style="list-style-type: none"> Testing magnetism experiment Comparing magnets experiment 	<ul style="list-style-type: none"> Make a cup and string telephone to observe how sound travels Catching sound test Light vs sound written activity 	<ul style="list-style-type: none"> Planet mobile Diagrams which present the movement of the Earth in space Line graph to show daylight hours across seasons 	<ul style="list-style-type: none"> Anti-smoking campaign Meal plan Supertaster

	<ul style="list-style-type: none"> • Wind vane • Create a tree of four seasons • Create a collage showing how to dress for each season 	<ul style="list-style-type: none"> • Making putty • Materials investigation • Recipe for silly putty • Orange: sink or swim experiment? • Waterproof experiment • Water absorbency test • Exploring materials/material audit 	<ul style="list-style-type: none"> • Magnetic shielding investigation • Make a compass • Ramp investigation • Air and water resistance investigation • Centrifugal force investigation with spinning discs and jelly 	<ul style="list-style-type: none"> • Create a sound museum • Six mini experiments to observe how sound travels in solids, liquids and gases (carousel) • Insulating sounds experiment 	<ul style="list-style-type: none"> • Drawing what planets may look like under a telescope • Space trumps • The Expanding Universe - balloon experiment • Big ball drop • Folding moon leaflet 	
Vocabulary	observe, describe, question, test, data, answer, weather, cloudy, rain, sunny, temperature, cloud, droplet, sky, sleet, flood, snow, blizzard, flurry, hail, ice, thunderstorm, thunder, lightning, safety, shelter, desert, rainforest, temperate, affect, humidity, Spring, Summer, Autumn, Winter, seasons	investigate, experiment, make links, test, explain, perform, Charles Macintosh, penetrate, repel, absorbent, waterproof, John McAdam, metal, tarmac, maintenance, rubber, force, pushing, properties, John Dunlop, material, suitable, unsuitable, transparent, strong, weak, squash, bend, twist, stretch, force, brick, rubber, fabric, stone, paper	gather, record, classify, present data, enquiry, explanation, results, conclusions, systematic and careful observations, scientific evidence, lodestone, iron, ore, attract, magnetic strip, bar magnet, cow magnet, horseshoe magnet, disc magnet, flexible magnet, North Pole, magnetic field, molten rock, compass, solar radiation, attract, repel, propulsion, Maglev train, high speed train, compass, magnetic needle, direction, orienteering, Magnetic North, direction, surface, pendulum, tilt, friction	observe, compare, make, experiment, comparative and fair test, explain, evidence, report, enquiry, conclude, data loggers, standard units, measurement, sound wave, echo, pinna, diffraction, fade, loudspeaker, voice box, sound, source, vibration, supersonic, Concorde, speed of sound, thunder, lightning, medium, vacuum, transmit, clarity, particle, low-pitched, high-pitched, volume, loud, quiet, ear defence, baffling, absorb, muffled, sensitivity	knowledge, test results, prediction, comparative and fair tests, reporting, presenting, findings, conclusions, heliocentric, geocentric, Nicolaus Copernicus, orbit, Ptolemy, axis, season, poles, eclipse, hemisphere, ocean tides, gravitational force, black hole, mass, celestial, rocky planets, gas planets, dwarf planet, moon, solar system, astronomy, universe, Milky Way, expand, Big Bang theory, phase, orbit, illuminate, waxing, waning	refute ideas or arguments, reporting, presenting, conclusions, heart attack, artery, fatty deposits, blood pressure, general practitioner, pulse, heart rate, exercise, addiction, black tar, cigarette, lung cancer, poison, nutrients, carbohydrates, protein, balanced diet, vitamins and minerals
Challenge	<ul style="list-style-type: none"> • Can you explain how different types of weather make you feel? • Can you begin to explore the water-cycle? • Can you explain why and how thunderstorms happen? • Can you find out why we have seasons? 	<ul style="list-style-type: none"> • Can you explain why a material is suitable or unsuitable for your instrument? • Can you describe squashing, bending, twisting, and stretching, with reference to the direction of forces? • Can you explain the difference Charles Macintosh's work has had on everyday life? • Can you explain why waterproof clothing is important to a mountaineer? 	<ul style="list-style-type: none"> • Can you explain why certain materials are magnetic? • Can you explain how a compass works and use one to navigate? • Can you explain how friction can be increased or decreased? 	<ul style="list-style-type: none"> • Can you explain how sound can be changed? • Find an object. Can you explain how to change the sound it makes? • Can you suggest why certain materials are better absorbers than others? 	<ul style="list-style-type: none"> • Can you explain how solar and lunar eclipses occur? • Can you find out what was before the Big Bang? • Can you explain why you can jump higher on the moon than you can on Earth? 	<ul style="list-style-type: none"> • Can you explain the impact that fatty deposits have on blood flow? • Can you explain where vegetarians get their protein from? • Can you explain what would happen if we didn't get enough of one food group?

