



Maybury Primary School
Science Curriculum

We are Scientists!



Maybury Primary School

Long Term Plan: Teaching Unit Plan Overview



EYFS Long Term Plan: Teaching Unit Plan Overview

	F1	Science Plan	F2	Science Plan
Autumn 1 Ourselves/The Three Little Pigs	<ul style="list-style-type: none"> • Our environment • Materials • Weather 	<ul style="list-style-type: none"> • Ourselves (Jigsaw) • Heavy and light (Huff /Puff investigation) • Autumn walk 	<ul style="list-style-type: none"> • Our environment • Materials • Weather 	<ul style="list-style-type: none"> • Ourselves (Jigsaw) • Heavy and light (Huff /Puff investigation) • Explain findings • Autumn walk
Autumn 2 Celebrations/light and dark/Peace at Last	<ul style="list-style-type: none"> • Materials • Weather 	<ul style="list-style-type: none"> • Shiny/dull • Autumn 	<ul style="list-style-type: none"> • Materials • Weather 	<ul style="list-style-type: none"> • Bear-coat e.g. waterproof and non.waterproof • Shadow puppets (Diwali) • Autumn
Spring 1 Bears/We are going on a Bear Hunt	<ul style="list-style-type: none"> • Our environment • Forces • Weather 	<ul style="list-style-type: none"> • Different types of bears • Arctic • Ice melting • Winter 	<ul style="list-style-type: none"> • Animals • Forces • Weather 	<ul style="list-style-type: none"> • Different types of bears • Bear habitats • Ice melting • Winter
Spring 2 Growing/Jack and the Beanstalk	<ul style="list-style-type: none"> • Plants and our environment • Weather 	<ul style="list-style-type: none"> • Plant beans-life cycle of a bean • Discussion- caring for plants • Spring walk 	<ul style="list-style-type: none"> • Plants and our environment • Weather 	<ul style="list-style-type: none"> • Plant beans – life cycle of a bean • Discussion-caring for plants • Labelling parts of a plant. • Naming common plants • Spring walk
Summer 1 Farm/Three Billy Goats	<ul style="list-style-type: none"> • Our environment (animals) • Weather 	<ul style="list-style-type: none"> • Mother and babies • Farm visit/growing chicks • Summer 	<ul style="list-style-type: none"> • Our environment (animals) • Materials • Weather 	<ul style="list-style-type: none"> • Mother and babies • Farm visit/growing chicks • Life cycles • What do animals eat? • Make a boat for the goat (floating/sinking) • Summer
Summer 2 Minibeasts/Seaside Hungry Caterpillar/The Train ride	<ul style="list-style-type: none"> • Our environment (animals) • Weather 	<ul style="list-style-type: none"> • Growth of caterpillar • Caring for animals • Summer 	<ul style="list-style-type: none"> • Plants • Weather 	<ul style="list-style-type: none"> • Growth of caterpillar/lifecycle • Caring for animals • Habitats of minibeasts • Summer
Animals Small world Home corner Reading area Investigation area Outdoor area Jigsaw Jennie	<u>Plants</u> <ul style="list-style-type: none"> • Outdoor area • Investigation area 	<u>Everyday materials</u> <ul style="list-style-type: none"> • Investigation • Creative workshop • Construction area 	<u>Seasonal</u> <ul style="list-style-type: none"> • Everyday weather wall/circle time • Investigation area 	



Long Term Plan: Teaching Unit Plan Overview

Curriculum Coverage and Progression of Knowledge and Skills in Science:

- Within each academic year, children will study a range of Science topics; Biology, Chemistry and Physics, with working scientifically taught through each of these.
- In both Key Stage 1 and Key Stage 2, children are taught Science as a discrete subject, covering a specific area. The table below shows the Science themes that are currently delivered, working scientifically is taught throughout all units:

	Biology		Chemistry		Physics		
EYFS	Explore the natural world around them, making observations and drawing pictures of animals and plants Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter						
Y1	Animals, including Humans		Plants	Everyday Materials		Seasonal Changes	
Y2	Animals, including Humans	Living Things and their Habitats	Plants	Uses of Everyday Materials			
Y3	Animals, including Humans		Plants	Rocks		Forces and Magnets	Light
Y4	Animals, including Humans	Living Things and their Habitats		States of Matter		Electricity	Sound
Y5	Animals, including Humans	Living Things and their Habitats		Properties of Materials	Changes in Materials	Forces	Earth and Space
Y6	Animals, including Humans	Living Things and their Habitats	Evolution and Inheritance			Electricity	Light



KS1/KS2 Maybury Long Term Teaching Unit Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Y1	Humans Animals, including humans	Everyday Materials Everyday Materials	Animals Animals, including humans	Uses of Everyday Materials Everyday Materials	What's growing in our gardens? Plants	Weather Seasonal Changes
Y2	Healthy Animals Animals, including Humans	Exploring Everyday Materials Uses of Everyday Materials	Habitats 1 Living Things and their Habitats	Uses of Everyday Materials Uses of Everyday Materials	Ready, Steady, Grow! Plants	Habitats 2 Living Things and their Habitats
Y3	Keeping Healthy Animals, including Humans	Rocks and Fossils Rocks	Magnets Forces and Magnets	Light and Shadows Light	Roots and Shoots Plants	Flowers, Fruits and Seeds Plants
Y4	Teeth and Digestion Animals, including Humans	Sound Sound	Electricity Electricity	Grouping and Classifying Living Things and their Habitats	States of Matter States of Matter	The Environment Living Things and their Habitats
Y5	Humans Animals, including Humans	Properties of Materials Properties of Materials	Forces Forces	Changes in Materials Changes in Materials	Lifecycles Living Things and their Habitats	Earth and Space Earth and Space
Y6	Being Human Animals, including Humans	Electricity Electricity	Light Light	Classification Living Things and their Habitats	Survival Evolution and Inheritance	

Biology
Chemistry
Physics



Maybury Primary School

Progression in Scientific Knowledge and Skills

Maybury Primary School: Becoming a Scientist

Working Scientifically

At Maybury, we consider Working Scientifically as two separate but linked aspects:

- Science enquiry
- Skills to carry out science enquiry

At Maybury we use the five types of enquiry explicitly named in all year groups:

- Observing changes over time
- Noticing Patterns
- Grouping and Classifying things (noticing similarities and differences)
- Comparative and fair testing
- Finding things out using secondary sources of information (researching)

Modelling is not explicitly mentioned but will be used

Children from Year 1 to Year 6, across the different subject areas (biology, physics, and chemistry), will use these types of enquiry as appropriate

National Curriculum: Working Scientifically		
Key Stage 1 (Y1&Y2)	Lower Key Stage 2 (Y3&Y4)	Upper Key Stage 2 (Y5&Y6)
<p>During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions 	<p>During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:</p> <ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. 	<p>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:</p> <ul style="list-style-type: none"> • 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 a 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



