



# Science Curriculum



## Topic - Step Right Up!

Year 1 - Autumn

Subject - Science - Animals including Humans / Plants



Prior Learning	In Reception, children explain what plants need to grow and plant seeds and care for growing plants. They begin to understand the key features of the life-cycle of a plant and animals. They also begin to understand the need to respect and care for the natural environment and all living things.
What Comes Next	In Year Two, the children will look at how animals grow. They will look at what living things need to reproduce in order for their species to survive.
Key Vocabulary	Leaves, flowers, blossom, petals, fruit, roots, bulb, seed, trunk, branches, deciduous, evergreen, stem, carnivore, omnivore, herbivore, fish, amphibian, reptile, bird, mammals.

Notes and Guidance	Skills	Knowledge
<p>Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted. They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem). Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example, the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.</p> <p>Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat. They should understand how to take care of animals taken from their local environment and the need to return them safely after study. Pupils should become familiar with the common names of some fish, amphibians, reptiles, birds and mammals, including those that are kept as pets. Pupils should have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes.</p> <p>Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells.</p>	<p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"><li>• Ask simple questions</li><li>• Observe closely, using simple equipment</li><li>• Identify and classify animals</li><li>• Use observations and ideas to suggest answers to questions</li></ul> <p><b>Animals including humans:</b></p> <ul style="list-style-type: none"><li>• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</li><li>• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.</li><li>• Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</li></ul> <p><b>Plants:</b></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>	<ul style="list-style-type: none"><li>• A variety of common animals including fish, amphibians, reptiles, birds and mammals</li><li>• A variety of common animals that are carnivores, herbivores and omnivores.</li><li>• The names of some fish, birds, mammals, reptiles and amphibians.</li><li>• A variety of common wild and garden plants, including deciduous and evergreen trees.</li><li>• That plants can change over time</li><li>• The basic structure of a variety of common flowering plants, including trees petals, fruit, roots, bulb, seed, trunk, branches, and stem.</li></ul>

### Enrichment

During this topic the children will experience a circus workshop this provides the children with an opportunity to learn the skills involved with activities such as scarf juggling, diabolo and plate spinning



Prior Learning	In Reception, children explore collections of materials with similar or different properties. They also learn how environments contrast and describe what they see hear and feel whilst outside.		
What Comes Next	In Year 2, children identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. They also find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		
Key Vocabulary	Properties, hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, rigid, waterproof, absorbent, opaque, transparent, Spring, Summer, Autumn, Winter		
Notes and Guidance		Skills	Knowledge
<p>Pupils should identify and discuss the uses of different everyday materials so that they become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs; wood can be used for matches, floors, and telegraph poles) or different materials are used for the same thing (spoons can be made from plastic, wood, metal, but not normally from glass). They should think about the properties of materials that make them suitable or unsuitable for particular purposes and they should be encouraged to think about unusual and creative uses for everyday materials.</p> <p>Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam.</p> <p>Pupils might work scientifically by: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.</p>		<p>Working Scientifically</p> <ul style="list-style-type: none"><li>To observe closely, using simple equipment.</li><li>To perform simple tests.</li><li>To use observations and ideas to suggest answers to questions.</li><li>To gather and record data to help in answering questions</li><li>Seasonal Changes</li><li>Observe changes across the four seasons.</li><li>Observe and describe weather associated with the seasons and how day length varies.</li></ul> <p>Everyday Materials</p> <ul style="list-style-type: none"><li>To distinguish between an object and the material from which it is made.</li><li>To identify and name everyday materials, including wood, plastic, glass, metal, water and rock.</li><li>To describe the simple physical properties of a variety of everyday materials.</li><li>To compare and group together a variety of everyday materials on the basis of their simple physical properties.</li></ul>	<p>Everyday Materials</p> <ul style="list-style-type: none"><li>The difference between hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent</li></ul>
Enrichment			
During this topic the children spend a day at Warwick Castle.			



Topic - Yum Yum

Year 1 - Summer

Subject - Science - Animals including Humans



Prior Learning	In Reception, children learn how we care for the natural world around us and study pictures of the natural world. They also learn about some plants and animals, recognise familiar plants and animals and learn the vocabulary that is needed to name specific natural features of the world.
What Comes Next	In Year Three, the children will look at the main parts of the body associated with the skeleton and muscles. They will look at different types of a body joint and how they move. They will look at how joints enable us to move and what the purpose is of both the spine and the ribcage.
Key Vocabulary	Head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth.

