




# Progression in Science




 Science	Nursery		
	Autumn	Spring	Summer
<b>Early Learning Goal</b>	Children at the expected level of development will: <ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</li> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter</li> </ul>		
<b>Disciplinary Knowledge</b>			
<b>Changes</b>	I notice changes with some adult support. I can talk about what they see, using a basic vocabulary. I show awareness of change, as I can talk about the differences between materials and changes that I notice using simple terms to describe.		
<b>Materials</b>	I can talk about materials. (Collections of the same materials, e.g., shells, leaves) I can talk about what I can see. I can explore collections of different materials with similar and different properties. I can name some common materials, e.g. sand, wood, glass, brick, clay, fabric etc with adult support.		
<b>Forces and Movement</b>	I can explore how things work. I can explore how things work, and I can talk about 'contact' forces such as pushes and pulls.		
<b>Seasonal Change</b>	I can talk about how the weather changes, and that different places/countries have different weather. I can name some types of weather, e.g. rainy, sunny, windy, snowy, cloudy and stormy. I can talk about some natural features that I see and feel during different seasons, including different weather. I can talk about the clothes that I need for different seasons/ weather and why.		
<b>Living Things - Animals</b>	I can name some animals correctly. I can use simple language to describe animals. I can examine animals to find out more about them. I use my senses to explore.		
<b>Living Things - Plants</b>	I can name some plants correctly. I can use simple language to describe plants, e.g., colour and size. I can examine plants to find out more about them. I use my senses to explore.		
<b>Living Things - Conservation</b>	I can show some awareness that living things need to be cared for and treated with respect. I understand that living things need to be cared for and treated with respect.		
<b>Sound</b>	I can talk about familiar sounds at home and school. I understand that sounds can come from a range of sources. I can identify and describe the source of a range of sounds.		
<b>Vocabulary</b>	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ear, tongue, weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length, Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through, Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud		





# Progression in Science












 Science	Reception		
	Autumn	Spring	Summer
<b>Early Learning Goal</b>	Children at the expected level of development will: <ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</li> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter</li> </ul>		
<b>Disciplinary Knowledge</b>			
<b>Changes</b>	I can name the four seasons. I can order the four seasons. I can describe about how the seasons can affect the natural world and how things grow. e.g. acorns and conkers are found in autumn and some trees have no leaves in winter. I notice and describe seasonal weather patterns. I can ask and answer 'how' and 'why' questions. I understand some important processes and changes in the natural world including the seasons.		
<b>Materials</b>	I can use the correct basic scientific vocabulary to describe parts of animals. I can explain a simple lifecycle, E.g., butterfly, chicks, or frogs. I can talk about what plants need to survive and grow healthily. I can explain where a range of animals live. Describing habitats and some microhabitats. I make close observations of animals in the natural world. I make comparisons and identify similarities and differences. I understand through books and observations that animals change, and I explain a range of lifecycles. I understand how animals grow and change. I can explore animals in the natural world, making observations and drawings of plants.		
<b>Forces and Movement</b>	I can explore 'non-contact' forces such as gravity or magnetism. I describe what I see, hear and feel whilst exploring inside and outside. I notice links between cause and effect as I explore changes such as speed, direction, shape or magnetism. I can describe and make comparisons. I understand some important processes and changes in the natural world.		
<b>Seasonal Change</b>	I can name the four seasons. I can order the four seasons. I can describe about how the seasons can affect the natural world and how things grow. e.g. acorns and conkers are found in autumn and some trees have no leaves in winter. I notice and describe seasonal weather patterns. I can ask and answer 'how' and 'why' questions. I understand some important processes and changes in the natural world including the seasons.		
<b>Living Things - Animals</b>	I can use the correct basic scientific vocabulary to describe parts of animals. I can explain a simple lifecycle, E.g., butterfly, chicks, or frogs. I can talk about what plants need to survive and grow healthily. I can explain where a range of animals live. Describing habitats and some microhabitats. I make close observations of animals in the natural world. I make comparisons and identify similarities and differences. I understand through books and observations that animals change, and I explain a range of lifecycles. I understand how animals grow and change. I can explore animals in the natural world, making observations and drawings of plants.		
<b>Living Things - Plants</b>	I can use the correct basic scientific vocabulary to describe parts of plants. I can explain a simple lifecycle, E.g., sunflower, or oak tree. I can talk about what plants need to survive and grow healthily. I can explain where some plants grow. Describing habitats and some microhabitats. I make close observations of plants in the natural world. I make comparisons and identify similarities and differences. I understand through books and observations that plants change, and I explain a range of lifecycles. I understand how plants grow and change. I can explore plants in the natural world, making observations and drawings of plants.		
<b>Living Things - Conservation</b>	I can show care and respect for living things. I can show care and respect for living things and the environment in which they live. I understand some important processes and changes in sounds in the natural.		
<b>Sound</b>	I can explore how to change sounds. I can describe changes in sounds such as loud and quiet, tempo - fast or slow. I can explain how and why sounds can be changed. I understand some important processes and changes in sounds in the natural world around them.		
<b>Vocabulary</b>	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ear, tongue, weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length, Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through, Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud		