KS1 and KS2: Working Scientifically

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Overview (Sticky Knowledge)	Focused on observation and classification. Observe equipment modelled by a teacher. Record results simply (in a table/with pictures/ by grouping)	Plan and conduct simple tests to answering specific questions; know how to change one variable and control the others; answer the specific question	Set up experiments with an understanding of fair testing. Make predictions that have reasoning behind them. Collect different types of data beyond observation. Report on and explain findings	Setting up experiments and collecting different types of data and reporting and explaining findings. Know how to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion	Justify conclusions using scientific evidence. Know how to independently write a simple scientific enquiry write up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion	Overview and revision of all previously taught material to apply a higher level of understanding to planning, investigation, recording and concluding
Plan	<ul style="list-style-type: none"> Know that scientific investigation begins with a question they want to find the answer to Know that they can ask questions about the world and then make observations to answer these questions 	<ul style="list-style-type: none"> As Year 1 Know that each experiment is a test that will generate a clear outcome and that predictions can be made about what this will be 	<ul style="list-style-type: none"> As Year 2 Set up own simple practical enquiries Use different types of scientific enquiries to answer questions Understand that fair testing means changing one variable at a time (independent variable) and one thing that may change (that is measured –dependent variable Make reasoned predictions 	<ul style="list-style-type: none"> As Year 3 Make relevant predictions based on their increasing scientific knowledge that will be tested in a scientific enquiry Plan and carry out comparative tests 	<ul style="list-style-type: none"> As Year 4 Ask relevant questions and use different types of scientific enquiry to answer including recognising and controlling variables where necessary 	<ul style="list-style-type: none"> As Year 5 Know how to choose appropriate variables to test a hypothesis Know examples of instances where scientific evidence has been used to support or contest ideas or arguments Know that a theory is an explanation of observations that has been tested to some extent Know that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry
Investigate	<ul style="list-style-type: none"> Use magnifying glasses to observe objects closely (collect results) Know that objects can be identified or sorted into groups based on their observable properties 	<ul style="list-style-type: none"> Set up and perform simple tests Use systematic observation to gather results to answer their question Know that observation is a valid way of collecting data about changes 	<ul style="list-style-type: none"> As Year 2 Use equipment systematically and carefully to take accurate measurements using standard units and a range of equipment: thermometers, data loggers, rulers, stopwatches 	<ul style="list-style-type: none"> As Year 3 Use equipment systematically and carefully to take accurate measurements using standard units and a range of equipment: thermometers, data loggers, rulers, stopwatches 	<ul style="list-style-type: none"> As Year 4 Use scientific equipment increasing accuracy and precision, taking repeat readings when appropriate Know that scientific enquiries are limited by the accuracy of measurements and how conditions vary Know that repeating enquiries, measurements and keeping conditions consistent can make outcomes more accurate 	<ul style="list-style-type: none"> As Year 5 Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognising the relative accuracy of each device Know how and when to repeat measurements Know how to find an average of a set of measurements and how to recognise and remove outliers from a set of data, justifying the removal as a potential mis-measurement

Record	<ul style="list-style-type: none"> Know that data needs to be gathered and recorded to answer the asked questions Write down numbers and words or draw pictures to record what they find 	<ul style="list-style-type: none"> As Year 1 Results to experiments can be recorded in different ways: a table, a labelled diagram 	<ul style="list-style-type: none"> As Year 2 Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key; how to draw a neat table; how to draw a classification key 	<ul style="list-style-type: none"> As Year 3 Classify and present data in a variety of ways to help answer questions Know – with structured guidance – how to write up a simple scientific enquiry including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion 	<ul style="list-style-type: none"> As Year 4 Record findings with increasing complexity using scientific diagrams and labels, classification keys, scatter graphs, bar and line graphs Know how to independently write up a simple scientific enquiry including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion 	<ul style="list-style-type: none"> As Year 5 Include areas of improvement and further research questions to investigate
Conclude and Explain	<ul style="list-style-type: none"> Suggest an answer based on real life experience or using taught scientific knowledge 	<ul style="list-style-type: none"> Use observations to suggest plausible answers to questions Explain how objects have been identified or sorted into groups based on their observable properties 	<ul style="list-style-type: none"> As Year 2 Use results to draw simple conclusions that answer the investigation question based on their results Draw a conclusion based on the relationship between the independent and the dependent variable (the ‘er’ rule) Report on findings from enquiries, including oral and written explanations 	<ul style="list-style-type: none"> As Year 3 Draw a conclusion based on the relationship between the independent and the dependent variable (the ‘er’ rule) Suggest improvements and raise further questions Use scientific evidence to answer questions or to support findings Identify differences, similarities or changes related to simple scientific ideas and processes Know that scientific enquiries are limited by the accuracy of measurements and how conditions vary Know that repeating enquiries, measurements and keeping conditions consistent can make outcomes more accurate 	<ul style="list-style-type: none"> As Year 4 Know that conclusions from scientific enquiries can lead to further questions and be able to plan for these Use test results to make predictions to set up further comparative and fair tests Justify their conclusions using scientific evidence Use conclusions, causal relationships and explanations of and degree of trust in results to report on findings Draw a conclusion based on the relationship between the independent and the dependent variable (the ‘er’ rule) 	<ul style="list-style-type: none"> As Year 5 Know how to present brief oral findings from an enquiry, speaking clearly and with confidence, using notes where necessary Know how to identify conditions that were imperfectly controlled and can explain how these might affect results Draw a conclusion based on the relationship between the independent and the dependent variable (the ‘er’ rule)
Vocabulary	properties, observe, test, magnifying glass, object, record, equipment	<i>properties, observe, test, magnifying glass, object, record, equipment</i> investigate, measure, predict, conclude, data, sketch, label	<i>Investigate, measure, predict, conclude, label</i> prediction, measurement, enquiry, dependent variable, independent variable, fair test, present, similar, differences, diagram, key, chart, evidence	<i>Investigate, measure, predict, conclude, label</i> prediction, measurement, enquiry, dependent variable, independent variable, fair test, present, similar, differences, diagram, key, chart, evidence	<i>Investigate, measure, predict, conclude, label, prediction, measurement, enquiry, dependent variable, independent variable, fair test, present, similar, differences, diagram, key, chart, evidence</i> relationship, controls, component, effect, interpret, justify, cause & effect	<i>Investigate, measure, predict, conclude, label, prediction, measurement, enquiry, dependent variable, independent variable, fair test, present, similar, differences, diagram, key, chart, evidence</i> relationship, controls, component, effect, interpret, justify, cause & effect theory, hypothesis, repeatable, causal relationships