Spring 2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Theme	Animals Including Humans – About Me		Plants – Life Cycle	Electricity	Forces	Animals Including Humans – The Heart
Skills	<ul style="list-style-type: none"> Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Use observations to compare and contrast animals (including humans) at first hand or through videos and photographs, describing how they identify and group them. Grouping and classifying Explore and answer questions about animals in their habitat. Using observations and ideas to suggest answers to questions. Performing simple tests Observe changes over time 	<ul style="list-style-type: none"> To make links between materials and how they are used. Identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper and cardboard, for a particular use. To test different materials to find out how absorbent they are. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. To use scientific words related to changing shape. Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting, and stretching. To test whether recycled materials are suitable to create musical sounds from. To recognise that different objects can have different properties, and to sort objects according to how their shapes can be changed. Performing simple tests. To compare balls to find out how bouncy they are. 	<ul style="list-style-type: none"> Explore the parts that flowers play in the life cycle of flowering plants; including pollination, seed formation and seed dispersal. Recording findings, using simple scientific languages, questions, labelled diagrams. Oral and written explanations, displays or presentations of scientific concepts. Explain the part that flowers play in the life cycle of flowering plants, including roots, stem/trunk, leaves, and flowers. Recording findings, using simple scientific languages, questions, labelled diagrams. 	<ul style="list-style-type: none"> Construct a simple series electric circuit, identifying and naming the basic parts, including cells wires, bulbs, switches, and bulbs. Identifying differences and similarities or changes related to scientific ideas and processes. Identify common appliances that run on electricity. Recognise some common conductors and insulators and associate metals with being good conductors. Construct a simple series electric circuit, identifying and naming the basic parts, including cells wires, bulbs, switches, and buzzers. Identify whether or not a lamp will light in a simple series circuit based on whether or not the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Pupils should be taught about precautions for working safely with electricity. 	<ul style="list-style-type: none"> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Pupils might find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation. Report and present findings using other presentations. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Use test results to make predictions to set up further comparative and fair tests. Explore resistance in water by making and testing boats of different shapes. Identify the effects of air resistance, water resistance and friction that act between moving surfaces. Take measurements, use a range of scientific equipment, take repeated accurate readings. Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. Record data using scientific diagrams and label 	<ul style="list-style-type: none"> Describe the ways in which nutrients and water are transported within animals, including humans. Identify scientific evidence that has been used to support or refute ideas or arguments. Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Record data and results of increasing complexity using scientific diagrams. Plan different types of scientific enquiries to answer questions. Reporting and presenting findings from enquiries, including conclusions, casual relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
Key Content	<p>The five senses</p> <ul style="list-style-type: none"> Basic human body parts Comparing humans of different ages Taking care of our bodies Comparing humans and nature 	<ul style="list-style-type: none"> Uses of everyday materials Why we use certain materials Squashing, bending, twisting and stretching materials Charles Macintosh John McAdam's John Dunlop 	<ul style="list-style-type: none"> How plants soak up water Life-cycle of a plant How plants make their food Parts of a flower and their functions Process of pollination Seed sharing in plants 	<ul style="list-style-type: none"> Working safely with electricity Transportation of electricity Basic parts of a circuit Lighting lamps in a basic circuit Electrical conductors and insulators Parallel circuits 	<ul style="list-style-type: none"> Sir Isaac Newton Gravity and air resistance Water resistance and friction Mechanisms - levers and pulleys Mechanisms - gears 	<ul style="list-style-type: none"> Function of blood Function of blood vessels Moving blood around the body What affects your heart rate
