



## HAWKESLEY CHURCH PRIMARY ACADEMY

### Progression of Knowledge Science

Working Scientifically	EYFS <a href="http://www.hawkesley.bham.sch.uk/Early-Years/">http://www.hawkesley.bham.sch.uk/Early-Years/</a>	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
<b>Ask Questions and Predict</b>	Explore the natural world around them, making observations and drawing pictures of animals and plants.  Know some similarities and differences between the world around them and contrasting environments, drawing on their experiences and what has been read in class.	Ask simple questions when prompted.	<b>Ask simple questions.</b>	Ask relevant questions when prompted.	<b>Ask relevant questions.</b>			
<b>Plan</b>		Suggest ways of answering a question.	<b>Recognise that questions can be answered in different ways.</b>	Use different types of scientific enquiry to answer their questions.	<b>Use different types of scientific enquiries to answer their questions.</b>	Plan different types of scientific enquiries to answer questions. With prompting, recognise and control variables where necessary.	<b>Plan different types of scientific enquiries to answer questions. Recognise and control variables where necessary.</b>	
<b>Set Up and Perform a Test</b>		Conduct simple tests, with support.	<b>Perform simple tests.</b>	Set up simple and practical enquiries, comparative and fair tests with some support.	<b>Set up simple and practical enquiries, comparative and fair tests.</b>			
<b>Observe and Measure</b>		Make relevant observations using simple equipment.	<b>Observe closely, using simple equipment.</b>	Make systematic and careful observations, using simple equipment. Use standard units when taking measurements.	<b>Make systematic and careful observations using a range of equipment, including thermometers and data loggers. Take accurate measurements using standard units, where appropriate.</b>	Select, with prompting, and take appropriate equipment to take readings. Take precise measurements using standard units. Begin to understand the need for repeat readings.	<b>Use a range of scientific equipment to take measurements. Take measurements with increasing accuracy and precision. Take repeat readings when appropriate.</b>	
<b>Record</b>		Understand some important process and changes in the natural world around them including the seasons and changing states of matter.	Gather and record data. Identify and classify, with guidance.	<b>Gather and record data to help answer questions. Identify and classify.</b>	With modelling and guidance gather, record, classify and present data in a variety of ways to help to answer questions. With prompting, use various ways of recording, grouping and displaying evidence and suggest how findings may be tabulated.	<b>Gather, record, classify and present data in a variety of ways to help to answer questions. Record findings using simple scientific language, drawings and labelled diagrams. Record findings using keys, bar charts and tables.</b>	Take and process repeat readings. Record data and results. Record data using labelled diagrams, keys, tables and charts. Use line graphs to record data.	<b>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar charts and line graphs.</b>
<b>Conclude</b>		Recognise findings. Use their observations and ideas to suggest answers to simple questions.	<b>Use their observations and ideas to suggest answers to simple questions.</b>	With prompting, suggest conclusions from enquiries. Suggest possible improvements or further questions to investigate.	<b>Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to</b>	Suggest further comparative or fair tests. Report and present findings from enquiries, including conclusions and, with	<b>Identify scientific evidence that has been used to support or refute ideas or arguments. Use test results to make predictions to set up</b>	

					answer questions or to support their findings. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	prompting, suggest casual relationships.	further comparative and fair tests. Report and present findings from enquiries, including conclusions and casual relationships.
<b>Report</b>			<b>Record and communicate their findings in a range of ways and begin to use simple scientific language.</b>	Suggest how findings could be reported.	<b>Report on findings from enquiries, including oral and written explanations, of results and conclusions. Report on findings from enquiries using displays or presentations.</b>	With support, present findings from enquiries orally and in writing.	<b>Report and present findings from enquiries in oral and written forms such as displays and other presentation. report and present findings from enquiries, including explanations of, and degree of, trust in results.</b>
<b>Vocabulary</b>		Questions, answers, equipment, gather, measure, record, results, sort, group, test, explore, observe, compare, describe, similar/ities, different/ces, beaker, pipette, syringe.	Previous vocabulary, plus: Observe changes over time, notice patterns, secondary sources, hand lenses, egg timers, identify, classify, data.	Previous vocabulary, plus: Scientific enquiry changes over time, notice patterns, secondary sources, comparative tests, fair tests	Previous vocabulary, plus: Enquiry types, increase, decrease, identify, classify, order, notice patterns, relationships, appearance, present results, data loggers.	Previous vocabulary, plus: Notice patterns, relationships, independent variable, dependent variable, controlled variable, accuracy, precision, degree of trust, classification keys, scatter graphs, line graphs, casual relationships, support/refute, data loggers.	Previous vocab, plus opinion/fact, confidently name scientific enquiry types.

<b>Animals. including humans</b>	<b>Early Learning Goals</b>	Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the world around them and contrasting environments, drawing on their experiences and what has been read in class.					
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	
<b>Curriculum Coverage</b>	Pupils should be taught to: - 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	Pupils should be taught to: - notice that animals, including humans, have offspring which grow into adults - find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	Pupils should be taught to: - identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat - identify that humans and some other animals have skeletons and muscles for	Pupils should be taught 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 simple functions - construct and interpret a variety of food chains,	Pupils should be taught to: - describe the changes as humans develop to old age. - describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird (Y5 – Living things and their habitats) - describe the life processes of reproduction in some plants and animals (Y5 –	Pupils should be taught to: - identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood - recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function	