KS1 and KS2: Scientific Knowledge and Understanding: BIOLOGY

Animals, including Humans

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Knowledge and understanding	<ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense 	<ul style="list-style-type: none"> Know that animals, including humans, have offspring which grow into adults Know the basic stages in a life cycle for animals, including humans. Find out and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene 	<ul style="list-style-type: none"> Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement 	<ul style="list-style-type: none"> Be able to describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their functions Construct and interpret a variety of food chains, identifying producers, predators and prey 	<ul style="list-style-type: none"> Be able to describe the changes as humans develop to old age 	<ul style="list-style-type: none"> Identify and name the main parts of the human circulator 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
Sticky Knowledge	<ul style="list-style-type: none"> Know the common names of some fish, amphibians, reptiles, birds and mammals, including those kept as pets Be able to use the common names of some carnivores, herbivores and omnivores and say what they eat Know the names of the main parts of the human body (head, neck, arms, legs, knees, face, ears, eyes, hair, mouth, teeth) 	<ul style="list-style-type: none"> Be able to describe the basic stages in a life cycle for animals (e.g. chicken, butterfly, frog, sheep) including humans Be able to say what all animals need to stay alive Know that to stop illness and infection humans need to exercise, have a balanced diet and keep clean 	<ul style="list-style-type: none"> Know about the importance of a nutritious, balanced diet Know how nutrients, water and oxygen are transported within the bodies of animals and humans Know that many animals have skeletons to support their bodies and protect vital organs Know that muscles are connected to bones and move them when they contract 	<ul style="list-style-type: none"> Identify and know the different types of human teeth Know the jobs done by the different types of teeth Identify and know the functions of the organs in the human digestive system Know that blood takes nutrients around the body. Be able to use, construct and explain food chains to identify producers, consumers, predators and prey 	<ul style="list-style-type: none"> Create a timeline to indicate stages of growth in humans Know that puberty is a process which prepares our bodies for being adults and reproduction Hormones control these changes which can be physical and/or emotional Humans reproduce sexually where offspring inherit information from both parents 	<ul style="list-style-type: none"> Identify and name the main parts of the human circulatory system Know the function of the heart, blood vessels and blood Know the impact of diet, exercise, drugs and lifestyle on health Know the ways in which nutrients and water are transported in animals, including humans
Vocabulary	animals, amphibians, birds, fish, mammals, reptiles carnivore, herbivore, omnivore sight, hearing, touch, taste, smell, head, neck, ear, mouth, arm, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, tooth, teeth, elbow	humans, adult, air, animals, baby, basic needs, child, exercise, food, growth, humans, hygiene, maturity, nutrition, offspring, reproduction, survival, teenager, toddler, water, egg/chick/chicken, spawn/tadpole/frog, egg/caterpillar/pupa/butterfly, lamb/sheep	Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax	<i>herbivore, carnivore, omnivore</i> , predator, prey, consumer, producer, digestive system, <i>mouth</i> , tongue, oesophagus, stomach, small intestine, large intestine, <i>tooth, teeth</i> , canine, incisor, molar, premolar	foetus, embryo, womb, gestation, baby, toddler, teenager, elderly, growth, development, puberty, hormone, physical, emotional, adolescent, adult	artery, blood, blood vessels, circulatory system, damaged, deoxygenated, diet, <i>digestive system</i> , drugs, <i>exercise</i> , functions, harm, health, heart, <i>human</i> , impact, internal organs, lifestyle, muscular system, <i>nutrients</i> , oxygenated, respiration, skeletal system, substances, transported, valve, veins, <i>water</i>

**KS1 and KS2: Scientific Knowledge and Understanding: BIOLOGY**

Plants			
	Year 1	Year 2	Year 3
Knowledge and understanding	<ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants. Identify and name the roots, trunk, branches and leaves of trees. 	<ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and warmth to grow and stay healthy. 	<ul style="list-style-type: none"> Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers Explore the part flowers play in a flowering plants life cycle, including: pollination, seed formation and seed dispersal Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants Investigate the way in which water is transported within plants
Sticky Knowledge	<ul style="list-style-type: none"> Know and name a variety of common wild and garden plants Know and name the petals, stem, leaves and root of a plant Know and name the roots, trunk, branches and leaves of a tree 	<ul style="list-style-type: none"> Know that plants grow from seeds and bulbs Know that plants need light, water and warmth to grow and survive 	<ul style="list-style-type: none"> Know that plants are producers, they make their own food Know the role of the roots and stem, the leaves and flowers of a plant Know about the importance of flowers in the life cycle of the flowering plant
Vocabulary	Leaves, trunk, branch, petal, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, blossom, fruit, vegetables, wild	bulbs, environment, germination, grow, healthy, light, mature plants, reproduction, seeds, store of food, survival, temperature, water	Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, material, photosynthesis, chlorophyll

**KS1 and KS2: Scientific Knowledge and Understanding: BIOLOGY**

Evolution and Inheritance	
	Year 6
Knowledge and understanding	<ul style="list-style-type: none"> 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.
Sticky Knowledge	<ul style="list-style-type: none"> Know how the Earth and living things have changed over time Know how fossils can be used to find out about the past Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) Know how plants and animals are adapted to suit their environment Link adaptation over time to evolution Know about evolution and explain what it is
Vocabulary	fossils, adaptation, evolution, characteristics, reproduction, genetics, variation, inherited, environmental, mutation, competition, survival of the fittest, evidence



KS1 and KS2: Scientific Knowledge and Understanding: BIOLOGY

Living things and their habitats

	Year 2	Year 4	Year 5	Year 6
Knowledge and understanding	<ul style="list-style-type: none"> • Explore and compare the difference between things that are living, dead and things that have never been alive • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including micro-habitats • Describe how animals obtain their food from plants and other animals using the idea of a simple food chain, and identify and name the different sources of food 	<ul style="list-style-type: none"> • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose danger to living things. 	<ul style="list-style-type: none"> • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals 	<ul style="list-style-type: none"> • 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.
Sticky Knowledge	<ul style="list-style-type: none"> • Know that some things are living, some things were once living but are now dead and some things never lived • Match animals and plants to their habitats • Describe how living things are adapted to survive in different habitats • Name some different sources of food for animals • Explain a simple food chain • Know that all life on the planet begins with the energy that the sun provides 	<ul style="list-style-type: none"> • Use classification keys to group, identify and name living things • Know that changes to environments can sometimes pose dangers to living things • Know that humans can positively (conservation) and negatively (population, development deforestation) affect the environment 	<ul style="list-style-type: none"> • Know the life cycle of different living things – mammal, amphibian, insect and bird • Know the process of reproduction in plants • Know the process of reproduction of plants and animals in the local environment 	<ul style="list-style-type: none"> • Organisms best suited to their environment are more likely to survive long enough to reproduce • Give reasons for classifying plants and animals in a specific way
Vocabulary	Alive, animals, basic needs, characteristics, conditions, dead, depend on, environment, food, food chain, habitat, healthy, living, micro-habitat, plants, provide, shelter, sources, suited	Environment, habitats, flowering, nonflowering, plants, animals, vertebrates, fish, birds, amphibians, reptiles, mammals, invertebrate, snails, slugs, worms, spiders, insects, human impact, nature reserves, deforestation.	reproduction, sexual, asexual, pollination, dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant	amphibians, animals, bacteria, birds, characteristics, classification system, classified, differences, fish, groups, habitats, insects, invertebrates, key, living things, mammals, micro-organisms, organisms, plants, reptiles, similarities, snails, spiders, subdivided, variation, vertebrates, worms