Notes and Guidance	Skills	Knowledge
Pupils should have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes.	<p>Working scientifically:</p> <ul style="list-style-type: none"><li>• Observe closely, using simple equipment</li><li>• Identify and classify</li></ul> <p>Animals including humans:</p> <ul style="list-style-type: none"><li>• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li></ul>	<ul style="list-style-type: none"><li>• The names of the main body parts including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth.</li><li>• That each sense is connected to an organ</li></ul>

#### Enrichment

During this topic, the children go strawberry picking; this gives them a working insight into where some of the produce used in their fruit salads comes from.



Topic – Fire and Ice  
Year 2 – Autumn



Subject – Science – Plants / Animals including Humans

Prior Learning	In Year 1, the children name a variety of common wild and garden plants, including deciduous and evergreen trees. (plants commonly found in the UK – Rose, Daisy, Cow Parsley, Poppy, Oak, Horse Chestnut, Birch, Beech, Ash, Bluebell, Bramble). They also learn that plants can change over time. In addition to this, Year 1 children learn the basic structure of a variety of common flowering plants, including trees.	
What Comes Next	In Year 3, the children learn that plants produce seeds that are dispersed in a variety of ways. In addition, the children will investigate the way in which water is transported within plants.	
Key Vocabulary	Head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth, smell, taste, sight, hearing, touch	
Notes and Guidance	Skills	Knowledge
During this term, the children will learn about different plants found in the UK. They will also learn about the conditions needed for seeds to germinate and grow effectively. The children will also study animals and observe changes over time. They will consider what humans need to survive and thrive by looking at case studies.	<p>Working Scientifically:</p> <ul style="list-style-type: none"> <li>Ask simple questions</li> <li>Observe closely, using simple equipment</li> <li>Identify and classify animals</li> <li>Use observations and ideas to suggest answers to questions</li> </ul> <p>Plants:</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> </ul> <p>Animals including Humans:</p> <ul style="list-style-type: none"> <li>Notice that animals, including humans, have offspring which grow into adults</li> <li>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul>	<p>Plants:</p> <ul style="list-style-type: none"> <li>The requirements of plants for germination, growth and survival.</li> <li>That seeds and bulbs need water to grow but most do not need light.</li> <li>That seeds and bulbs have a store of food inside them.</li> </ul> <p>Animals including Humans:</p> <ul style="list-style-type: none"> <li>That animals grow and can alter as they grow.</li> <li>What humans need in order to survive – food, shelter.</li> <li>That regular exercise enables humans to be healthy.</li> <li>That different foods have different effects on the human body. Some of the foods that are healthy and unhealthy.</li> </ul>
<p><b>Enrichment</b></p> <p>During this topic, children go on a visit to Aston Hall where they tour the hall; handle historical artefacts and complete drama and art activities based on the Great Fire of London. The fire brigade visits the children to discuss fire safety and how fire safety equipment has changed since the Great Fire of London.</p>		



Prior Learning	In Year 1, the children identify a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Including the names of animals that are commonly found in the UK or kept as pets). They also name a variety of common animals that are carnivores, herbivores and omnivores.	
What Comes Next	In Year 3, the children learn that different parts of the body have special functions. In addition to this, they learn that there are animals that do not have skeletons and can compare the animals with vertebrates.	
Key Vocabulary	Water, food, air, hygiene	
Notes and Guidance		<ul style="list-style-type: none"> <li>Skills</li> </ul>
<p>Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. They should raise and answer questions that help them to become familiar with the life processes that are common to all living things. Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'microhabitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter). They should raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals. Pupils should compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.</p> <p>Pupils might work scientifically by sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions like 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. They could construct a simple food chain that includes humans (e.g., grass, cow, human). They could describe the conditions in different habitats and microhabitats (under log, on stony path, under bushes); and find out how the conditions affect the number and type(s) of plants and animals that live there.</p>		<p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>Ask simple questions and recognise that they can be answered in different ways</li> <li>Use observations and ideas to suggest answers to questions – changes to own body during exercise</li> <li>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</li> </ul> <p><b>Living Things and their Habitats</b></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</li> <li>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> </ul>
		<ul style="list-style-type: none"> <li>Knowledge</li> </ul>
		<ul style="list-style-type: none"> <li>Living things have certain characteristics that are essential for keeping them alive and healthy.</li> <li>Children should learn the differences between a habitat and a microhabitat.</li> <li>Understand how plants in the local area provide food and shelter for animals.</li> <li>How to compare habitats in familiar and unfamiliar areas.</li> </ul>
<p><b>Enrichment</b></p> <p>During this topic, the children will visit the safari park to see the animals learnt about in class in a real-life setting.</p>		