Suggested outcomes	<p>Senses test</p> <ul style="list-style-type: none"> Sound and smell walk Standing jump test 	<ul style="list-style-type: none"> Bouncy balls experiment Material, source, product activity 	<ul style="list-style-type: none"> Root observation experiment Plant life-cycle presentation 	<ul style="list-style-type: none"> Safety poster challenge Health and safety booklet Make your own doorbell Fruit power battery 	<ul style="list-style-type: none"> Newton challenges - acrostic poem/short play/poster Paper drop experiment 	<ul style="list-style-type: none"> Model of the heart Beating pulses investigation

	<ul style="list-style-type: none"> • Observations of photographs of when they were a baby • Hot dinner menu • Design a protective product inspired by nature 	<ul style="list-style-type: none"> • Making recycled music instruments • Making putty • Materials investigation • Recipe for silly putty • Orange: sink or swim experiment? • Waterproof experiment • Water absorbency test • Exploring materials/material audit 	<ul style="list-style-type: none"> • Observing and comparing two plants that have been stored in different places • Waggle dance to show process of pollination • Seed dispersal investigation 	<ul style="list-style-type: none"> • Build a series circuit with a bulb • Torch investigation • Insulators and conductors challenge • Make a light spinner card 	<ul style="list-style-type: none"> • Make a parachute and carry out own investigation • Friction ramps • Make a pulley system • Create a set of gears • Sink or swim experiment 	
Vocabulary	observe, observations, question, answer, describe, biology senses, sight, touch, taste, smell, hearing, eyes, nose, mouth, ears, head, organs, torso, arms, legs, baby, food, grow, hair, teeth, exercise, cleanliness, healthy, rest, mimic, design, burr, designer, sonar	investigate, experiment, make links, test, explain, perform, Charles Macintosh, penetrate, repel, absorbent, waterproof, John McAdam, metal, tarmac, maintenance, rubber, force, pushing, properties, John Dunlop, material, suitable, unsuitable, transparent, strong, weak, squash, bend, twist, stretch, force, brick, rubber, fabric, stone, paper	record, labelled diagrams, oral and written explanations, scientific concepts, root, root hair, absorb, anchor, store, pollination, fertilisation, germination, dispersal, reproduction, photosynthesis, chlorophyll, UV light, carbon dioxide, glucose, anther, stigma, petal, style, filament, nectar, pollen, pollinator, waggle dance, sycamore, wind dispersal, water dispersal, animal dispersal, explosion dispersal	scientific ideas and processes, similarities and differences, results, open circuit, closed circuit, switch, component, circuit diagram, national grid, switch, wind turbine, electrons, cable, parallel circuit, series circuit, current, continuous, represent, conductor, insulator, resistance, electrical shock, short circuit, electric circuit, wire, electrical appliance, bulb, battery, electrician, electric shock, precaution, repair, electrical socket	record and present findings, test results, predictions, comparative and fair test, measurements, repeat accurate readings, scientific equipment, record data, scientific diagrams and labels, Sir Isaac Newton, prism, gravity, theory, curved mirror, brake, water resistance, streamlined, paddle, friction, parachute, paragliding, skydiving, gravity, drag, mass, volume, buoyant, floating, sinking, gear, worm gear, rack and pinion, bevel gear, mesh, load, effort, lever, pivot, fulcrum	refute ideas or arguments, scientific diagrams, reporting, presenting, conclusions, casual relationships and explanations, degree of trust in results, transportation, cell, circulatory system, blood vessels, heart attack, artery, vein, involuntary, contract, relax, oxygenated, bloodstream, blood pressure, general practitioner, pulse, heart rate
Challenge	<p>Can I explore what life would be like without a particular sense?</p> <ul style="list-style-type: none"> • Can I look for my own patterns in my results? • Can I explain how to grow healthy? • Can I find out how our senses work? 	<ul style="list-style-type: none"> • Can you explain why a material is suitable or unsuitable for your instrument? • Can you describe squashing, bending, twisting, and stretching, with reference to the direction of forces? • Can you explain the difference Charles Macintosh's work has had on everyday life? • Can you explain why waterproof clothing is important to a mountaineer? 	<ul style="list-style-type: none"> • Can you explain how the functions of the root affect the life of a plant? • Can you explain how transpiration helps photosynthesis? • Can you explain how the anther and style help reproduction? • Can you explain how flowers compete for pollinators? 	