**KS1 and KS2: Scientific Knowledge and Understanding: CHEMISTRY**

Materials	Year 1	Year 2	Year 3	Year 4	Year 5
	Everyday Materials	Uses of Everyday Materials	Rocks	States of Matter	Properties and Changes in Materials
Knowledge and understanding	<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, metal, plastic, glass, water and rock, 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 properties 	<ul style="list-style-type: none"> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 	<ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple 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 matter 	<ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	<ul style="list-style-type: none"> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including wood, metals and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda
Sticky Knowledge	<ul style="list-style-type: none"> Know the names of everyday materials – wood, plastic, glass, metal, water, rock Be able to talk about the properties of everyday materials Know that the properties of a material determine whether they are suitable for a purpose 	<ul style="list-style-type: none"> Materials can be changed by physical force (twisting, bending, squashing and stretching) Know why a material might or might not be used for a specific job 	<ul style="list-style-type: none"> Compare and group rocks based on their appearance and physical properties, giving reasons Know how soil is made and how fossils are formed Know about and be able to explain the difference between sedimentary, metamorphic and igneous rock 	<ul style="list-style-type: none"> Know that materials can be divided into solids, liquids and gases Know the temperature at which materials change state Know the part played by evaporation and condensation in the water cycle 	<ul style="list-style-type: none"> Compare and group materials based on their properties (hardness, solubility, transparency, conductivity and response to magnets) Know and explain how a material dissolves to form a solution Know and show how to recover a substance from a solution Know and demonstrate how some materials can be separated (filtering, sieving and evaporating) Know and demonstrate that some changes are/are reversible Know how some changes result in the formation of a new material and that this is usually irreversible
Vocabulary	Hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy/not bendy, waterproof/not waterproof, absorbent, opaque, wood, plastic, glass, metal, water, rock	Waterproof, fabric, rubber, cars, rock, paper, cardboard, wood, metal, plastic, glass, brick, twisting, squashing, bending, matches, cans, spoons	Appearance, building, crystals, formed, fossils, grains, granite gravestones, marble, organic matter, physical properties, rocks, sandstone, sedimentary rock, metamorphic rock, igneous rock, soils, trapped	solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporate, water vapour, energy, precipitation, collection, hardness, solubility, transparency, conductivity, magnetic, filter, evaporation, dissolving, mixing material, conductor, dissolve, insoluble, suspension, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, transparent, flexible, permeable, soluble, property, magnetic, hard.	

**KS1 and KS2: Scientific Knowledge and Understanding: PHYSICS**

Energy	Year 1	Year 3	Year 4	Year 6
	Seasonal Changes	Light	Sound	Light
Knowledge and understanding	<ul style="list-style-type: none"> • Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies 	<ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes • Recognise that shadows are formed when the light from a light source is blocked by a solid object • Find patterns in the way that the sizes of shadows change 	<ul style="list-style-type: none"> • Know how sound is made associating some of them with vibrating • Know what happens to a sound as it travels from its source to our ears • Know the correlation between pitch and the object producing a sound • Know the correlation between the volume of a sound and the strength of the vibrations that produced it. • Know how sound travels from a source to our ears. • Recognise that sounds get fainter as the distance from the sound source increases 	<ul style="list-style-type: none"> • 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
Sticky Knowledge	<ul style="list-style-type: none"> • Know that there are four seasons –spring, summer, autumn and winter – and be able to talk about the weather in each • Daylight is when it is light outside; Know that days are longer and hotter I the summer; days are shorter and colder in the winter 	<ul style="list-style-type: none"> • Know that dark is the absence of light • Know that light is needed in order to see and is reflected from a surface • Know and demonstrate how a shadow is formed and explain how a shadow changes shape • Know about the danger of direct sunlight and describe how to keep protected 	<ul style="list-style-type: none"> • Know that sound is a type of energy and is produced when an object vibrates • Know how sound travels from a source to our ears • Know the correlation between pitch and the object producing a sound • Know the correlation between the volume of a sound and the strength of the vibrations that produced it • Know what happens to a sound as it travels away from its source 	<ul style="list-style-type: none"> • Know that light travels in straight lines • Know that animals see light sources when light travels from the source into the eye • Know that animals see objects when light is reflected off that object and enters their eyes • Know why shadows have the same shape as the object that cast them
Vocabulary	seasons, spring, summer, autumn, winter, windy, sunny, overcast, snow, rain, temperature, changes, day length	light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent, distance, surfaces	amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave	Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent, Reflect, absorb, emitted, scattered, refraction



KS1 and KS2: Scientific Knowledge and Understanding: PHYSICS

Forces	Year 3	Year 5	Year 5
	Forces and Magnets	Forces	Earth and Space
Knowledge and understanding	<ul style="list-style-type: none"> Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract and repel each other and attract some materials and not others 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 Describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing 	<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 and the impact of gravity on our lives. Identify the effects of air resistance, water resistance and friction, which act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. 	<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 Describe the Sun, Earth and Moon as approximately spherical bodies Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky
Sticky Knowledge	<ul style="list-style-type: none"> Know that most forces require direct contact: opening a door, pushing a swing Know that magnetic forces can act without direct contact Know that magnets exert attractive and repulsive forces on each other Predict whether magnets will attract or repel and give a reason Be able to identify some magnetic materials Know how a simple pulley works and use to lift an object 	<ul style="list-style-type: none"> Know what gravity is and how it impacts on our lives Know how friction stops or slows moving objects Identify and know the effect of air and water resistance Know that some objects/animal are streamlined to minimise the effects of air/water resistance Know that some objects require large forces to make them move; gears, pulleys and levers can reduce the force to make things move 	<ul style="list-style-type: none"> Know about and explain the movement of the Earth and other planets in our solar system relative to the Sun Know about and explain the movement of the Moon relative to the Earth Know how day and night are created Describe the Sun, Earth and Moon (use the term spherical)
Vocabulary	force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass	air resistance, water resistance, friction, gravity, Newton, gears, pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley	Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical.



KS1 and KS2: Scientific Knowledge and Understanding: PHYSICS

Electricity	Year 4	Year 6
	Electricity	Electricity
Knowledge and understanding	<ul style="list-style-type: none"> Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its 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 the circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators, and associate metals with being good conductors. Know the difference between a conductor and an insulator; giving examples of each and associate metals with being good conductors 	<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
Sticky Knowledge	<ul style="list-style-type: none"> Know that a source of electricity (mains or battery) is needed for electrical devices to work Know that a complete circuit is needed for electricity to flow and devices to work Identify and name the components in a series circuit Know the function of a switch Know that some materials allow electricity to flow easily and these are called conductors Know that some materials don't allow electricity to flow easily and these are called insulators 	<ul style="list-style-type: none">
Vocabulary	Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component.	Electricity, neutrons, protons, electrons, nucleus, atom, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, conductor.