Prior Learning	In Year 1, the children distinguish between an object and the material from which it is made. They also identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. In addition to this, the children describe the simple physical properties of a variety of everyday materials.
What Comes Next	In Year 3, the children compare and group materials together, according to whether they are solids, liquids or gases. They also 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).
Key Vocabulary	Hard, soft, durable, brittle, squashing, bending, twisting, stretching,

Notes and Guidance	Skills	Knowledge
During this term, the children will assess a range of materials and classify them according to the properties they have. They will handle examples of different objects made from the same material in order to understand how the same material can be put to a range of uses. They will also consider how material may be unsuitable for a particular purpose. Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam. Pupils will compare materials found around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs).	<p>Working scientifically:</p> <ul style="list-style-type: none"> <li>• Ask simple questions and recognising that they can be answered in different ways</li> <li>• Observe closely, using simple equipment</li> <li>• Perform simple tests</li> <li>• Identify and classifying</li> <li>• Use their observations and ideas to suggest answers to questions</li> <li>• Gather and record data to help in answering questions</li> </ul> <p>Materials</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>	<ul style="list-style-type: none"> <li>• That different materials have different properties – hard, soft, durable, brittle</li> <li>• That the same material can be used to create a wide range of items.</li> <li>• That particular materials are suitable for certain uses.</li> </ul>

#### Enrichment

During this topic, the children will visit a beach location to have first-hand experiences of some of the geographical and scientific features they have learnt about. They also spend time creating their own sand sculptures.



Prior Learning	This is the first time the children will study rocks.
What Comes Next	In Year 4, the children will look at properties and changes of materials,
Key Vocabulary	Fossil, sedimentary, igneous, porous

Notes and Guidance	Skills	Knowledge
<p>Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment. Pupils might work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils, identify similarities and differences between them, and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>Set up simple practical enquiries, comparative and fair tests</li> <li>Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>Use straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p><b>Rocks</b></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> </ul>	<ul style="list-style-type: none"> <li>That rocks can change over time.</li> <li>How to use a hand lens to analyse objects.</li> <li>That rocks may alter when they are rubbed together.</li> <li>That rocks may change when they are in water.</li> </ul>

**Enrichment**  
During this topic, the children will take part in an interactive theatre in education piece that will enhance and further the children's understanding and enjoyment of their Stone Age study.





Prior Learning	Previously, the children have identified and named a variety of common wild and garden plants and described the structure of flowering plants and trees. In Year 2, children have observed and described how seeds and bulbs grow.	
What Comes Next	Children will continue to learn about plants in 'Living Things and their Habitats' units.	
Key Vocabulary	Roots, stem, trunk, leaves, flowers, nutrients, soil, pollination, seed formation, dispersal	
Notes and Guidance	Skills	Knowledge
<p>Pupils might compare the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser. They may discover how seeds are formed by observing the different stages of plant life cycles over a period of time. They will learn how seeds are dispersed.</p> <p>They will observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>• Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>• Set up simple practical enquiries, comparative and fair tests</li> <li>• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>• Use straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p><b>Plants</b></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 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>• The types of animals that are commonly found as fossils</li> <li>• That every part of a plant exists to perform a function</li> <li>• How plants obtain nutrition</li> </ul>
<p><b>Enrichment</b></p> <p>During this topic, the children will take part in an interactive theatre in education piece that will enhance and further the children's understanding and enjoyment of their Stone Age study.</p>		



Topic – James & The Giant Peach  
Year 3 – Spring Term  
Subject – Science – Animal including Humans



Prior Learning	In Year 2, children learn the importance of exercise, eating the right amounts of different types of food and hygiene.
What Comes Next	In Year 4, children describe the simple functions of basic parts of the digestive system, the different types of human teeth and identify producers, predators and prey in a food chain.
Key Vocabulary	Nutrition, skeleton, muscle, diet, protein, carbohydrate, dairy,