	<p>common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>	<p>- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>support, protection and movement.</p>	<p>identifying producers, predators and prey.</p>	<p>Living things and their habitats)</p>	<p>- describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals (Y6 – Living things and their habitats)</p> <p>- give reasons for classifying plants and animals based on specific characteristics (Y6 – Living things and their habitats)</p>
<b>Vocabulary</b>	<p>Fish, amphibians, reptiles, birds, mammals, carnivore, herbivore, omnivore, tame, wild, nocturnal</p>	<p>Carbohydrates, diet, extinct, exercise, fat, healthy, hygiene, life cycle, life span, minerals, off-spring, nutrition, protein, survival, vitamins</p>	<p>Arthropod, balanced diet, carbohydrates, carnivore, diet, fats, herbivore, invertebrate, joint, minerals, muscle, nutrition, omnivore, protein, ribcage, skeleton, spine, tendon, unbalanced diet, vertebrate, vitamins</p>	<p>Anus, canines, detritivore, digestion, food chain, incisors, intestine, large intestine, molar, oesophagus, organ, predator, pancreas, premolars, prey, rectum, salivary gland, small intestine, stomach, tongue</p>	<p>Anomalous result, brain, classification, embryo, follicles, gestation period, hormone, nerves, obese, organs, pores, puberty, reproduction, teenager, toddler</p>	<p>Artery, atrium, blood vessels, breathing rate, capillary, cardiologist, cardiovascular, circulatory system, drugs, liver, pulse rate, ultrasound, vein, ventricles, William Harvey.</p>
<b>Sticky Knowledge</b>	<p>- Know how to classify a range of animals by amphibian, reptile, mammal, fish and bird.</p> <p>- Know and classify animals by what they eat (carnivore, herbivore and omnivore).</p> <p>- Know how to sort by living and non-living things.</p> <p>- Know the name of parts of the human body that can be seen.</p>	<p>- Know the basic stages in a life cycle for animals, (including humans).</p> <p>- Know why exercise, a balanced diet and good hygiene are important for humans.</p>	<p>- Know about the importance of a nutritious, balanced diet.</p> <p>- Know how nutrients, water and oxygen are transported within animals and humans.</p> <p>- Know about the skeletal and muscular system of a human.</p>	<p>- Know what the human digestive system is, naming the main parts and describing the journey of food.</p> <p>- Names and identify the three main types of teeth in humans and explains their function.</p> <p>- Knows how to look after their own teeth and why it is important.</p> <p>- Know what a food chain is, that it always starts with a plant (a producer) and what the arrow in a food chain means.</p>	<p>- Create a timeline to indicate stages of growth in humans.</p>	<p>- Identify and name the main parts of the human circulatory system.</p> <p>- Know the function of the heart, blood vessels and blood.</p> <p>- Know the impact of diet, exercise, drugs and lifestyle on health.</p> <p>- Know the ways in which nutrients and water are transported in animals, including humans.</p>