Maybury Primary School

Year Group Expectations

End of EYFS Expectations: Early Learning Goal:

Children at the expected level of development will:

Explore the natural world around them, making observations and drawing pictures of animals and plants

Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class

Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter

	3 to 4	Children in Reception	Vocabulary	ELG
Materials	<ul style="list-style-type: none"> Use all their senses in hands on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about what they see, using a wide vocabulary. Talk about the differences between materials and changes they notice. 	<ul style="list-style-type: none"> Explore the natural world around them. Describe what they see, hear and feel whilst outside. <i>Observe and interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water.</i> 	<ul style="list-style-type: none"> Fabric, stone, wood, plastic, glass, metal, elastic, string, ice, melt, rough, smooth, hard, soft, bend, squish, twist, transparent, opaque, shadow 	<ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants; Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.
Plants and Our Environment	<ul style="list-style-type: none"> Plant seeds and care for growing plants. Understand the key features of the life cycle of a plant and an animal. Begin to understand the need to respect and care for the natural environment and all living things. 	<ul style="list-style-type: none"> Explore the natural world around them. Describe what they see, hear and feel whilst outside. Recognise some environments that are different to the one in which they live. Understand the effect of changing seasons on the natural world around them. <i>Name and describe some plants and animals children are likely to see, encouraging children to recognise familiar plants and animals whilst outside.</i> <i>Model the vocabulary needed to name specific features of the natural world, both natural and manmade.</i> 	<ul style="list-style-type: none"> Plant, seed, sprout, shoot, daisy, daffodil, poppy, dandelion, flower, leaves, crow, pigeon, blackbird, caterpillar, cocoon, butterfly, stone, pebble, brick, manmade, natural 	
Forces	<ul style="list-style-type: none"> Explore and talk about different forces they can feel. 	<ul style="list-style-type: none"> <i>Observe and interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water.</i> 	<ul style="list-style-type: none"> Push, pull, magnet, magnetism, attract, repel, melt, freeze, frozen, thaw, vibrate, move, travel, sound, clear, opaque, shadow, float, sink 	
Weather		<ul style="list-style-type: none"> Understand the effect of changing seasons on the natural world around them. 	Autumn, winter, spring, summer, sunny, cloudy, rain, storm, overcast, windy, snow, ice, frost, temperature, rainfall	

Working Scientifically

National Curriculum End of Key Stage 1 expectations:

Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Y1 Overview	Focused on observation and classification. Observe equipment modelled by a teacher Record results simply (in a table/with pictures/ by grouping)	
	Learning Intentions	Vocabulary
Plan	<ul style="list-style-type: none"> • Know that scientific investigation begins with a question they want to find the answer to • Know that they can ask questions about the world and then make observations to answer these questions 	properties, observe, test, magnifying glass, object, record, equipment
Investigate	<ul style="list-style-type: none"> • Use magnifying glasses to observe objects closely (collect results) • Know that objects can be identified or sorted into groups based on their observable properties 	
Record	<ul style="list-style-type: none"> • Know that data needs to be gathered and recorded to answer the asked questions • Write down numbers and words or draw pictures to record what they find 	
Conclude and Explain	<ul style="list-style-type: none"> • Suggest an answer based on real life experience or using taught scientific knowledge 	

Y1	National Curriculum	Sticky Knowledge	Vocabulary
Animals, including Humans	<ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense 	<ul style="list-style-type: none"> Know the common names of some fish, amphibians, reptiles, birds and mammals, including those kept as pets Be able to use the common names of some carnivores, herbivores and omnivores and say what they eat Know the names of the main parts of the human body (head, neck, arms, legs, knees, face, ears, eyes, hair, mouth, teeth) 	animals, amphibians, birds, fish, mammals, reptiles, carnivore, herbivore, omnivore, pets, sight, hearing, touch, taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow, arm
Plants	<ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants. Identify and name the roots, trunk, branches and leaves of trees 	<ul style="list-style-type: none"> Know and name a variety of common wild and garden plants Know and name the petals, stem, leaves and root of a plant Know and name the roots, trunk, branches and leaves of a tree 	Leaves, trunk, branch, petal, root, seed, bulb, flower, stem, wild, garden, deciduous, evergreen, blossom, fruit, vegetables, wild
Everyday Materials	<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, metal, plastic, glass, water and rock, 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 properties 	<ul style="list-style-type: none"> Know the names of everyday materials – wood, plastic, glass, metal, water, rock Be able to talk about the properties of everyday materials Know that the properties of a material determine whether they are suitable for a purpose 	Hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy/not bendy, waterproof/not waterproof, absorbent, opaque, wood, plastic, glass, metal, water, rock
Seasonal Changes	<ul style="list-style-type: none"> Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies 	<ul style="list-style-type: none"> Know that there are four seasons –spring, summer, autumn and winter – and be able to talk about the weather in each Daylight is when it is light outside; Know that days are longer and hotter in the summer; days are shorter and colder in the winter 	seasons, spring, summer, autumn, winter, windy, sunny, overcast, snow, rain, temperature, changes, day length

Working Scientifically

National Curriculum End of Key Stage 1 expectations:

Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Y2 Overview	Plan and conduct simple tests to answering specific questions Know how to change one variable and control the others Answer the specific question	
	Learning Intentions	Vocabulary
Plan	<ul style="list-style-type: none"> • <i>Know that scientific investigation begins with a question they want to find the answer to</i> • <i>Know that they can ask questions about the world and then make observations to answer these questions</i> • Know that each experiment is a test that will generate a clear outcome and that predictions can be made about what this will be 	<i>properties, observe, test, magnifying glass, object, record, equipment</i> investigate, measure, predict, conclude, data, sketch, label
Investigate	<ul style="list-style-type: none"> • Set up and perform simple tests • Use systematic observation to gather results to answer their question e.g. how seeds & bulbs grow into mature plants • Know that observation is a valid way of collecting data about changes 	
Record	<ul style="list-style-type: none"> • <i>Know that data needs to be gathered and recorded to answer the asked questions</i> • <i>Write down numbers and words or draw pictures to record what they find</i> • Results to experiments can be recorded in different ways: a table, a labelled diagram 	
Conclude and Explain	<ul style="list-style-type: none"> • Use observations to suggest plausible answers to questions • Explain how objects have been identified or sorted into groups based on their observable properties 	