Notes and Guidance	Skills	Knowledge
<p>Children will analyse a range of skeletons and identify differences. They will then identify how the differences indicate the diet of the animal. Children will then group animals depending on their diet. Children to sort animals into those with vertebrae and those without.</p> <p>Children might research different food groups and how they keep us healthy, and design meals based on what they find out.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>• Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>• Set up simple practical enquiries, comparative and fair tests</li> <li>• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>• Use straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p><b>Animals including Humans</b></p> <ul style="list-style-type: none"> <li>• Identify differences, similarities or changes related to simple scientific ideas and processes – compare how different animals move/eat based upon their skeletons.</li> <li>• Identify that animals, including humans, need the right types and amount of nutrition</li> <li>• Identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul>	<ul style="list-style-type: none"> <li>• That animals cannot make their own food and must obtain nutrition from what they eat</li> <li>• The main body parts associated with the skeleton and muscles.</li> <li>• That different parts of the body have special functions That there are animals that don't have skeletons and can compare the animals with vertebrate</li> <li>• That animals can be grouped according to what they eat</li> <li>• That there are different food groups and their names.</li> <li>• A range of foods that fit into different food groups.</li> <li>• How to create a healthy diet with an appropriate combination of food groups</li> </ul>

**Enrichment**

During this topic, the children will go on a trip to Sheepwash Farm where they learn more about the animals live there and how crops are grown and harvested on the farm.

Prior Learning	This is the first time the children will be exploring light.	
What Comes Next	In Year 6, children will recognise that light travels in straight lines, understand the reason why objects are seen and understand that shadows have the same shape as the object that cast them.	
Key Vocabulary	Reflect, opaque, transparent, translucent, shadow, surface	
Notes and Guidance	Skills	Knowledge
<p>Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.</p> <p>Note: pupils should be warned that it is not safe to look directly at the sun, even when wearing dark glasses.</p> <p>Pupils might work scientifically by: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>• Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>• Set up simple practical enquiries, comparative and fair tests</li> <li>• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>• Use straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p><b>Light</b></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</li> <li>• Recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>• Find patterns in the way that the size of shadows change</li> </ul>	<ul style="list-style-type: none"> <li>• That they are able to protect their eyes from possible damage by bright lights.</li> <li>• That different shaped objects produce different shadows</li> <li>• That the size of shadows can be changed by the proximity of the light source</li> <li>• That it is not safe to look directly into the sun.</li> <li>• That light responds differently in different surfaces.</li> </ul>
Enrichment	During this topic, the children will plan and participate in a 'Living Museum' event which parents will be invited to at the end of the topic where they will show case aspects of life during Ancient Greek times.	



Topic – Water  
Year 4 – Autumn Term  
Subject – Science - Electricity



Prior Learning	This is the first time the children have studied electricity.	
What Comes Next	In Year 6, children will associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuits and 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.	
Key Vocabulary	Electrical circuit, appliances, bulbs, switches, buzzers, series circuit, conductors, insulators	
Notes and Guidance	Skills	Knowledge
<p>Pupils could construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols. Pupils could experiment to find that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>• Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>• Set up simple practical enquiries, comparative and fair tests</li> <li>• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>• Use straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p><b>Electricity</b></p> <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 lamplights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul>	<ul style="list-style-type: none"> <li>• That electricity can be sourced from mains or cells and that electricity can have a variable output. That appliances in the home can be found using both forms of electricity and that those using low voltages can be powered by</li> <li>• That problems in ineffective circuits can be identified by trouble-shooting. Working through each variable in turn</li> <li>• That the circuits created are very similar to those found in the home.</li> <li>• Where an insulator is required, specific materials are chosen in order to best suit practical purposes e.g. the coating on electrical wires.</li> </ul>
<p><b>Enrichment</b></p> <p>During this topic, the children will go on a visit to Lunt Roman Fort to see primary sources and learn more about the Roman Empire.</p>		



Prior Learning	This is the first time the children have studied sound.
What Comes Next	The children will study light and how this travels in Year 6.
Key Vocabulary	Vibrations, dissipate, pitch, length.