<p><b>Beyond</b></p>	<ul style="list-style-type: none"> <li>- understand why animals are grouped</li> <li>- know that all animals can be grouped into one of six groups - fish, amphibians, reptiles, birds, mammals and invertebrates</li> <li>- know that five groups of animals - fish, amphibians, reptiles, birds and mammals are called vertebrates (i.e. have a backbone) and knows that other animals are invertebrates (i.e. do not have a backbone)</li> <li>- identify some of the similarities and differences between the animals in the five vertebrate groups, <i>e.g. all mammals produce milk, all birds have feathers</i></li> <li>- know that some vertebrates are cold blooded and some are warm blooded</li> <li>- use the terms herbivore, carnivore and omnivore correctly</li> <li>- classify an animal as being a carnivore, herbivore or omnivore by describing what it eats</li> <li>- know that herbivores are often prey for carnivores</li> <li>- identify the group that an animal belongs to by looking at its structure describes and compares the structure of less common animals</li> <li>- name more of the parts of the human body including some internal organs, <i>e.g. brain, heart, lungs, skeleton, muscles, stomach, intestines</i></li> </ul>	<ul style="list-style-type: none"> <li>- name a wider range of animals and their offspring</li> <li>- know that some animals give birth to live young, some lay eggs</li> <li>- know that different animals live (on average) different lengths of time</li> <li>- explain why an animal needs water, food and air</li> <li>- know that animals can only survive for a very short time without air</li> <li>- know the short term effects on an animal of having no water/having no food</li> <li>- know that animals need shelter</li> <li>- explain the dangers to the health of an animal that does not have its basic needs</li> <li>- talk about animals in the wild that can no longer find food/shelter i.e. extinct or endangered species</li> <li>- explain why exercise helps to keep a human healthy</li> <li>- have some knowledge of the term 'balanced diet' and know that eating some of every food type can be beneficial to health</li> <li>- know that eating too much of a particular food type can lead to a human becoming unhealthy</li> <li>- explain the effects on a human body of not having good hygiene, <i>e.g. tooth decay, upset tummy, disease</i></li> </ul>	<ul style="list-style-type: none"> <li>- name the food groups and knows the benefits to the human body of the different food groups, <i>e.g. proteins, carbohydrates</i></li> <li>- explain the effect on the human body that eating too much of a particular food/drink can have</li> <li>- know what role a dietician plays in ensuring certain humans have the correct nutrition</li> <li>- know that calorific food values are measured</li> <li>- know how many calories humans should consume in a day</li> <li>- describe or research how poor nutrition can affect our health, <i>e.g. rickets, type II diabetes, heart disease, scurvy</i></li> <li>- describes the possible effects on the human body that a deficiency in certain vitamins may have, <i>e.g. Vitamin C</i></li> <li>- construct a model of a human skeleton (or draws one) with an increasing level of accuracy</li> <li>- knows that the adult human skeleton has 206 bones</li> <li>- know that the skeleton of a human baby has more bones than an adult</li> <li>- know the correct names of many bones in the human skeleton</li> <li>- compare a human skeleton with that of another animal</li> <li>- name an animal that does not have a skeleton</li> </ul>	<ul style="list-style-type: none"> <li>- explain how the human digestive system works</li> <li>- name the other organs in the human body that are associated with digestion, <i>e.g. liver, gallbladder, pancreas</i></li> <li>- know that a child has 20 temporary teeth and an adult has 32 permanent teeth</li> <li>- know how many of each type (molars, canines and incisors) of tooth a human has</li> <li>- explain how teeth differ according to the species of animal and relates this to the animal's diet</li> <li>- know that the Sun is the ultimate and constant source of energy</li> <li>- know that new supplies of material are NOT being added to the Earth</li> <li>- use the terms herbivore, carnivore and omnivore accurately and confidently</li> <li>- use the terms producer, predator and prey accurately and confidently</li> <li>- explain why a food chain always starts with a plant (and that the plant absorbs energy from sunlight)</li> <li>- create more complex food chains including food webs</li> </ul>	<ul style="list-style-type: none"> <li>- compare the amount of bones between a baby and an adult</li> <li>- compare the cognitive skills of a human at different developmental stages</li> <li>- know that animals other than humans develop at different rates, <i>e.g. that a guinea pig can reproduce within weeks of being born</i></li> <li>- know that changes in body structure and emotions are the effect of hormones</li> <li>- know about the menopause</li> </ul>	<ul style="list-style-type: none"> <li>- know some of the additional vocabulary: veins, arteries, capillaries, chambers, valves, aorta, oxygenated/deoxygenated blood, oxygen and carbon dioxide</li> <li>- begin to explain the function of some of the above</li> <li>- begin to understand the structure of the heart, <i>e.g. valves to stop blood flowing the wrong way</i></li> <li>- draw and labels a diagram of the circulatory system</li> <li>- knows about calories and how the amount of calories different people need varies, <i>e.g. according to age, gender, lifestyle</i></li> <li>- explain how different forms of exercise develop different aspects of fitness, <i>e.g. muscular strength, aerobic, cardio-vascular fitness, flexibility</i></li> <li>- begin to understand the dangers of recreational drugs</li> <li>- describes the impact of drugs on the body in more detail, <i>e.g. how alcohol affects the liver, how tar (smoking) affects the lungs</i></li> <li>- knows that nutrients are absorbed when food passes through the small intestine</li> </ul>
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	<ul style="list-style-type: none"><li>- explain in simple terms the function of some of the human body parts</li><li>- talk about why the senses are important to humans (and other animals)</li><li>- describe what it would be like for a human if one of their senses did not function correctly, <i>e.g. loss of sight, loss of hearing</i></li></ul>		<ul style="list-style-type: none"><li>- use the terms vertebrate and invertebrate correctly to describe animals with/without a backbone</li><li>- know that muscles are attached to bones by tendons</li><li>- describe how muscles work in pairs</li></ul>			
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<b>Living things and their habitats</b>	<b>Early Learning Goals</b>	Explore the natural world around them, making observations and drawing pictures of animals and plants.				
		Know some similarities and differences between the world around them and contrasting environments, drawing on their experiences and what has been read in class.				
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
<b>Curriculum Coverage</b>	<ul style="list-style-type: none"> <li>- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Y1 – Plants)</li> <li>- identify and describe the basic structure of a variety of common flowering plants, including trees (Y1 – Plants)</li> <li>- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (Y1 – Animals including humans)</li> <li>- identify and name a variety of common animals that are carnivores, herbivores and omnivores (Y1 - Animals including humans)</li> <li>- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) (Y1 – Animals including humans)</li> <li>- observe changes across the four seasons (Y1 – Seasonal change)</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>- 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</li> <li>- identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</li> <li>- notice that animals, including humans, have offspring which grows into adults (Y2 – Animals including humans)</li> </ul>	<ul style="list-style-type: none"> <li>- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal (Y3 – Plants)</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- recognise that living things can be grouped in a variety of ways</li> <li>- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>- recognise that environments can change and that this can sometimes pose dangers to living things</li> <li>- construct and interpret a variety of food chains, identifying producers, predators and prey (Y4 – Animals, including humans)</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>- describe the life process of reproduction in some plants and animals.</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- give reasons for classifying plants and animals based on specific characteristics</li> </ul>
<b>Vocabulary</b>		Burrow, cacti, caterpillar, desert, food chain, indigenous, habitat, microhabitat, minibeast, minerals, pond, rainforest, river, sea, species, woodland		Amphibians, arthropods, birds, classification keys, conifers, echinoderms, environment, ferns, fish, invertebrates, jellyfish, mammals, mollusc, mosses, ozone, reptiles, species, vertebrates	Amphibians, anther, bird, asexual, cell, external fertilisation, embryo, fish, fruit, germination, insect, internal fertilisation, life cycle, life span, mammals, ovary, ovule, placenta, pollen, pollination,	Algae, antennae, arachnid, arthropod, bacteria, Carl Linnaeus, classification key, crustacean, fungi, insect, invertebrate, micro-organism, myriapod, prostita, species, vertebrate

					reproduction, reptile, seed, seed dispersal, sexual, stamen, stigma, testes, womb	
<b>Sticky Knowledge</b>		<ul style="list-style-type: none"> <li>- Classify things by living, dead or never lived.</li> <li>- Know how a specific habitat provides for the specific needs of things living there (plants and animals).</li> <li>- Match living things to their habitat.</li> <li>- Name some different sources of food for animals.</li> <li>- Know about and explain a simple food chain.</li> </ul>		<ul style="list-style-type: none"> <li>- Use classification keys to group, identify and name living things.</li> <li>- Know how changes to an environment could endanger living things.</li> </ul>	<ul style="list-style-type: none"> <li>- Know the life cycle of different living things e.g. mammal, amphibian, insect and bird.</li> <li>- Know the differences between different life cycles.</li> <li>- Know the process of reproduction in plants.</li> <li>- Know the process of reproduction in animals</li> </ul>	<ul style="list-style-type: none"> <li>- Classify living things into broad groups according to observable characteristics and based on similarities and differences.</li> <li>- Know how living things have been classified.</li> <li>- Give reasons for classifying plants and animals in a specific way.</li> </ul>
<b>Beyond</b>		<ul style="list-style-type: none"> <li>- explain the typical characteristics of something that is living, something that is dead or something that has never been alive</li> <li>- is aware that living things have life processes and can name some of these</li> <li>- name some of the characteristics of an animal that help it to live in a particular habitat</li> <li>- describe what a particular animal or plant needs to survive and links this to the habitat where the animal or plant lives</li> <li>- know that plants and animals depend on their habitat in order to survive and gives examples</li> <li>- identify a more diverse range of plants and animals and knows what their habitat is like</li> <li>- use the terms herbivore, carnivore and omnivore confidently</li> </ul>		<ul style="list-style-type: none"> <li>- define the terms vertebrate and invertebrate</li> <li>- identify the characteristics of: fish, amphibians, reptiles, birds and mammals</li> <li>- group vertebrate animals into fish, amphibians, reptiles, birds and mammals</li> <li>- group invertebrate animals into snails and slugs, worms, spiders and insects</li> <li>- group plants into categories such as flowering (including grasses) and non-flowering, such as ferns and mosses</li> <li>- use a complex classification key to help group, identify and name a variety of living things</li> <li>- devise a complex classification key to help group, identify and name a variety of living things</li> <li>- describes the possible long term outcome that change may have on an environment</li> </ul>	<ul style="list-style-type: none"> <li>- compare animals within one group, <i>e.g. a variety of mammals – sheep, dolphin, elephant and human</i></li> <li>- explain why death is not usually included in a life cycle</li> <li>- know that sexual reproduction produces new varieties of the organism whereas asexual reproduction produces an exact copy of the parent</li> <li>- is aware that DNA is the ‘building block’ of life</li> </ul>	<ul style="list-style-type: none"> <li>- decide which group a variety of unfamiliar animals or plants belong to</li> <li>- identify the further subdivision of broad groups <i>e.g. invertebrates could be divided into; insects, molluscs, crustaceans, corals, arachnids, worms etc</i></li> <li>- know some of the additional vocabulary: veins, arteries, capillaries, chambers, valves, aorta, oxygenated/deoxygenated blood, oxygen and carbon dioxide</li> <li>- begin to explain the function of some of the above</li> <li>- begin to understand the structure of the heart, <i>e.g. valves to stop blood flowing the wrong way</i></li> <li>- draw and labels a diagram of the circulatory system</li> <li>- know about calories and how the amount of calories different people need varies, <i>e.g. according to age, gender, lifestyle</i></li> </ul>