Y2	National Curriculum	Sticky Knowledge	Vocabulary
Animals, including Humans	<ul style="list-style-type: none"> Know that animals, including humans, have offspring which grow into adults Know the basic stages in a life cycle for animals, including humans. Find out and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene 	<ul style="list-style-type: none"> Be able to describe the basic stages in a life cycle for animals (e.g. chicken, butterfly, frog, sheep) including humans Be able to say what all animals need to stay alive Know that to stop illness and infection humans need to exercise, have a balanced diet and keep clean 	adult, air, animals, baby, basic needs, child, exercise, food, growth, humans, hygiene, maturity, nutrition, offspring, reproduction, survival, teenager, toddler, water, egg/chick/chicken, spawn/tadpole/frog, egg/caterpillar/pupa/butterfly, lamb/sheep
Plants	<ul style="list-style-type: none"> Observe and describe how seeds and bulbs grow into mature plants. Find out and describe how plants need water, light and warmth to grow and stay healthy 	<ul style="list-style-type: none"> Know that plants grow from seeds and bulbs Know that plants need light, water and warmth to grow and survive 	bulbs, environment, germination, grow, healthy, light, mature plants, reproduction, seeds, store of food, survival, temperature, water
Living Things and their Habitats	<ul style="list-style-type: none"> Explore and compare the difference between things that are living, dead and things that have never been alive Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including micro-habitats Describe how animals obtain their food from plants and other animals using the idea of a simple food chain, and identify and name the different sources of food 	<ul style="list-style-type: none"> Know that some things are living, some things were once living but are now dead and some things never lived Match animals and plants to their habitats Describe how living things are adapted to survive in different habitats Name some different sources of food for animals Explain a simple food chain Know that all life on the planet begins with the energy that the sun provides 	Alive, animals, basic needs, characteristics, conditions, dead, depend on, environment, food, food chain, habitat, healthy, living, micro-habitat, plants, provide, shelter, sources, suited
Uses of Everyday Materials	<ul style="list-style-type: none"> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 	<ul style="list-style-type: none"> Materials can be changed by physical force (twisting, bending, squashing and stretching) Know why a material might or might not be used for a specific job 	Waterproof, fabric, rubber, cars, rock, paper, cardboard, wood, metal, plastic, glass, brick, twisting, squashing, bending, matches, cans, spoons

Working Scientifically

National Curriculum End of Lower Key Stage 2 (Y3 & Y4) expectations:

Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Y3 Overview	Set up experiments with an understanding of fair testing Make predictions that have reasoning behind them Collect different types of data beyond observation Report on and explain findings	
	Learning Intentions	Vocabulary
Plan	<ul style="list-style-type: none"> • <i>Know that scientific investigation begins with a question we want to find the answer to</i> • Set up own simple practical enquiries by identifying a question they want the answer to and making sure the test is fair • Use different types of scientific enquiries to answer questions • Understand that fair testing means changing one variable at a time (independent variable) and one thing that may change (that is measured – dependent variable) • <i>Know that each experiment is a test that will generate a clear outcome and that predictions can be made about what this will be</i> • Make reasoned predictions based on scientific understanding or real life experience 	<i>Investigate, measure, predict, conclude, label</i> prediction, measurement, enquiry, dependent variable, independent variable, fair test, present, similar, differences, diagram, key, chart, evidence
Investigate	<ul style="list-style-type: none"> • <i>Ask questions about the world and make observations to answer these questions</i> • <i>Observe closely using simple equipment</i> • Use equipment systematically and carefully to take accurate measurements using standard units and a range of equipment: thermometers, data loggers, rulers, stopwatches 	
Record	<ul style="list-style-type: none"> • Know that data needs to be gathered and recorded to answer the asked questions • Know how to classify and present data by using <i>drawings</i>; using simple scientific language; drawing bar charts; <i>labelling a diagram</i> using lines to connect information to the diagram; how to use a coloured key; how to draw a neat table; how to draw a classification key 	
Conclude and Explain	<ul style="list-style-type: none"> • <i>Use observations and knowledge to suggest plausible answers to questions</i> • Use results to draw simple conclusions that answer the investigation question based on their results • Draw a conclusion based on the relationship between the independent and the dependent variable (the 'er' rule) • Report on findings from enquiries, including oral and written explanations 	

Y3	National Curriculum	Sticky Knowledge	Vocabulary
Animals, including Humans	<ul style="list-style-type: none"> Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement 	<ul style="list-style-type: none"> Know about the importance of a nutritious, balanced diet Know how nutrients, water and oxygen are transported within the bodies of animals and humans Know that many animals have skeletons to support their bodies and protect vital organs Know that muscles are connected to bones and move them when they contract 	Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax
Plants	<ul style="list-style-type: none"> Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers Explore the part flowers play in a flowering plants life cycle, including: pollination, seed formation and seed dispersal Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants Investigate the way in which water is transported between plants 	<ul style="list-style-type: none"> Know that plants are producers, they make their own food Know the role of the roots and stem, the leaves and flowers of a plant <p>Know about the importance of flowers in the life cycle of the flowering plant</p>	Air, light, water, nutrients, soil, support, anchor, reproduction, pollination, dispersal, transportation, flower, energy, growth, seedling, carbon dioxide, oxygen, sugar, material, photosynthesis, chlorophyll
Rocks	<ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple 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 matter 	<ul style="list-style-type: none"> Compare and group rocks based on their appearance and physical properties, giving reasons Know how soil is made and how fossils are formed Know about and be able to explain the difference between sedimentary, metamorphic and igneous rock 	Appearance, building, crystals, formed, fossils, grains, granite gravestones, marble, organic matter, physical properties, rocks, sandstone, sedimentary rock, metamorphic rock, igneous rock, soils, trapped
Light	<ul style="list-style-type: none"> Recognise that they need light in order to see things and that dark is the absence of light. Notice that light is reflected from surfaces Recognise that light from the sun can be dangerous and that there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is blocked by a solid object Find patterns in the way that the sizes of shadows change 	<ul style="list-style-type: none"> Know that dark is the absence of light Know that light is needed in order to see and is reflected from a surface Know and demonstrate how a shadow is formed and explain how a shadow changes shape Know about the danger of direct sunlight and describe how to keep protected 	light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent, distance, surfaces
Forces and Magnets	<ul style="list-style-type: none"> Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract and repel each other and attract some materials and not others 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 Describe magnets as having two poles Predict whether two magnets with attract or repel each other, depending on which poles are facing 	<ul style="list-style-type: none"> Know that most forces require direct contact: opening a door, pushing a swing Know that magnetic forces can act without direct contact Know that magnets exert attractive and repulsive forces on each other Predict whether magnets will attract or repel and give a reason Be able to identify some magnetic materials Know how a simple pulley works and use to lift an object 	force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass

Working Scientifically

National Curriculum End of Lower Key Stage 2 (Y3 & Y4) expectations:

Pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Y4 Overview	Set up experiments and collect different types of data and reporting and explaining findings. Know how to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion	
	Learning Intentions	Vocabulary
Plan	<ul style="list-style-type: none"> • Know that scientific investigation begins with a question we want to find the answer to • Set up own simple practical enquiries by identifying a question that needs an answer and making sure the test is fair • Understand that fair testing means changing one variable at a time (independent variable) and one thing that may change (that is measured –dependent variable) • Know that each experiment is a test that will generate a clear outcome and that predictions can be made about what this will be • Make reasoned predictions based on scientific understanding or real life experience • Make relevant predictions based on their increasing scientific knowledge that will be tested in a scientific enquiry • Plan and carry out comparative tests 	<i>Investigate, measure, predict, conclude, label prediction, measurement, enquiry, dependent variable, independent variable, fair test, present, similar, differences, diagram, key, chart, evidence</i>
Investigate	<ul style="list-style-type: none"> • Know that we can ask questions about the world and make observations to answer these questions observing closely using simple equipment • Use equipment systematically and carefully to take accurate measurements using standard units and a range of equipment: thermometers, data loggers, rulers, stopwatches 	
Record	<ul style="list-style-type: none"> • Know that data needs to be gathered and recorded to answer the asked questions • Know how to classify and present data by using drawings; using simple scientific language; drawing bar charts; labelling a diagram using lines to connect information to the diagram; how to use a coloured key; how to draw a neat table; how to draw a classification key • Classify and present data in a variety of ways to help answer questions • Know – with structured guidance – how to write up a simple scientific enquiry including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion 	
Conclude and Explain	<ul style="list-style-type: none"> • Report on findings of enquiries <i>using oral and written explanations</i>, displays or presentations of results and conclusions • Draw a conclusion based on the relationship between the independent and the dependent variable (the ‘er’ rule) • Use scientific evidence to answer questions or to support findings • <i>Use results to draw simple conclusions</i> • Identify differences, similarities or changes related to simple scientific ideas and processes • Know that scientific enquiries are limited by the accuracy of measurements and how conditions vary • Know that repeating enquiries, measurements and keeping conditions consistent can make outcomes more accurate 	

Y4	National Curriculum	Sticky Knowledge	Vocabulary
Animals, including Humans	<ul style="list-style-type: none"> Be able to describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their functions Construct and interpret a variety of food chains, identifying producers, predators and prey 	<ul style="list-style-type: none"> Identify and know the different types of human teeth Know the jobs done by the different types of teeth Identify and know the functions of the organs in the human digestive system Know that blood takes nutrients around the body. Be able to use, construct and explain food chains to identify producers, consumers, predators and prey 	herbivore, carnivore, omnivore, predator, prey, consumer, producer, digestive system, tongue, mouth, teeth, oesophagus, stomach, small intestine, large intestine, tooth, canine, incisor, molar, premolar
Living things and their habitats	<ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Recognise that environments can change and that this can sometimes pose danger to living things. 	<ul style="list-style-type: none"> Use classification keys to group, identify and name living things Know that changes to environments can sometimes pose dangers to living things Know that humans can positively (conservation) and negatively (population, development deforestation) affect the environment 	Environment, habitats, flowering, nonflowering, plants, animals, vertebrates, fish, birds, amphibians, reptiles, mammals, invertebrate, snails, slugs, worms, spiders, insects, human impact, nature reserves, deforestation.
States of Matter	<ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases. Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	<ul style="list-style-type: none"> Know that materials can be divided into solids, liquids and gases Know the temperature at which materials change state Know the part played by evaporation and condensation in the water cycle 	solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, condense, evaporation, water vapour, energy, precipitation, collection, water cycle
Sound	<ul style="list-style-type: none"> Know how sound is made associating some of them with vibrating Know what happens to a sound as it travels from its source to our ears Know the correlation between pitch and the object producing a sound Know the correlation between the volume of a sound and the strength of the vibrations that produced it. Know how sound travels from a source to our ears. Recognise that sounds get fainter as the distance from the sound source increases 	<ul style="list-style-type: none"> Know that sound is a type of energy and is produced when an object vibrates Know how sound travels from a source to our ears Know the correlation between pitch and the object producing a sound Know the correlation between the volume of a sound and the strength of the vibrations that produced it Know what happens to a sound as it travels away from its source 	amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave
Electricity	<ul style="list-style-type: none"> Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its 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 the circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators, and associate metals with being good conductors. Know the difference between a conductor and an insulator; giving examples of each and associate metals with being good conductors 	<ul style="list-style-type: none"> Know that a source of electricity (mains or battery) is needed for electrical devices to work Know that a complete circuit is needed for electricity to flow and devices to work Identify and name the components in a series circuit Know the function of a switch Know that some materials allow electricity to flow easily and these are called conductors Know that some materials don't allow electricity to flow easily and these are called insulators 	Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component.

Working Scientifically

National Curriculum End of Upper Key Stage 2 (Y5 & Y6) expectations:

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 a 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

Y5 Overview	Justify conclusions using scientific evidence. Know how to independently write a simple scientific enquiry write up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion	
	Learning Intentions	Vocabulary
Plan	<ul style="list-style-type: none"> • Know that scientific enquiry is framed by asking relevant questions and using different types of scientific enquiry to answer them • Ask relevant questions and use different types of scientific enquiry to answer including recognising and controlling variables where necessary • Understand that fair testing means changing one variable at a time (independent variable) and one thing that may change, that is measured (the dependant variable) 	<i>Investigate, measure, predict, conclude, label, prediction, measurement, enquiry, dependent variable, independent variable, fair test, present, similar, differences, diagram, key, chart, evidence relationship, controls, component, effect, interpret, justify, cause & effect</i>
Investigate	<ul style="list-style-type: none"> • Observe closely, systematically and carefully using simple equipment where appropriate, taking accurate measurements using standard units, using a range of equipment including thermometers and data loggers • Use scientific equipment with increasing accuracy and precision, taking repeat readings when appropriate • Know that scientific enquiries are limited by the accuracy of measurements and how conditions vary • Know that repeating enquiries, measurements and keeping conditions consistent can make outcomes more accurate 	
Record	<ul style="list-style-type: none"> • Know that in order to answer asked questions, data needs to be gathered and recorded and that this can be classified and presented in a variety of ways: recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, to help answer questions • Record findings with increasing complexity using scientific diagrams and labels, classification keys, scatter graphs, bar and line graphs • Know how to independently write up a simple scientific enquiry including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion 	
Conclude and Explain	<ul style="list-style-type: none"> • Use results to draw conclusions, suggest improvements and raise further questions • Know that conclusions from scientific enquiries can lead to further questions and be able to plan for these • Use test results to make predictions to set up further comparative and fair tests • Use straightforward scientific evidence to answer questions or to support findings • Justify their conclusions using scientific evidence • Report on findings from enquiries using oral and written forms, displays or presentations of results and conclusions • Use conclusions, causal relationships and explanations of and degree of trust in results to report on findings • Draw a conclusion based on the relationship between the independent and the dependent variable (the 'er' rule) 	