<ul style="list-style-type: none"> • Can you find out renewable ways of creating energy? • Can you explain how an LED lights? • Can you draw a diagram using symbols to show the component parts of a series circuit? 	<ul style="list-style-type: none"> • Can you explain why Sir Isaac Newton's theory is so important? • Can you explain 'drag' and how it affects the speed of an object falling? • Can you test and evaluate the variables to improve the design of your parachute? • Can you design a fair test which explores the effect of surface area on water resistance? • Can you explain how density is calculated? 	<ul style="list-style-type: none"> • Can you explain the process of respiration and oxygen transfer? • Can you explain and present findings to others using scientific language?

Summer 1	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Theme		Plants – Growth And Care	Rocks	Classifying Living Things And Their Habitat	Animals Including Humans – The Human Life Cycle	Light
Skills	<ul style="list-style-type: none"> Use the local environment throughout the year to explore and answer questions about animals in their habitat. Identifying and classifying Identify and name a variety of common animals including fish, amphibious, reptiles, birds and mammals. Use observations and ideas to suggest answers to questions Understand how to take care of animals taken from their local environment and the need to return them safely after study. Grouping and classifying Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets). Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Observing closely using simple equipment 	<ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow into mature plants. Using observations and ideas to suggest answers. Describe how plants need water, light and suitable temperature to grow and to stay healthy. To ask questions that help us to find out about growing plants from seeds. Gathering and recording data to help answer questions. Performing simple tests. Using observations and ideas to suggest answers. To ask questions that help us to find out about growing plants from seeds. 	<ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and physical properties. Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Recognise that soils are made from rocks and organic material. Communicating key concepts. Asking relevant questions and using different types of scientific enquiries to answer them. Identifying differences, similarities or changes related to simple scientific ideas and processes. Using straightforward and scientific evidence to answer questions, or to support their findings. Set up simple practical enquiries, comparative and fair tests. Grouping and classifying. 	<ul style="list-style-type: none"> Explore and use classification keys to help find, identify and name a variety of living things in their local and wider environment and raise and answer questions based on their observations of animals and what they have found out about other animals that they have researched. Making systematic and careful observations and recording findings using diagrams or keys. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that living things can be grouped in a variety of ways. Identifying differences, similarities or changes related to simple scientific ideas and processes. Recognise that environments can change and that this can sometimes pose dangers to living things. Asking relevant questions and using different types of scientific enquiries to answer them. Explore and use classification keys to help them group, identify and name a variety of living things in their local and wider environment and put vertebrate animals into groups, for example: fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. 	<ul style="list-style-type: none"> Draw a timeline to indicate stages in the growth and development of humans. Present information in a series of drawings. Work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows. Report on findings from enquiries, including oral and written explanations, displays of results. Report and present findings from enquiries, including conclusions, in oral and written forms. Describe the changes as humans develop to old age. 	<ul style="list-style-type: none"> Recognise that light appears to travel in straight lines. Identifying evidence that has been used to support or refute ideas or arguments. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. 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. Noticing patterns. 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. Predict the effects of colour mixing. Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Exploring the way that light behaves, including light sources, reflection and shadows.