		<ul style="list-style-type: none"><li>- explain (in simple terms) why a food chain always starts with a plant</li><li>- create more complex food chains</li><li>- know that the arrow in a food chain means 'gives energy to'</li></ul>		<ul style="list-style-type: none"><li>- describes ways in which human and natural impact to an environment can be prevented or lessened</li><li>- explain how some 'natural changes' to the environment are possibly due to human activity</li></ul>		<ul style="list-style-type: none"><li>- explain how different forms of exercise develop different aspects of fitness, <i>e.g. muscular strength, aerobic, cardio-vascular fitness, flexibility</i></li><li>- begin to understand the dangers of recreational drugs</li><li>- describe the impact of drugs on the body in more detail, <i>e.g. how alcohol affects the liver, how tar (smoking) affects the lungs</i></li><li>- know that nutrients are absorbed when food passes through the small intestine</li></ul>
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Plants	Early Learning Goals	Explore the natural world around them, making observations and drawing pictures of animals and plants.				
		Know some similarities and differences between the world around them and contrasting environments, drawing on their experiences and what has been read in class.				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Curriculum Coverage	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>- identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- observe and describe how seeds and bulbs grow into mature plants</li> <li>- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</li> <li>- identify and name a variety of plants and animals in their habitats, including microhabitats (Y2 – Living things and their habitats)</li> </ul>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</li> <li>- investigate the way in which water is transported within plants</li> <li>- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>	<ul style="list-style-type: none"> <li>- recognise that living things can be grouped in a variety of ways (Y4 – Living things and their habitats)</li> <li>- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (Y4 – Living things and their habitats)</li> <li>- Recognise that environments can change and that this can sometimes pose dangers to living things (Y4 – Living things and their habitats)</li> </ul>	<ul style="list-style-type: none"> <li>- describe the life processes of reproduction in some plants and animals (Y5 – Living things and their habitats)</li> </ul>	<ul style="list-style-type: none"> <li>- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals (Y6 – Living things and their habitats)</li> <li>- Give reasons for classifying plants and animals based on specific characteristics (Y6 – Living things and their habitats)</li> </ul>
Vocabulary	Blossom, branches, buds, bulb, conifer, deciduous, environment, evergreen, fern, flower, fruit, leaf, moss, petals, root, seed, stem, trunk, vegetable, wild plant.	Blossom, bud, bulb, deciduous, evergreen, germination, greenhouse, habitat, oxygen, probe, roots, seed, stem, temperature, thermometer, trunk, tuber, woodland	Anther, extinct, flower, fruit, nectar, nutrient, ovary, ovule, petal, pollen, pollination, roots, seed, seed dispersal, soil, stem, stigma, style, stamen			
Sticky Knowledge	<ul style="list-style-type: none"> <li>- Know and name a variety of common wild and garden plants.</li> <li>- Know and name the petals, stem, leaves and root of a plant.</li> <li>- Know and name the roots, trunk, branches and leaves of a tree.</li> </ul>	<ul style="list-style-type: none"> <li>- Know and explain how seeds and bulbs grow into plants.</li> <li>- Know what plants need in order to grow and stay healthy (water, light and suitable temperature).</li> </ul>	<ul style="list-style-type: none"> <li>- Know how water is transported within plants.</li> <li>- Know the plant life cycle, especially the importance of flowers.</li> </ul>			
Beyond	<ul style="list-style-type: none"> <li>- identify a large variety of common wild and garden plants including deciduous and evergreen trees</li> </ul>	<ul style="list-style-type: none"> <li>- know that mature plants have seeds and that the seeds will make more plants</li> </ul>	<ul style="list-style-type: none"> <li>- name and know the functions of other parts of a plant, e.g. pips, seeds,</li> </ul>			