# Progression in Science








 Science	Year One		
	Autumn	Spring	Summer
	  	 	  
<b>Substantive Knowledge</b>	<p><b>Animals Including Humans.</b></p> <ul style="list-style-type: none"> <li>- Humans have key parts in common, but these vary from person to person.</li> <li>- Humans (and other animals) find out about the world using their senses.</li> <li>- Humans have five senses – sight, touch, taste, hearing and smelling.</li> <li>- These senses are linked to particular parts of the body.</li> </ul> <p><b>Plants</b></p> <ul style="list-style-type: none"> <li>- Some trees keep their leaves all year while other trees drop their leaves during autumn and grow them again during spring.</li> <li>- Growing locally, there will be a vast array of plants which all have specific names.</li> <li>- These can be identified by looking at the key characteristics of the plant.</li> </ul> <p><b>Seasonal Changes – Autumn</b></p> <ul style="list-style-type: none"> <li>- In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again.</li> <li>- The weather also changes with the seasons.</li> <li>- In the UK, it is usually colder and rainier in winter, and hotter and dryer in the summer.</li> </ul>	<p><b>Animals, Including Humans</b></p> <ul style="list-style-type: none"> <li>- Animals vary in many ways having different structures e.g. wings, tails, ears etc. - They also have different skin coverings e.g. scales, feathers, hair.</li> <li>- These key features can be used to identify them.</li> </ul> <p><b>Seasonal Changes – Winter</b></p> <ul style="list-style-type: none"> <li>- In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again.</li> <li>- The weather also changes with the seasons.</li> <li>- In the UK, it is usually colder and rainier in winter, and hotter and dryer in the summer.</li> </ul> <p><b>Animals, Including Humans</b></p> <ul style="list-style-type: none"> <li>- Animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals.</li> </ul>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>- Plants have common parts, but they vary between the different types of plants.</li> </ul> <p><b>Seasonal Changes – Spring</b></p> <ul style="list-style-type: none"> <li>- In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again.</li> <li>- The weather also changes with the seasons.</li> <li>- In the UK, it is usually colder and rainier in winter, and hotter and dryer in the summer.</li> </ul> <p><b>Materials</b></p> <ul style="list-style-type: none"> <li>- All objects are made of one or more materials.</li> <li>- Some objects can be made from different materials e.g. plastic, metal or wooden spoons.</li> <li>- Materials can be described by their properties e.g. shiny, stretchy, rough etc.</li> <li>- Some materials e.g. plastic can be in different forms with very different properties.</li> </ul> <p><b>Seasonal Changes – Spring</b></p> <ul style="list-style-type: none"> <li>- In the UK, the day length is longest at mid-summer (about 16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again.</li> <li>- The weather also changes with the seasons.</li> <li>- In the UK, it is usually colder and rainier in winter, and hotter and dryer in the summer.</li> </ul>
<b>Disciplinary Knowledge</b>	<ul style="list-style-type: none"> <li>• ask simple questions and <b>list</b> the different ways they could be answered.</li> <li>• observe closely, using simple equipment, and <b>describe</b> what can be seen.</li> <li>• <b>perform</b> simple tests</li> <li>• <b>identify</b> objects, materials and living things.</li> <li>• use observations and ideas to <b>suggest</b> answers to questions</li> <li>• <b>gather and record</b> data to help answering questions.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>formulate simple questions</b> and <b>compare</b> the different ways they could be answered.</li> <li>• observe closely, using simple equipment, and <b>explain</b> what can be seen.</li> <li>• perform simple tests in a clear <b>sequence</b>.</li> <li>• <b>classify</b> objects, materials and living things.</li> <li>• use observations and ideas to <b>apply</b> answers to questions</li> <li>• <b>analyse</b> data to help answering questions.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>formulate simple questions</b> and <b>theorise</b> the potential answers.</li> <li>• observe closely, using simple equipment, and <b>evaluate</b> what was seen.</li> <li>• perform simple tests in a clear sequence and <b>evaluate approaches</b>.</li> <li>• <b>make a generalisation about</b> objects, materials and living things.</li> <li>• use observations and ideas to <b>reflect upon</b> answers to questions</li> <li>• <b>Evaluate</b> data after answering questions.</li> </ul>
<b>Vocabulary</b>	<p>head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ear, tongue</p> <p>Name and identify a range of animals in each group e.g. name specific birds and fish. <b>They do not need to use the terms mammal, reptiles etc. or know the key characteristics of each, although they will probably be able to identify birds and fish, based on their characteristics.</b></p> <p><b>The children also do not need to use the words carnivore, herbivore and omnivore. If they do, ensure that they understand that carnivores eat other animals, not just meat.</b></p> <p><b>Although we often use our fingers and hands to feel objects, the children should understand that we can feel with many parts of our body.</b></p> <p>weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length</p>	<p>weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length</p> <p>Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through</p>	<p>weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length</p> <p>Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud</p> <p><b>Names of trees in the local area</b></p> <p><b>Names of garden and wild flowering plants in the local area</b></p>
<b>Significant Scientific Figures</b>	Helen Keller David Attenborough Linda Brown Buck	Ole Kirk Christiansen George James Symons	Jane Colden