Key Content	<ul style="list-style-type: none"> What animals need in order to grow Birds - where they live and what they need The differing needs of animals Animal offspring Animal groups Carnivores, herbivores, carnivores 	<ul style="list-style-type: none"> Exploring what plants need to thrive The difference between a bulb and seed Exploring how plants make their own food How plants grow from a seed to a plant The importance of flowers and seeds 	<ul style="list-style-type: none"> Formation of mountains Igneous, sedimentary and metamorphic rocks Fossils Mary Anning Soils Gravestone weathering 	<ul style="list-style-type: none"> Habitats Classifying animals Vertebrates and invertebrates Cold-blooded amphibians and reptiles Warm-blooded birds and mammals Comparing fish to amphibians and reptiles 	<ul style="list-style-type: none"> Life-cycles Gestation periods Propagation Changes from birth Changes in adolescence Changes as humans develop to old age 	<ul style="list-style-type: none"> Material transparency Shadows Use of lenses White light as a mixture water bending light Light colour mixing

Suggested outcomes	<ul style="list-style-type: none"> ● Pass the puppy ● Sorting animals into indoors and outdoors ● Animal adjectives ● Making bird feeders ● Animal care poster ● Making dog biscuits ● Monster breeding ● Building a bird's nest ● Create a large scale crocodile and compare to humans ● Identifying animal types ● Classifying animal types 	<ul style="list-style-type: none"> ● A recipe for growth ● Writing about what is needed for plant growth ● Peas experiment to explore what plants need in order to grow ● Comparing the inside of seeds and bulbs ● Leaf cover test ● Make a diorama of a plant life-cycle ● Seed sorting ● Modelling and sorting fruits and vegetables 	<ul style="list-style-type: none"> ● Build a model of a mountain ● Making models of igneous, sedimentary and metamorphic rock ● Make a fossil in amber ● Soil types experiment ● Rock audit ● Rock absorbency 	<ul style="list-style-type: none"> ● Pond dipping ● Grouping and classifying animals ● Animal collage of classified animals ● Build a habitat for an amphibian ● Wildlife spotting ● Magnetic fish game 	<ul style="list-style-type: none"> ● Life-cycle flip book ● Gestation periods research ● Gestation periods right up ● A different starting point experiment with plants ● Sequencing a life-cycle ● A day in the life of a baby account ● Adolescence quiz ● A guide to keeping active brochure/leaflet/video 	<ul style="list-style-type: none"> ● Casting shadows experiment ● Make a periscope ● Newton colour wheel ● Glass of water lens ● Colour mixing
Vocabulary	<p>identify, classify, observe, questions, answers, equipment, data, food, water, shelter, air, energy, bird, nest, build, mud, grass, pet food, kennel, snake, ferret, iguana, kitten, puppy, offspring, new-born, care, fish, amphibian, reptile, mammal, class, carnivore, herbivore, omnivore, identify, predator</p>	<p>question, observe, record, gather, perform, test, suggest, temperature, insulate, artificial, natural, absorb, nutrient, temperature, roots, fertiliser, produce, bulb, dormant, onion, daffodil, tulip, glucose, carbon dioxide, oxygen, conditions, photosynthesis, pollen, ovule, fertilised, stigma, anther, blossom, fruit, vegetable, seed, flower</p>	<p>questions, answer, differences, similarities, scientific evidence, findings, enquiries, comparative and fair tests, grouping, classifying, mountain, Europe, hill, Himalayas, Alps, metamorphic rock, igneous rock, sedimentary rock, magma, minerals, fossil, amber, Jurassic Coast, seashell, extinct, peat, clay soil, chalky soil, sandy soil, texture, lichen, acid rain, chemical weathering, physical weathering, biological weathering, marble, sandstone, limestone, flake, granite, sandstone, marble, slate, granite, grain size</p>	<p>classification keys, observations, questions, diagrams, similarities and differences, scientific ideas and processes, pond dipping, sample, sediment, water lily, newt, classify, vertebrate, invertebrate, species, characteristics, vertebrate, invertebrate, amphibian, exoskeleton, skeleton, cold-blooded, gills, oxygen, scales, reptile, bird, mammal, warm-blooded, migration, hibernation, fish, coldblooded, shark</p>	<p>oral and written explanations, displays of results, enquiry, conclusion, reproduce, adult, foetus, embryo, puberty, egg, sperm, ovary, testes, fertilisation, gestation, breeding, elephant, North