	<ul style="list-style-type: none"> <li>- explain the difference between a deciduous and an evergreen tree (i.e. states that the leaves fall from a deciduous tree in autumn)</li> <li>- sort and/or group common plants and trees and can justify their groupings</li> <li>- match flowers or fruits to plants or trees</li> <li>- explain in simple terms what each part of the plant does</li> <li>- name other parts of a plant, <i>e.g. seeds, stones, stamens, petals, stigma</i></li> <li>- know that some plants bear fruit</li> <li>- names a variety of plants/fruits that we can eat</li> <li>- research where on a plant its edible part grows</li> </ul>	<ul style="list-style-type: none"> <li>- know that bulbs make more bulbs i.e. they multiply</li> <li>- identify a variety of plants which grow from bulbs, <i>e.g. daffodil, tulip, snowdrop, crocus</i> and a variety that grow from seeds, <i>e.g. lettuce, grass, radish</i></li> <li>- explain why it is important to have healthy plants, <i>e.g. better fruit crops</i></li> <li>- raise own questions for an investigation about further conditions affecting plant growth, <i>e.g. effect of plant food on plant growth</i></li> </ul>	<p><i>stones, stamens, petals, stigma</i></p> <ul style="list-style-type: none"> <li>- know that plants can reproduce in different ways, <i>e.g. sexual and asexual</i></li> <li>- recognises the different needs of plants according to the habitat where they grow, <i>e.g. plants in the desert, plants in the rain forest</i></li> <li>- know that xylem transports water and nutrients from the roots to the leaves</li> <li>- know that phloem transports food from leaves to the rest of the plant</li> <li>- explains why a plant withers</li> <li>- explain why a plants leaves start to go brown or the leaves/roots rot</li> <li>- name and know the functions of other parts of a plant, <i>e.g. stones, stamens, stigma</i></li> <li>- know that seeds dispersed into the right conditions for growth stand a better chance of survival, <i>e.g. not too many seeds in the same place</i></li> <li>-describes a greater variety of ways in which seeds are dispersed</li> <li>- describes more unusual methods of seed dispersal, <i>e.g. some native plants of Australia and South Africa have seedpods that open as a result of the heat from bush fires</i></li> </ul>			
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Seasonal change	Early Learning Goals	Understand some important process and changes in the natural world around them including the seasons and changing states of matter.				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Curriculum Coverage</b>	Pupils should be taught to: - observe changes across the four seasons - observe and describe weather associated with the seasons and how day length varies		- recognise that light from the sun can be dangerous and that there are ways to protect their eyes (Y3 – Light)		- use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky (Y5 – Earth and space)	
<b>Vocabulary</b>	Autumn, compass, deciduous, fall, shadow, spring, summer, temperature, thermometer, weather, weather symbol, winter					
<b>Sticky Knowledge</b>	- Name the seasons - Know about the type of weather in each season.					
<b>Beyond</b>	- name and correctly orders the four seasons - know that certain plants and animals respond to seasonal change, <i>e.g. some birds migrate, some animals hibernate</i> - describe the effect that the changing seasons has on their own life, <i>e.g. can play outside longer in summer</i> - describe typical weather and temperature in Great Britain associated with each of the seasons - know that the weather in another country, at the same time of the year may be very different to the weather in Great Britain - know that the length of the day (hours of daylight), in another country at the same time of the year, may be very different to the length of a day in Great Britain					

	<ul style="list-style-type: none"><li>- describe how the length of the day (hours of daylight) changes from season to season</li><li>- say which months are associated with each season</li></ul>					
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Materials (including rocks) and States of Matter	Early Learning Goals					
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Curriculum Coverage	<p><b>Everyday Materials</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- distinguish between an object and the material from which it is made</li> <li>- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>- describe the simple physical properties of a variety of everyday materials</li> <li>- compare and group together a variety of everyday materials on the basis of their simple physical properties.</li> </ul>	<p><b>Uses of Everyday Materials</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> </ul>	<p><b>Rocks</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>- describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>- recognise that soils are made from rocks and organic matter.</li> <li>- notice that some forces need contact between two objects, but magnetic forces can act at a distance (Y3 – Forces and magnets)</li> </ul>	<p><b>States of Matter</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- compare and group materials together, according to whether they are solids, liquids or gases</li> <li>- observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</li> <li>- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul>	<p><b>Properties and Changes of Materials</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- 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</li> <li>- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>- demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</li> </ul>	<p>- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago (Y6 – Evolution and inheritance)</p>

<b>Vocabulary</b>	Absorbent, bendy, flexible, foil, gas, liquid, materials, metal, opaque, plastic, prediction, shiny, stiff, stretch, translucent, transparent, waterproof, wood	Bending, Charles Macintosh, John Dunlop, John McAdam, material, metal, plastic, squashing, stretching, twisting, wood	Arthropod, crystal, fossil, humus, igneous rock, metamorphic rock, organic matter, palaeontologist, sedimentary rock, soil, weathering	Condensation, data logger, evaporation, freezing point, gas, liquid, melting point, precipitation, solid, temperature, thermometer, water cycle, water vapour	Atom, chemical, conductivity, dissolve, evaporation, filter, insoluble, irreversible change, melt, molecule, particle, reversible change, sieve, separate, soluble, solute, solution, solvent, transparency	
<b>Sticky Knowledge</b>	<ul style="list-style-type: none"> <li>- Know the name of the materials an object is made of.</li> <li>- Know about the properties of everyday materials.</li> </ul>	<ul style="list-style-type: none"> <li>- Know how materials can be changed by squashing, bending, twisting and stretching.</li> <li>- Know why a material might or might not be used for a specific job.</li> </ul>	<ul style="list-style-type: none"> <li>- Compare and group rocks based upon their appearance and physical properties, giving reasons.</li> <li>- Know how soil is made and how fossils are formed.</li> <li>- Know about and explain the difference between sedimentary, metamorphic and igneous rock.</li> </ul>	<ul style="list-style-type: none"> <li>- Know the temperature at which materials change state.</li> <li>- Group materials based on their state of matter (solid, liquid or gas).</li> <li>- Know about and explore how some materials can change state.</li> <li>- Know the part played by evaporation and condensation in the water cycle.</li> </ul>	<ul style="list-style-type: none"> <li>- Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets.</li> <li>- Know and explain how a material dissolves to form a solution.</li> <li>- Know and show how to recover a substance from a solution.</li> <li>- Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating).</li> <li>- Know and demonstrate that some changes are reversible and some are not.</li> <li>- Know how some changes result in the formation of a new material and that this is usually irreversible.</li> </ul>	
<b>Beyond</b>	<ul style="list-style-type: none"> <li>- names objects that, <i>e.g. metal</i> could be used to make</li> <li>- say that an item is made of metal but also identifies the metal, <i>e.g. a gold ring, copper wire (or any other types of common materials)</i></li> <li>- use more complex adjectives to describe materials, <i>e.g. absorbent,</i></li> </ul>	<ul style="list-style-type: none"> <li>- recognise that some items can be made from a variety of different materials, <i>e.g. a spoon can be made from either wood, metal or plastic.</i></li> <li>- compare two (or more) materials and explains which they think would be best to make, <i>e.g. a chair</i></li> </ul>	<ul style="list-style-type: none"> <li>- compare and groups different kinds of rock based on appearance and properties using the correct scientific language to describe the properties, <i>e.g. permeable/ impermeable</i></li> <li>- compare and groups different kinds of rock based on their knowledge of how the rock was formed</li> </ul>	<ul style="list-style-type: none"> <li>- know that materials are made up of particles and explains (in simple terms) how the particles are arranged differently in each</li> <li>- observe, compare and sort more complex materials as solids, liquids or gases, <i>e.g. shaving foam, sponge, talcum powder, jelly</i></li> </ul>	<ul style="list-style-type: none"> <li>- know that certain groups of materials have particular properties but that these are not generic to the whole group, <i>e.g. although materials that are magnetic are metals, not all metals are magnetic</i></li> <li>- know that a solution can become saturated when too much solute is added</li> </ul>	