Notes and Guidance	Skills	Knowledge
<p>Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways.</p> <p>Pupils might find patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>• Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>• Set up simple practical enquiries, comparative and fair tests</li> <li>• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>• Use straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p><b>Sound</b></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>	<ul style="list-style-type: none"> <li>• That vibrations can be witnessed in some instruments.</li> <li>• That different mediums (paper/wood/glass/brick) conduct sound vibrations more or less successfully.</li> <li>• That there is a connection between the size of an instrument and the pitch of sound it can produce.</li> <li>• That by playing an instrument with a greater force may produce are louder sound and vice versa.</li> <li>• That sound waves dissipate over distance.</li> </ul>

#### Enrichment

During this topic, the children will go on a visit to Lunt Roman Fort to see primary sources and learn more about the Roman Empire.



Topic – Roman Empire  
Year 4 – Spring Term  
Subject – Science – States of Matter



Prior Learning	In Year 2, the children studied the properties of solid materials and classified them according to their properties.
What Comes Next	In Year 5, the children will consider how solids, liquids and gasses can be mixed and separated. They will learn about how changes to materials can be reversible or irreversible.
Key Vocabulary	Solids, liquids, gases, evaporation, condensation, temperature, materials, water-cycle, collection, precipitation

Notes and Guidance	Skills	Knowledge
<p>Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled. Note: teachers should avoid using materials where heating is associated with chemical change, for example, through baking or burning.</p> <p>Pupils might work scientifically by grouping and classifying a variety of different materials; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice cream for a party). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>• Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>• Set up simple practical enquiries, comparative and fair tests</li> <li>• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>• Use straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p><b>States of Matter</b></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>	<ul style="list-style-type: none"> <li>• That states of matter can be described in simple terms</li> <li>• That water demonstrates all 3 states of matter in our everyday lives and can be observed</li> <li>• That changes in temperature can have an effect on a range of materials</li> <li>• That the rate of evaporation alters according to conditions, predominantly temperature.</li> </ul>

**Enrichment**

During this topic, the children will learn more about Bewdley, a local area that is prone to flooding. They will visit Bewdley Museum, located in the heart of the town it provides a fascinating insight into the history and development of the town and the lives of the people who live there.



Topic – Water  
Year 4 – Spring Term  
Subject – Science – Animals including Humans



Prior Learning	In Year 3, the children studied the skeletons of animals and separated creatures into vertebrates and invertebrates. They also identify the purpose of the skeleton and how it differs in different animals.
What Comes Next	In Year 6, the children will identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood and recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. They will also describe the ways in which nutrients and water are transported within animals, including humans.
Key Vocabulary	Digestion, incisor, molar, canine, wisdom, premolars, organs, prey, predator, consumer, producer, carnivore, herbivore, omnivore

Notes and Guidance	Skills	Knowledge
Pupils might compare the teeth of carnivores and herbivores, and suggest reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.	<p>Scientific Enquiry</p> <ul style="list-style-type: none"><li>• Ask relevant questions and use different types of scientific enquiries to answer them</li><li>• Set up simple practical enquiries, comparative and fair tests</li><li>• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li><li>• Gather, record, classify and present data in a variety of ways to help in answering questions</li><li>• Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li><li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li><li>• Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li><li>• Identify differences, similarities or changes related to simple scientific ideas and processes</li><li>• Use straightforward scientific evidence to answer questions or to support their findings.</li></ul> <p>Animals including Humans</p> <ul style="list-style-type: none"><li>• Describe the simple functions of the basic parts of the digestive system in humans</li><li>• Identify the different types of teeth in humans and their simple functions</li><li>• Construct and interpret a variety of food chains, identifying producers, predators and prey.</li></ul>	<ul style="list-style-type: none"><li>• That animals have developed teeth that match their dietary requirements.</li><li>• That teeth can be damaged by different substances</li></ul>

Enrichment

During this topic, the children will learn more about Bewdley, a local area that is prone to flooding. They will visit Bewdley Museum, located in the heart of the town it provides a fascinating insight into the history and development of the town and the lives of the people who live there.





Topic – Rainforests  
Year 4 – Summer Term  
Subject – Science



Prior Learning	In Year 3 the children identify that animals, including humans, need the right types and amount of nutrition and identify that humans and some other animals have skeletons and muscles for support, protection and movement.
What Comes Next	In Year 6 the children learn that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of Years ago. They also learn that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents and identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
Key Vocabulary	Vertebrate, invertebrate, deforestation, habitat, ecological.