American Opossum, time period, growth spurt, childhood, motor skills, milk teeth, labour, adolescence, bloodstream, hormone, growth, appetite, cataract, cardiovascular, plasticity, memory, neurodegenerative</p>	<p>evidence, support, refute, arguments, measurements, accuracy, precision, readings, variable, predict, plan, control, light source, transparent, opaque, shadow, opposite, obstruct, light ray, fluorescent, focal point, lens, refraction, refracting telescope, convex lens, spectrum, indigo, glass prism, white light, medium, magnify, rainbow, distorted, primary colours, secondary colour, light filter,</p>
Challenge	<ul style="list-style-type: none"> ● Can you show what an animal needs in order to be well looked after? ● Can you explain why birds need to live in a nest? ● Can you describe the kind of diet and exercise common animals need to stay healthy? ● Can you explain what you notice about animals and their offspring? ● Can you explain why some animals need certain features to survive? 	<ul style="list-style-type: none"> ● Can you explain why plants need certain conditions? ● Can you generate further questions about growing plants? ● Can you discover how to tell if a plant has grown from a bulb or seed? ● Can you explain the sequence of germination? 	<ul style="list-style-type: none"> ● Can you compare mountains based on how they are formed? ● Can you explain the role decomposers play in creating soil? ● Can you explain the different ways that rock is used to make things that we use? 	<ul style="list-style-type: none"> ● Can you find out how biodiverse a chosen habitat is? ● Can you find out how scientists classify animals? ● Can you explain how a warm-blooded animal maintains its temperature? 	<ul style="list-style-type: none"> ● Can you draw a graph and represent the varied lengths of gestation in animals? ● Can you explain the advantages and disadvantages of propagation methods? ● Can you explain why the needs of younger children are greater than the needs of older children? 	<ul style="list-style-type: none"> ● Can you explain the difference between luminous and nonluminous light sources? ● Can you explain how lenses manipulate light rate? ● Can you explain how white light can be split?

Summer 2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Theme	Plants	Living Things And Their Habitats	Light	Scientists and Inventors	Living Things and Their Habitats	Electricity
Skills	<ul style="list-style-type: none"> Identify and describe the basic structure of a variety of common flowering plants, including trees. Become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem). Observe closely to see how plants grow Observe closely and use simple scientific words Collecting and sorting data Observing closely and using simple equipment Observe the growth of flowers and vegetables that they have planted. Keep records of how plants have changed over time, for example, the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants. Identifying and classifying 	<ul style="list-style-type: none"> Explore the differences between things that are living, dead and things that have never been alive. Identifying and classifying Identify and name a variety of plants and animals in their habitats, including microhabitats. Sorting and classifying Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. Performing simple tests Gather and recording data to help in answering questions 	<ul style="list-style-type: none"> Know how to measure shadows, and find out how they are formed, and what might cause the shadows to change. Using results to draw simple conclusions. Recognise that shadows are formed when the light from a light source is blocked by a solid object. Ask relevant questions and use different types of scientific enquiries to answer them. Notice that light is reflected from surfaces. Using results to draw simple conclusions, make predictions for new values. Recognise that they need light in order to see things and that dark is the absence of light, and notice that light is reflected from surfaces. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Recognise that light from the sun can be dangerous and there are ways to protect the eyes. Setting up simple practical enquiries, comparative and fair tests, making accounts measurements, using standard units, using a range of equipment, for example thermometers and data-loggers. 	