	<p><i>transparent, opaque, flexible</i></p> <ul style="list-style-type: none"> <li>- devise and explain their own method of grouping materials based on simple physical properties</li> <li>- sort a collection of objects using more than one physical property of the material it is made from, <i>e.g. smooth and shiny, rough and hard</i></li> </ul>	<ul style="list-style-type: none"> <li>- know that it is difficult to change the shape of many solid objects and can name a selection of these, <i>e.g. a metal bar, a coin, a wooden table, a glass marble</i></li> </ul>	<p>compares and groups different kinds of rock based on their knowledge of the names of the different kinds of rock</p> <ul style="list-style-type: none"> <li>- describe in detail how a fossil is formed when a living thing is trapped in rock - including the chemical reactions that turn the sediment into rock and the bones into mineralised fossils</li> <li>- recognise that there is more than one way a fossil can be formed</li> <li>- know that only a very small proportion of things that have once been alive become fossils</li> <li>- describe how soil is formed</li> <li>- recognise that soil will be different according to the geographical area in which it is found</li> <li>- know that the nutrients contained within the remains of living things are slowly being released into the soil</li> <li>- describe the difference between topsoil and subsoil</li> </ul>	<ul style="list-style-type: none"> <li>- know that temperature can affect the state in which a material exists</li> <li>- describe the effect of temperature on a range of different materials</li> <li>- recognise that some changes of state are reversible and some are not</li> <li>- know that the water we drink today is the same water that people drank in the past</li> <li>- use correct terminology to explain concepts, <i>e.g. the 'steam' on the windows is condensation</i></li> <li>- know that evaporation and condensation are reversible changes</li> </ul>	<ul style="list-style-type: none"> <li>- know some of the additional vocabulary, <i>e.g. solvent and solute</i></li> <li>- is aware that some materials do not dissolve and form a mixture (emulsion), <i>e.g. oil droplets in water</i></li> <li>- can separate a mixture of three or more materials that requires separation in order, <i>e.g. sand, salt and lentils using knowledge of solubility and evaporation</i></li> <li>- recognises that materials are suitable for a purpose due to a combination of their properties, although one property may be dominant, <i>e.g. glass is used in most windows but not just because it is transparent!</i></li> <li>- offer alternative suggestions for the use of a material, based on knowledge of properties discovered during testing</li> <li>- give further examples of reversible change and talk about their application</li> <li>- recognise that during some irreversible changes heat is produced, <i>e.g. when mixing plaster of Paris</i></li> <li>- give further examples of irreversible change and talk about their application, <i>e.g. reaction of yeast when making bread</i></li> </ul>	
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Light and sound	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Curriculum Coverage</b>			<p><b>Light</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- recognise that they need light in order to see things and that dark is the absence of light</li> <li>- notice that light is reflected from surfaces</li> <li>- recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>- recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> <li>- find patterns in the way that the size of shadows change.</li> </ul>	<p><b>Sound</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- identify how sounds are made, associating some of them with something vibrating</li> <li>- recognise that vibrations from sounds travel through a medium to the ear</li> <li>- find patterns between the pitch of a sound and features of the object that produced it</li> <li>- find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>- recognise that sounds get fainter as the distance from the sound source increases</li> </ul>		<p><b>Light</b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>- recognise that light appears to travel in straight lines</li> <li>- 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</li> <li>- 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</li> <li>- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</li> </ul>
<b>Vocabulary</b>			Concave mirror, convex mirror, image, incident ray, light beam, light ray, light source, opaque, reflected ray, reflection, shadows	Ear protectors, frequency, inner ear, insulation, middle ear, outer ear, percussion instrument, pitch, sound wave, stringed instrument, tines, tuning fork, vibration, volume, wind instrument		Angle of incidence, angle of reflection, concave, convex, cornea, filters, iris, lens, light source, light wave, opaque, pupil, reflection, refraction, retina, spectrum, translucent, transparent
<b>Sticky Knowledge</b>			<ul style="list-style-type: none"> <li>- Know that dark is the absence of light.</li> <li>- Know that light is needed in order to see and is reflected from a surface.</li> <li>- Know and demonstrate how a shadow is formed and explain how a shadow changes shape.</li> <li>- Know about the danger of direct sunlight and describe how to keep protected.</li> </ul>	<ul style="list-style-type: none"> <li>- Know how sound is made, associating some of them with vibrating.</li> <li>- Know how sounds travel from a source to our ears.</li> <li>- Know the correlation between pitch and the object producing a sound.</li> <li>- Know the correlation between the volume of a sound and the strength of the vibrations that produced it.</li> <li>- Know what happens to a sound as it travels away from its source.</li> </ul>		<ul style="list-style-type: none"> <li>- Know how light travels.</li> <li>- Know and demonstrate how we see objects.</li> <li>- Know why shadows have the same shape as the object that casts them.</li> <li>- Know how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.</li> </ul>