Notes and Guidance	Skills	Knowledge
<p>The children might identify how the habitat changes throughout the Year. Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants. Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation. Pupils might work scientifically by using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>• Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>• Set up simple practical enquiries, comparative and fair tests</li> <li>• Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>• Gather, record, classify and present data in a variety of ways to help in answering questions</li> <li>• Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>• Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>• Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>• Use straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p><b>Living things and their Habitats</b></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 the local and wider environment.</li> <li>• Recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul>	<ul style="list-style-type: none"> <li>• That changes can be seen in the local environment throughout the Year.</li> <li>• That animals are divided into vertebrates and invertebrates</li> <li>• That environments can be damaged or preserved/enhanced by human action e.g. nature reserves, garden ponds, litter, deforestation.</li> <li>• That living things can be organised by asking questions about their properties</li> </ul>

**Enrichment**

During this topic, the children will learn more about the animals that live in the rainforest through either a trip to a wildlife park or through a workshop in school (SchoolLab). The children will also have the opportunity to go on a residential trip to Bell Heath where they will take part in a range of outdoor activities including orienteering and high ropes developing skills such as independence and resilience.





Topic – Blackheath and the Blitz  
Year 5 - Autumn Term  
Subject – Science - Animals including Humans



Prior Learning	In Year 4, the children have learnt about the simple functions of the digestive system in humans; identified the different types of teeth and their simple functions and constructed and interpreted a variety of food chains, identifying producers, predators and prey.	
What Comes Next	In Year 6, the children learn about the main parts of the circulatory system; the impact of diet, exercise and drugs on the way their bodies function and describe the ways in which nutrients and water are transported within animals including humans.	
Key Vocabulary	Growth, development, puberty, gestation, foetus, toddler, adolescent, reproduce, deteriorate	
Notes and Guidance		Skills
<p>Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty.</p> <p>Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.</p>		<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>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</li> <li>Identifying scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p><b>Animals, including Humans</b></p> <ul style="list-style-type: none"> <li>Describe the changes as humans develop to old age</li> </ul>
		<ul style="list-style-type: none"> <li>Those humans' cells reproduce less effectively as we age, (how does the skin alter during the life of a human).</li> <li>That different animals have different gestation periods</li> <li>That humans undergo significant changes during puberty</li> </ul>
<p><b>Enrichment</b></p> <p>During this topic, the children will go on a trip to RAF Cosford Museum to learn more about WW2 and the experience of being an evacuee.</p>		



## Topic – Blackheath and the Blitz

Year 5 - Autumn Term

### Subject – Science – Living things and their Habitats



Prior Learning	In Year 4, children have grouped things in a variety of ways, explore the use of classification keys to group living things in the wider environment and recognised that environments can change and that this can sometimes pose dangers to living things.	
What Comes Next	Children will continue learning in the Key Stage 3 curriculum.	
Key Vocabulary	Reproduction, mammal, reptile, amphibian, insect	
Notes and Guidance	Skills	Knowledge
<p>Pupils should study and raise questions about their local environment throughout the Year. They should observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment. They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.</p> <p>Pupils should find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.</p> <p>Pupils might work scientifically by observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.</p>	<p>Scientific Enquiry</p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p>Living Things and their Habitats</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>	<ul style="list-style-type: none"> <li>That life-cycle changes can be seen in a variety of living things such as vegetable gardens or flower borders</li> <li>That there are different types of reproduction, including sexual and asexual reproduction in plants.</li> <li>That new plants can be grown from different parts of a parent plant,</li> </ul>
<p>Enrichment</p> <p>During this topic, the children will go on a trip to RAF Cosford Museum to learn more about WW2 and the experience of being an evacuee.</p>		



Topic – Reach for the Stars  
Year 5 – Spring Term  
Subject – Science – Space



Prior Learning	This is the first time the children have learnt about Space.
What Comes Next	Children will explore the Key Stage 3 curriculum in their high school.
Key Vocabulary	Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, solar system, gravity, galaxy, orbit, planet, geocentric, heliocentric,

Notes and Guidance	Skills	Knowledge
<p>Pupils should find out about the way that ideas about the solar system have developed understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus.</p> <p>Pupils might work scientifically by: comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p><b>Space</b></p> <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>	<ul style="list-style-type: none"> <li>That the sun is a star at the centre of our solar system and that it has 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune</li> <li>That a moon is a celestial body that orbits a planet</li> <li>That it is not safe to look directly at the sun, even when wearing dark glasses.</li> <li>That the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus</li> </ul>

**Enrichment**  
During this topic, the children will go on a trip to the Space Centre in Leicester. As the UK's largest planetarium, it offers the children a first-hand experience of life under the stars.