<ul style="list-style-type: none"> Recognise that environments can change and that this can sometimes pose dangers to living things Recognise that vibrations from sounds travel through a medium to the ear Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Take accurate measurements using standard units and a range of equipment, including thermometers Identify changes relating to simple scientific ideas and processes Identify changes related to scientific ideas and processes Use scientific evidence from comparative tests to support their findings 	<ul style="list-style-type: none"> Research the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall. Report and present findings from enquiries, in oral and written forms Describe the life process of reproduction in some plants and animals. Describe the differences in the life cycles of a mammal, amphibian, insect and bird. 	<ul style="list-style-type: none"> 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. Recording data and results of increasing complexity using scientific diagrams and labels, classification keys tables, scatter graphs and / or bar and line graphs. Work scientifically by: systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit. Plan different types of scientific enquiries to answer questions, recognise control variables where necessary. Designing and making a set of traffic lights, a burglar alarm or some other useful 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. Take measurements, use a range of scientific equipment, with increasing accuracy
Key Content	<ul style="list-style-type: none"> What a plant needs in order to grow well Basic parts of a plant Variety of common flowering plants and trees Evergreen and deciduous plants Different sources of food grown by farmers Know how plants changed over time 	<ul style="list-style-type: none"> Living things, things that are dead, things that have never been alive Plants Animals Animal food Sources of food Microhabitats Food chains 	<ul style="list-style-type: none"> Shadows and how they are formed Exploration of light Different types of mirrors Reflective surfaces and how they keep us safe Light from the sun and ways to protect eyes from it 	<ul style="list-style-type: none"> Investigate and describe the dangers of deforestation in Madagascar Gerald Durrell Alexander Graham Bell Identify the achievements of Maria Telkes Discuss the achievements of Garrett Morgan Lord Kelvin Compare the effectiveness of toothpastes 	<ul style="list-style-type: none"> Sexual reproduction Asexual reproduction Life cycle of an insect and amphibian Life cycle of a mammal, bird and reptile Sir David Attenborough Dame Jane Goodall 	<ul style="list-style-type: none"> How objects become charged Electric circuit parts Circuit diagrams and what affects the output of a circuit Compare electrical conductors and insulators Rail crossing signals How variable resistors can work like a switch

Suggested outcomes	<ul style="list-style-type: none"> ● Planting cress experiment ● Drawing a plant ● Graphs representing the colour and names of a variety of plants ● Leaf sorting ● Leaf rubbing ● Leaf rubbing scavenger hunt ● Growing grass from seeds investigation ● Make a growing tree ● Plant card challenge 	<ul style="list-style-type: none"> ● Seven characteristics of things that are living poster ● Living, dead, never alive hunt ● Grouping things into living, dead and never been alive ● Make a bug hotel ● Flow diagram to show how food is produced ● Growing grass from seed ● Fresh fruit test ● Food chain Russian dolls 	<ul style="list-style-type: none"> ● Shadow stick investigation ● Make a shadow puppet ● Reflection sketching ● Mirror investigation ● Build roadside dioramas and examine the reflectivity of the surfaces ● UV investigation 	<ul style="list-style-type: none"> ● Describe Gerald Durrell and his conservation work in Madagascar ● Present research into Alexander Graham Bell to an audience ● Build a solar oven ● Oxygen and burning experiment ● Work about temperature ● Use given ingredients to invent their own toothpaste 	<ul style="list-style-type: none"> ● Flowering plant storyboard ● Plant cloning ● Life cycle comparison ● Create a poster or leaflet which visually shows a life cycle of an animal ● David Attenborough interview ● Jane Goodall timeline 	<ul style="list-style-type: none"> ● Circuit building ● Independent circuit building to discover how changing components impacts circuit output ● Conductor or insulator experiment ● Design a traffic lights circuit