<p><b>Beyond</b></p>			<ul style="list-style-type: none"> <li>- explain why animals, including humans, are unable to see when it is completely dark</li> <li>- explain that we see objects because light reflected from the object enters our eyes</li> <li>- understand that some surfaces are better than others at reflecting light and can give examples of how this information could be used in everyday life</li> <li>- understand that light can be absorbed in different ways by different coloured materials and how this information can be used in everyday life</li> <li>- is beginning to observe that water and other liquids can change the path of light (refraction)</li> <li>- know that light is scattered off objects</li> <li>- know that light travels in straight lines</li> <li>- know that the darkness of a shadow can vary depending upon whether the object blocking the light is opaque, translucent or transparent</li> <li>- know that the position, shape and size of a shadow depends upon the position of the object in relation to the light source</li> <li>- explain how shadows move when the object causing the shadow moves</li> <li>- explain why shadows vary in length according to the time of day</li> <li>- explains why shadows vary in length according to the time of the year</li> </ul>	<ul style="list-style-type: none"> <li>- demonstrate and explain how sound is made, using scientific vocabulary including vibration, conduct, sound wave and material</li> <li>- explain that without air, we would not hear any sound, <i>e.g. in outer space</i></li> <li>- know that we hear because the outer ear collects the sounds and carries them to the eardrum</li> <li>- explain the relationship between pitch and the feature of the object, <i>e.g. the thinner the guitar string the higher the pitch of the note</i></li> <li>- explain the relationship between volume and the strength of the action used to make a sound</li> <li>- know that as volume increases, the size of the vibrations increases</li> <li>- explain why the volume of the sound heard changes depending on the distance from the sound source</li> </ul>		<ul style="list-style-type: none"> <li>- explain how a pinhole camera works</li> <li>- explain, using diagrams, how light travels through a series of reflections then into your eye, such as viewing the back of your head using mirrors when at the hairdressers</li> <li>- predict, using accurate drawings, how shadows formed by different objects might change when the direction or brightness of the light changes</li> <li>knows that the size of a shadow depends not only on the size of the object casting the shadow but also on the position of the light source</li> </ul>
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			- explain the difference between a reflection and a shadow			
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Forces and magnets	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Curriculum Coverage</b>			Pupils should be taught to: <ul style="list-style-type: none"> <li>- compare how things move on different surfaces</li> <li>- notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>- observe how magnets attract or repel each other and attract some materials and not others</li> <li>- 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</li> <li>- describe magnets as having two poles</li> <li>- predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>		Pupils should be taught to: <ul style="list-style-type: none"> <li>- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>- identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> </ul>	
<b>Vocabulary</b>			Attract, contact force, force, friction, magnet, magnetic material, magnetic north pole, magnetic south pole, metal, non-contact force, non-magnetic material, repel, sliding friction, static friction		Acceleration, air resistance, element, force meter, friction, gears, gravity, levers, newton, parachutes, pulley, sliding friction, static friction, streamlined, water resistance, weight	
<b>Sticky Knowledge</b>			<ul style="list-style-type: none"> <li>- Know about and describe how objects move on different surfaces.</li> <li>- Know how some forces require contact and some do not, giving examples.</li> <li>- Know about and explain how magnets attract and repel, predicting whether magnets will attract or repel and giving a reason.</li> </ul>		<ul style="list-style-type: none"> <li>- Know what gravity is and its impact on our lives.</li> <li>- Identify and know the effect of air and water resistance.</li> <li>- Identify and know the effect of friction.</li> <li>- Explain how levers, pulleys and gears allow a smaller force to have a greater effect.</li> </ul>	

			<ul style="list-style-type: none"> <li>- Name some magnetic and non-magnetic materials.</li> </ul>			
<b>Beyond</b>			<ul style="list-style-type: none"> <li>- explain the differences in distance or speed that an object travels over different surfaces, using the term friction</li> <li>- give examples of how magnetic forces acting at a distance are used in everyday life, <i>e.g. the fastener on a mobile phone case</i></li> <li>- explore how magnets, other than bar magnets, attract and repel each other</li> <li>- name a metal which is magnetic</li> <li>- names a metal which is not magnetic</li> <li>- describe why the poles of a magnet are called north and south</li> </ul>		<ul style="list-style-type: none"> <li>- know that most forces usually occur in pairs</li> <li>- know that all objects 'pull' other things to themselves but heavier objects have a bigger 'pull'</li> <li>- know that falling objects increase their speed as they fall because their weight (the force of gravity) pulls them to Earth</li> <li>- explain that gravity acts upon mass and gives objects weight</li> <li>- know that all objects free fall at the same rate of acceleration regardless of their mass</li> <li>- explain why supported objects do not fall to the ground and refers to balanced forces</li> <li>- compare and contrast gravity on different planets</li> <li>- know that whilst there is no air in space there is gravity (keeping the planets in orbit)</li> <li>- talk about objects as having a 'centre of gravity' and can demonstrate this by balancing, <i>e.g. a ruler on their finger</i></li> <li>- know that when friction occurs, energy is lost to the surroundings as heat</li> <li>- know that friction can generate static electricity</li> <li>- talk about friction in everyday life and says whether the friction is helpful or unhelpful</li> </ul>	

					<ul style="list-style-type: none"><li>- know that levers, pulleys and gears are simple machines</li><li>- gives more everyday examples of gears, pulleys and levers and explains their purpose</li></ul>	
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Electricity	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Curriculum Coverage</b>				Pupils should be taught to: <ul style="list-style-type: none"> <li>- identify common appliances that run on electricity</li> <li>- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>- 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</li> <li>- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit - -</li> <li>- recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul>		Pupils should be taught to: <ul style="list-style-type: none"> <li>- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>- 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</li> <li>- use recognised symbols when representing a simple circuit in a diagram.</li> </ul>
<b>Vocabulary</b>				Appliance, battery, buzzer, cell, circuit, component, conductor, current electricity, insulator, negative terminal, positive terminal, socket, static electricity, switch, terminal, voltage		Atom, battery, cell, circuit, component, conductor, current electricity, electron, fuses, generator, insulator, negative terminal, positive terminal, series circuit, socket, parallel circuit, resistance, terminal, Thomas Edison, turbine, voltage
<b>Sticky Knowledge</b>				<ul style="list-style-type: none"> <li>- Identify and name appliances that require electricity to function.</li> <li>- Construct a series circuit.</li> <li>- Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers).</li> </ul>		<ul style="list-style-type: none"> <li>- Compare and give reasons for why components work and do not work in a circuit.</li> <li>- Draw circuit diagrams using symbols.</li> <li>- Know how the number and voltage of cells in a circuit links to the</li> </ul>