Prior Learning	Year 3 children investigated magnets in their forces topic and compare how things move on different surfaces.
What Comes Next	Children will explore the Key Stage 3 curriculum in their high school.
Key Vocabulary	Resistance, friction, lever, pulley, spring.

Notes and Guidance	Skills	Knowledge
<p>Pupils should explore falling objects and raise questions about the effects of air resistance. They should explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall. They should experience forces that make things begin to move, get faster or slow down. Pupils should explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel.</p> <p>Pupils should explore the effects of levers, pulleys and simple machines on movement. Pupils might find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravity.</p> <p>Pupils might work scientifically by exploring falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p><b>Forces</b></p> <ul style="list-style-type: none"> <li>Explain that unsupported objects fall towards 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>	<ul style="list-style-type: none"> <li>That forces that make things begin to move, get faster or slow down</li> <li>That friction has an effect on movement and find out how it slows or stops moving objects</li> <li>That levers, pulleys and simple machines have an effect on movement</li> </ul>

**Enrichment**  
During this topic, the children will go on a trip to the Space Centre in Leicester. As the UK's largest planetarium, it offers the children a first-hand experience of life under the stars.



Prior Learning	In Year 1, children have named everyday materials and described their properties. Year 2 have compared the suitability of everyday materials for particular uses.
What Comes Next	Children will continue learning in the Key Stage 3 curriculum.
Key Vocabulary	Hardness, solubility, transparency, conductivity, solution, separate, filtering, sieving, evaporating, dissolve, reversible, irreversible, insulator.

Notes and Guidance	Skills	Knowledge
<p>Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in Year 3 and about electricity in Year 4. They should explore reversible changes; including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes.</p> <p>Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. They should find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p><b>Materials and their Properties</b></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 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.</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>	<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 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.</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>

#### Enrichment

During this topic, the children will take part in a themed day at school, where a Saxon will visit. Through character acting, questioning and role-play, the workshop immerses children in Saxon life and enhances their understanding of the time period.



Prior Learning	In Year 4, children learnt to recognise that living things can be grouped in a variety of ways. They explored and used classification keys to help group, identify and name a variety of living things in the local and wider environment. They also recognised that environments can change and that this can sometimes pose dangers to living things.
What Comes Next	Children will follow the Key Stage 3 curriculum
Key Vocabulary	Invertebrates, invertebrates, mammal, reptile, fish, insect, amphibian

Notes and Guidance	Skills	Knowledge
<p>Pupils should build on their learning about grouping living things in Year 4 by looking at the classification system in more detail. They should be introduced to the idea that broad groupings, such as microorganisms, plants and animals can be subdivided. Through direct observations where possible, they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). They should discuss reasons why living things are placed in one group and not another.</p> <p>Pupils might find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.</p> <p>Pupils might work scientifically by using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report 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</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p><b>Living Things and their Habitats</b></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 micro-organisms, plants and animals</li> <li>Give reasons for classifying plants and animals based on specific characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>That broad groupings such as micro-organisms, plants and animals can be subdivided</li> <li>That animals can be classed into vertebrates and invertebrates.</li> <li>That Carl Linnaeus, a pioneer of classification, completed that significant work.</li> <li>That classification keys can be used and systems can be used to identify some animals and plants</li> </ul>

#### Enrichment

During this topic, the children will take part in an outwards bounds activity day where problem solving in a variety of contexts is explored.



Topic – Survival of the Fittest  
Year 6 – Autumn Term  
Subject – Science – Evolution and Inheritance



Prior Learning	This is a new area of learning not found earlier in the curriculum.
What Comes Next	Children will follow the Key Stage 3 curriculum
Key Vocabulary	Classification, habitat, evolution, inheritance, adaptation.