# Progression in Science








Year Two			
Science	Autumn	Spring	Summer
	 	 	
<b>Substantive Knowledge</b>	<p><b>Animals Including Humans</b></p> <ul style="list-style-type: none"> <li>- All animals, including humans, have the basic needs of feeding, drinking and breathing that must be satisfied in order to survive.</li> <li>- To grow into healthy adults, they also need the right amounts and types of food and exercise.</li> <li>- Good hygiene is also important in preventing infections and illnesses.</li> </ul> <p><b>Living Things and their Habitats</b></p> <ul style="list-style-type: none"> <li>- All objects are either living, dead or have never been alive.</li> <li>- Living things are plants (including seeds) and animals. Dead things include dead animals and plants and parts of plants and animals that are no longer attached e.g. leaves and twigs, shells, fur, hair and feathers (This is a simplification, but appropriate for Year 2 children.)</li> <li>- An object made of wood is classed as dead. - Objects made of rock, metal and plastic have never been alive (again ignoring that plastics are made of fossil fuels).</li> <li>- Animals and plants live in a habitat to which they are suited, which means that animals have suitable features that help them move and find food and plants have suitable features that help them to grow well.</li> <li>- The habitat provides the basic needs of the animals and plants – shelter, food and water.</li> <li>- Within a habitat there are different micro-habitats e.g. in a woodland – in the leaf litter, on the bark of trees, on the leaves.</li> <li>- These micro-habitats have different conditions e.g. light or dark, damp or dry.</li> <li>- These conditions affect which plants and animals live there.</li> <li>- The plants and animals in a habitat depend on each other for food and shelter etc.</li> <li>- The way that animals obtain their food from plants and other animals can be shown in a food chain.</li> </ul>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>- Plants may grow from either seeds or bulbs.</li> <li>- These then germinate and grow into seedlings which then continue to grow into mature plants.</li> <li>- These mature plants may have flowers which then develop into seeds, berries, fruits etc.</li> <li>- Seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates.</li> <li>- Some plants are better suited to growing in full sun and some grow better in partial or full shade.</li> <li>- Plants also need different amounts of water and space to grow well and stay healthy.</li> </ul> <p><b>Animals Including Humans</b></p> <ul style="list-style-type: none"> <li>- Animals, including humans, have offspring which grow into adults.</li> <li>- In humans and some animals, these offspring will be young, such as babies or kittens, that grow into adults.</li> <li>- In other animals, such as chickens or insects, there may be eggs laid that hatch to young or other stages which then grow to adults.</li> <li>- The young of some animals do not look like their parents e.g. tadpoles.</li> </ul>	<p><b>Everyday Materials</b></p> <ul style="list-style-type: none"> <li>- All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. For example, a water bottle is made of plastic because it is transparent allowing you to see the drink inside and waterproof so that it holds the water.</li> <li>- When choosing what to make an object from, the properties needed are compared with the properties of the possible materials, identified through simple tests and classifying activities.</li> <li>- A material can be suitable for different purposes and an object can be made of different materials.</li> <li>- Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting. For example, clay can be shaped by squashing, stretching, rolling, pressing etc. This can be a property</li> </ul>