				<ul style="list-style-type: none"> <li>- Predict and test whether a lamp will light within a circuit.</li> <li>- Know the function of a switch.</li> <li>- Know the difference between a conductor and an insulator; giving examples of each.</li> </ul>		<p>brightness of a lamp or the volume of a buzzer.</p>
<b>Beyond</b>				<ul style="list-style-type: none"> <li>- design a simple series circuit to work within a model, <i>e.g. a torch/lighthouse</i></li> <li>- recognise that if the circuit is complete, there may be other reasons as to why the bulb will not light, <i>e.g. the battery is flat, the bulb has blown</i></li> <li>- recognise that switches exist in many appliances</li> <li>- understand why a switch is needed</li> <li>- explain how a switch works</li> <li>- explain why electrical wires are encased in plastic</li> <li>- know that all metals are conductors but that some conduct electricity better than others</li> <li>- know what a 'short circuit' is</li> <li>- explain why electricity is dangerous</li> <li>- know why water and electricity are a dangerous combination</li> <li>- explain why there are no sockets/switches in a (UK) bathroom</li> </ul>		<ul style="list-style-type: none"> <li>- know the difference between current and voltage</li> <li>- know that voltage tells us how much a battery pushes the current</li> <li>- know that a cell pushes the current round the circuit and through <i>e.g. the lamps</i></li> <li>- know that current is a measure of how much electric charge flows through a circuit</li> <li>- explain that the more <i>e.g. lamps (bulbs)</i> there are, the harder it is for the current to flow because there is more resistance in the circuit</li> <li>- know that resistance tells us how difficult it is for the current to flow</li> <li>- explain how a component in a parallel circuit can keep working when another component is removed or damaged</li> <li>- know that when additional lamps (bulbs) are added to a parallel circuit the brightness of the lamps (bulbs) will not be any dimmer</li> <li>- use recognised symbols to draw a representation of a more complicated circuit, <i>e.g. a parallel circuit</i></li> </ul>

							<p>- know (and correctly use in a circuit representation) the recognised symbols for components other than those in a simple circuit <i>e.g.</i> a resistor, a LED</p>
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Earth and space	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Curriculum Coverage</b>					Pupils should be taught to: <ul style="list-style-type: none"> <li>- describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>- describe the movement of the Moon relative to the Earth</li> <li>- describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> </ul>	
<b>Vocabulary</b>					Astronomer, axis, constellation, crescent moon, eclipse, element, galaxy, gibbous moon, lunar, moon, orbit, planet, rotation, solar System, space probe, spherical, star, universe	
<b>Sticky Knowledge</b>					<ul style="list-style-type: none"> <li>- Know about and explain the movement of the Earth and other planets relative to the Sun.</li> <li>- Know about and explain the movement of the Moon in relation to the Earth.</li> <li>- Know and demonstrate how night and day are created.</li> <li>- Describe the Sun, Earth and Moon (using the term spherical).</li> </ul>	
<b>Beyond</b>					<ul style="list-style-type: none"> <li>- know that the planets take a different amount of time to orbit the Sun</li> <li>- know that planets orbiting the Sun travel at different speeds</li> </ul>	

					<ul style="list-style-type: none"><li>- know how long it takes planets in the solar system to orbit the Sun (other than Earth)</li><li>- describe the conditions on the planets</li><li>- explain an eclipse – lunar or solar</li><li>- explain what a leap year is</li><li>- describe the Moon as Earth's natural satellite</li><li>- know that although the Moon rotates on its own axis we only see one face of the Moon from Earth, because the Moon's rotational period is exactly the same as its orbital period</li><li>- know about the phases of the Moon</li><li>- know that planets other than Earth have moons</li><li>- describe the Earth and the Moon as spheroid (almost spherical) whereas the Sun is very nearly a perfect sphere</li><li>- know that although the Sun, Earth and Moon are all approximately spherical in shape, they are very different in size</li><li>- know that the Sun, the Moon, the planets, and the stars all (appear to) rise in the east and set in the west because Earth spins toward the east, in an anticlockwise direction</li><li>- describe the difference between geocentric and heliocentric models of the solar system</li></ul>	
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Evolution and inheritance	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Curriculum Coverage						Pupils should be taught to: <ul style="list-style-type: none"> <li>- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> </ul>
Vocabulary						Adaptations, Alfred Wallace, artificial selection, characteristics, Charles Darwin, chromosomes, evolution, fossils, genes, inheritance, Mary Anning, natural selection, off-spring, palaeontologist
Sticky Knowledge						<ul style="list-style-type: none"> <li>- Know how the Earth and living things have changed over time.</li> <li>- Know how fossils can be used to find out about the past.</li> <li>- Know about reproduction and offspring (recognising that offspring usually vary and are not identical to their parents).</li> <li>- Know how animals and plants are adapted to suit their environment.</li> <li>- Link adaptation over time to evolution.</li> </ul>

						<ul style="list-style-type: none"> <li>- Know about evolution and can explain what it is.</li> </ul>
<b>Beyond</b>						<ul style="list-style-type: none"> <li>- know that organisms can be turned into fossils in a number of ways, <i>e.g. unaltered preservation – insects trapped in amber</i></li> <li>- start to consider the ethical implications of human intervention, including cloning</li> <li>- suggest further examples of selective breeding that would be beneficial</li> <li>- recognise that selective breeding can have negative and often unpredictable side effects</li> <li>- predict how humans might evolve in the future</li> <li>- discuss how global warming might affect the evolution of plants and animals</li> <li>- talk about how non-living things have been adapted over time to become more complex and better for purpose, <i>e.g. cars, mobile phones</i></li> </ul>