Y5	National Curriculum	Sticky Knowledge	Vocabulary
Animals, including Humans	<ul style="list-style-type: none"> Be able to describe the changes as humans develop to old age 	<ul style="list-style-type: none"> Create a timeline to indicate stages of growth in humans Know that puberty is a process which prepares our bodies for being adults and reproduction Hormones control these changes which can be physical and/or emotional Humans reproduce sexually where offspring inherit information from both parents 	foetus, embryo, womb, gestation, baby, toddler, teenager, elderly, growth, development, puberty, hormone, physical, emotional, adolescent, adult
Living things and their habitats	<ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals 	<ul style="list-style-type: none"> Know the life cycle of different living things – mammal, amphibian, insect and bird Know the process of reproduction in plants Know the process of reproduction of plants and animals in the local environment 	reproduction, sexual, asexual, pollination, dispersal, reproduction, cell, fertilisation, pollination, male, female, pregnancy, young, mammal, metamorphosis, amphibian, insect, egg, embryo, bird, plant
Properties and Changes in Materials	<ul style="list-style-type: none"> Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Use knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including wood, metals and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda 	<ul style="list-style-type: none"> Compare and group materials based on their properties (hardness, solubility, transparency, conductivity and response to magnets) Know and explain how a material dissolves to form a solution Know and show how to recover a substance from a solution Know and demonstrate how some materials can be separated (filtering, sieving and evaporating) Know and demonstrate that some changes are/are reversible Know how some changes result in the formation of a new material and that this is usually irreversible 	Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection, hardness, solubility, transparency, conductivity, magnetic, filter, evaporation, dissolving, mixing material, conductor, dissolve, insoluble, suspension, chemical, physical, irreversible, solution, reversible, separate, mixture, insulator, transparent, flexible, permeable, soluble, property, magnetic, hard.
Forces	<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 and the impact of gravity on our lives. Identify the effects of air resistance, water resistance and friction, which act between moving surfaces. Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. 	<ul style="list-style-type: none"> Know what gravity is and how it impacts on our lives Know how friction stops or slows moving objects Identify and know the effect of air and water resistance Know that some objects/animal are streamlined to minimise the effects of air/water resistance Know that some objects require large forces to make them move; gears, pulleys and levers can reduce the force to make things move 	air resistance, water resistance, friction, gravity, Newton, gears, pulleys, force, push, pull, opposing, streamline, brake, mechanism, lever, cog, machine, pulley
Earth and Space	<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 Describe the Sun, Earth and Moon as approximately spherical bodies Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky 	<ul style="list-style-type: none"> Know about and explain the movement of the Earth and other planets in our solar system relative to the Sun Know about and explain the movement of the Moon relative to the Earth Know how day and night are created Describe the Sun, Earth and Moon (use the term spherical 	Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation, waxing, waning, crescent, gibbous. Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, planets, solar system, day, night, rotate, orbit, axis, spherical.

Working Scientifically

National Curriculum End of Upper Key Stage 2 (Y5 & Y6) expectations:

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 a 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

Y6 Overview	Overview and revision of all previously taught material to apply a higher level of understanding to planning, investigation, recording and concluding	
	Learning Intentions	Vocabulary
Plan	<ul style="list-style-type: none"> • Know that scientific enquiry is framed by asking relevant questions and using different types of scientific enquiry to answer them • Ask relevant questions and use different types of scientific enquiry to answer including recognising and controlling variables where necessary • Understand that fair testing means changing one variable at a time (independent variable) and one thing that may change, that is measured (the dependant variable) • Know how to choose appropriate variables to test a hypothesis • Know examples of instances where scientific evidence has been used to support or contest ideas or arguments • Know that a theory is an explanation of observations that has been tested to some extent • Know that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry 	<i>Investigate, measure, predict, conclude, label, prediction, measurement, enquiry, dependent variable, independent variable, fair test, present, similar, differences, diagram, key, chart, evidence relationship, controls, component, effect, interpret, justify, cause & effect theory, hypothesis, repeatable, causal relationships</i>
Investigate	<ul style="list-style-type: none"> • Observe closely, systematically and carefully using simple equipment where appropriate, taking accurate measurements using standard units, using a range of equipment including thermometers and data loggers • Use scientific equipment with increasing accuracy and precision, taking repeat readings when appropriate • Know that scientific enquiries are limited by the accuracy of measurements and how conditions vary • Know that repeating enquiries, measurements and keeping conditions consistent can make outcomes more accurate • Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognising the relative accuracy of each device • Know how and when to repeat measurements • Know how to find an average of a set of measurements and how to recognise and remove outliers from a set of data, justifying the removal as a potential mis-measurement 	
Record	<ul style="list-style-type: none"> • Know that in order to answer asked questions, data needs to be gathered and recorded and that this can be classified and presented in a variety of ways: recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, to help answer questions • Record findings with increasing complexity using scientific diagrams and labels, classification keys, scatter graphs, bar and line graphs • Know how to independently write up a simple scientific enquiry including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion • Include areas of improvement and further research questions to investigate 	
Conclude and Explain	<ul style="list-style-type: none"> • Use results to draw conclusions, suggest improvements and raise further questions • Know that conclusions from scientific enquiries can lead to further questions and be able to plan for these • Use test results to make predictions to set up further comparative and fair tests • Use straightforward scientific evidence to answer questions or to support findings • Justify their conclusions using scientific evidence • Report on findings from enquiries using oral and written forms, displays or presentations of results and conclusions • Use conclusions, causal relationships and explanations of and degree of trust in results to report on findings • Draw a conclusion based on the relationship between the independent and the dependent variable (the 'er' rule) • Know how to present brief oral findings from an enquiry, speaking clearly and with confidence, using notes where necessary • Know how to identify conditions that were imperfectly controlled and can explain how these might affect results 	

Y6	National Curriculum	Sticky Knowledge	Vocabulary
Animals, including Humans	<ul style="list-style-type: none"> Identify and name the main parts of the human circulator 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 	<ul style="list-style-type: none"> Identify and name the main parts of the human circulatory system Know the function of the heart, blood vessels and blood Know the impact of diet, exercise, drugs and lifestyle on health Know the ways in which nutrients and water are transported in animals, including humans 	animals, artery, blood, blood vessels, circulatory system, damaged, deoxygenated, diet, digestive system, drugs, exercise, functions, harm, health, heart, human, impact, internal organs, lifestyle, muscular system, nutrients, oxygenated, respiration, skeletal system, substances, transported, valve, veins, water
Living things and their habitats	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Organisms best suited to their environment are more likely to survive long enough to reproduce Give reasons for classifying plants and animals in a specific way 	amphibians, animals, bacteria, birds, characteristics, classification system, classified, differences, fish, groups, habitats, insects, invertebrates, key, living things, mammals, micro-organisms, organisms, plants, reptiles, similarities, snails, spiders, subdivided, variation, vertebrates, worms
Evolution and Inheritance	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Know how the Earth and living things have changed over time Know how fossils can be used to find out about the past Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) Know how plants and animals are adapted to suit their environment Link adaptation over time to evolution Know about evolution and explain what it is 	fossils, adaptation, evolution, characteristics, reproduction, genetics, variation, inherited, environmental, mutation, competition, survival of the fittest, evidence
Light	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Know that light travels in straight lines Know that animals see light sources when light travels from the source into the eye Know that animals see objects when light is reflected off that object and enters their eyes Know why shadows have the same shape as the object that cast them 	Light source, dark, reflect, ray, mirror, bounce, visible, beam, sun, glare, travel, straight, opaque, shadow, block, transparent, translucent, Reflect, absorb, emitted, scattered, refraction
Electricity	<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 	<ul style="list-style-type: none"> Draw circuit diagrams using correct symbols: lamp, wire, buzzer, cell, battery, motor, switch (open), switch (closed) Know that a circuit needs to be complete for it to work ie a series circuit will not work if a lamp is broken or a wire disconnected Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer 	Electricity, neutrons, protons, electrons, nucleus, atom, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, conductor.