Notes and Guidance	Skills	Knowledge
<p>Building on what they learned about fossils in the topic on rocks in Year 3, pupils should find out more about how living things on earth have changed over time. They should be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, Labradors are crossed with Poodles. They should also appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox.</p> <p>Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.</p> <p>Note: At this stage, pupils are not expected to understand how genes and chromosomes work.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report 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</li> <li>Identify scientific evidence that has been used to support or refute ideas or argument</li> </ul> <p><b>Evolution and Inheritance</b></p> <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>	<ul style="list-style-type: none"> <li>That characteristics are passed from parents to their offspring</li> <li>That, in some creatures, characteristics can be mixed when breeding</li> <li>That variation in offspring over time can make animals more or less able to survive in particular environments</li> <li>That there are advantages and disadvantages of specific adaptations, such as being on 2 feet rather than 4, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers</li> <li>That Charles Darwin and Alfred Wallace developed their ideas on evolution.</li> </ul>

**Enrichment**

During this topic, the children will take part in an outwards bounds activity day where problem solving in a variety of contexts is explored.



Prior Learning	In Year 3, pupils recognise that they need light to see and that dark is the absence of light. They notice that light is reflected from surfaces and recognise that light from the sun can be dangerous. They recognise that shadows are formed when a solid object blocks the light from a light source and find patterns in the way that the size of shadows change.
What Comes Next	Children will follow the Key Stage 3 curriculum
Key Vocabulary	Reflect, shadow, refract, source.

Notes and Guidance	Skills	Knowledge
<p>Pupils should build on the work on light in Year 3, exploring the way that light behaves, including light sources, reflection and shadows. They should talk about what happens and make predictions.</p> <p>Pupils might work scientifically by: deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report 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</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p><b>Light</b></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>	<ul style="list-style-type: none"> <li>That some objects reflect light more efficiently than others</li> <li>Some of the properties of objects that reflect light well and less well</li> <li>That the size of shadows is due to the relation of the light source to the object casting the shadow</li> </ul>

#### Enrichment

During this topic, the children will experience Chinese food and will make and eat their own Chinese banquet.





Prior Learning	In Year 4 pupils identify common electrical appliances, construct a simple series circuit and name its basic parts, identify whether or not a lamp will light in a simple series circuit and recognise that a switch opens and closes a circuit and associate this with whether or not a lamp will light.
What Comes Next	Children will explore the Key Stage 3 curriculum in their high school.
Key Vocabulary	Switches, bulbs, buzzers, motors, component, circuit,

Notes and Guidance	Skills	Knowledge
<p>Building on their work in Year 4, pupils should construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors. They should learn how to represent a simple circuit in a diagram using recognised symbols.</p> <p>Note: Pupils are expected to learn only about series circuits, not parallel circuits. Pupils should be taught to take the necessary precautions for working safely with electricity. Pupils might work scientifically by systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report 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</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p><b>Electricity</b></p> <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>	<ul style="list-style-type: none"> <li>That different components will have different effects on a circuit</li> <li>That circuits can be represented in a diagram</li> <li>That when changing a circuit, they should be changed one component at a time in order to effectively monitor differences.</li> <li>That circuits can be made and designed to mimic real-life usage</li> </ul>

#### Enrichment

During this topic, Year 6's residential trip to Plas Gwynant takes place. This provides our children with the opportunity to develop their resilience, confidence & independence, to raise aspirations and become more environmentally aware whilst taking part in a number of specially designed outward-bound activities such as canoeing, rock climbing and gorge walking.



Prior Learning	In Year 4 pupils identify common electrical appliances, construct a simple series circuit and name its basic parts, identify whether or not a lamp will light in a simple series circuit and recognise that a switch opens and closes a circuit and associate this with whether or not a lamp will light.
What Comes Next	Children will explore the Key Stage 3 curriculum in their high school.
Key Vocabulary	Heart, blood vessels, blood, diet, exercise, drugs, lifestyle, nutrient, circulatory

Notes and Guidance	Skills	Knowledge
<p>Pupils should build on their learning from Years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function.</p> <p>Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body.</p> <p>Pupils might work scientifically by exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.</p>	<p><b>Scientific Enquiry</b></p> <ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>Report 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</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p><b>Animals, including Humans</b></p> <ul style="list-style-type: none"> <li>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>Describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>	<ul style="list-style-type: none"> <li>That the human body can be damaged by drugs or lifestyle choices</li> <li>That the circulatory system enables the body to function</li> <li>That the organs of the body all perform a particular function</li> </ul>

#### Enrichment

During this topic, Year 6's residential trip to Plas Gwynant takes place. This provides our children with the opportunity to develop their resilience, confidence & independence, to raise aspirations and become more environmentally aware whilst taking part in a number of specially designed outward-bound activities such as canoeing, rock climbing and gorge walking.