Vocabulary	<p>observe closely, equipment, collect, record, data, perform, test, group, classify, plant, soil, water, light, seed flower, leaf, branch, root, stem, wildflower, buttercup, stinging nettle, daisy, dandelion, petal, tulip, pansy, oak tree, sweet peas, deciduous, evergreen, oak tree, pine tree, holly bush, potato, crop, rotation, sugar beet, barley, arable, seed, seedling, young plant, adult plant, fruit</p>	<p>identify, classify, sort, perform, test, gather, record, data, answer, questions, living, dead, excrete, smartphone, robot, abiotic, biotic, habitat, microhabitat, species, oil, cereal, root vegetable, fruit, sugarcane, potato, crop rotation, sugar beet, barley, arable, crate, frozen food, forklift truck, refrigerated lorry, canned fruit, food chain, caterpillar, producer, consumer, life cycle</p>	<p>draw simple conclusions, scientific enquiry, predictions, values, oral and written explanations, results, conclusions, practical enquiry, comparative and fair tests, standard units, data loggers position, intermediate, sundial, clockwise, indirectly, transparent, opaque, light, torch, shadow, mirror, concave, convex, reflection, telescope, periscope, submarine, parallel, viewer, enlarge, reflective material, road safety, fluorescent, dark, hi-vis, ultraviolet rays, calcium, sunglasses, sunburn, sun protection factor</p>	<p>Scientific ideas and processes, present, similarities and differences, simple scientific ideas and processes, accurate measurements, experiment, fair test, conclude, electrical circuit, series circuit, oxygen, temperature, thermometer, solar power</p>	<p>report, present, oral and written forms, enquiry, comparing, controlling variables, David Attenborough, natural sciences, documentary, naturalist, lecture, Jane Goodall, chimpanzee, primatologist, primate, endangered, fertilisation, genes, sexual reproduction, pollination, pollen, unborn, egg, hatch, fledgling, mammary gland, metamorphosis, larva, pupa, tadpole, butterfly, asexual, plantlet, bulb, tuber, bacteria</p>	<p>scientific diagrams, labels, classification keys, tables, scatter graphs, bar graphs, line graphs, scientific enquiry, variables, measurements, accuracy, static electricity, charge, electric shock, friction, discharge, circuit, battery, component, series circuit, switch, voltage, output, bulb, power, wind-up torch, insulator, conductor, copper, short circuit, fuse, signal, timer-based, synchronised, receiver, sensor, dimmer switch, LED, adjust, variable resistor, resistor</p>
Challenge	<ul style="list-style-type: none"> ● Can you explain what a healthy and unhealthy plant looks like? ● Can you explain the importance of each part of a plant? ● Can you make observations of trees that keep their leaves and trees that lose their leaves? ● Can you record results and explain why they are different? 	<ul style="list-style-type: none"> ● Can I justify why something is living, dead or never been alive? ● Can I begin to explore animal adaptations that enable them to survive in their habitat? 	<ul style="list-style-type: none"> ● Can you explain why and how a shadow changes? ● Can you explain how shadows made from opaque objects differ from clear objects? ● Can you explain how curved mirrors change the shape of a reflection? ● Can you explain what the effects of not protecting yourself in the sun are? 	<ul style="list-style-type: none"> ● Can you research the more complicated aspects of Alexander Grahams Bell's work? ● Can you demonstrate how particles would behave at absolute zero? ● Can you use your results to form a conclusion when comparing toothpastes? ● Can you explain how the suns energy can be used to heat things? 	<ul style="list-style-type: none"> ● Can you explain how a plant offspring will be identical to its parent? ● Can you describe how the length of animal life cycles vary? ● Can you highlight David Attenborough's importance to nature? ● Can you explain why the kind of work Jane Goodall does is so important? 	<ul style="list-style-type: none"> ● Can you understand and explain how portable and self-powered gadgets work? ● Can you compare the results and the output of your traffic light circuit by changing connections and recording effects?