<b>Disciplinary Concepts and Knowledge</b>	<ul style="list-style-type: none"> <li>• ask simple questions and <b>list</b> the different ways they could be answered.</li> <li>• observe closely, using simple equipment, and <b>describe</b> what can be seen.</li> <li>• <b>perform</b> simple tests</li> <li>• <b>identify</b> objects, materials and living things.</li> <li>• use observations and ideas to <b>suggest</b> answers to questions</li> <li>• <b>gather and record</b> data to help answering questions.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>formulate simple questions</b> and <b>compare</b> the different ways they could be answered.</li> <li>• observe closely, using simple equipment, and <b>explain</b> what can be seen.</li> <li>• perform simple tests in a clear <b>sequence</b>.</li> <li>• <b>classify</b> objects, materials and living things.</li> <li>• use observations and ideas to <b>apply</b> answers to questions</li> <li>• <b>analyse</b> data to help answering questions.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>formulate simple questions</b> and <b>theorise</b> the potential answers.</li> <li>• observe closely, using simple equipment, and <b>evaluate</b> what was seen.</li> <li>• perform simple tests in a clear sequence and <b>evaluate approaches</b>.</li> <li>• <b>make a generalisation about</b> objects, materials and living things.</li> <li>• use observations and ideas to <b>reflect upon</b> answers to questions</li> <li>• <b>Evaluate</b> data after answering questions.</li> </ul>
<b>Vocabulary</b>	<p>offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/hen, kitten/cat, caterpillar/butterfly), survive, survival, water food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)</p> <p>Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid</p> <p>Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching</p>	<p>living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied</p> <p>light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling</p>	<p>light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling</p>
<b>Significant Scientific Figures</b>	<p>Chris Packham John Boyd Orr Charles Macintosh Dunlop</p>	<p>David Attenborough Rachel Carson</p>	<p>Tim Smit Nicholas Grimshaw</p>





# Progression in Science










Year Three			
Science	Autumn	Spring	Summer
	 		 
<b>Substantive Knowledge</b>	<p><b>Forces and Magnets</b></p> <ul style="list-style-type: none"> <li>- A force is a push or a pull.</li> <li>- When an object moves on a surface, the texture of the surface and the object affect how it moves.</li> <li>- It may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.</li> <li>- A magnet attracts magnetic material.</li> <li>- Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic.</li> <li>- The strongest parts of a magnet are the poles.</li> <li>- Magnets have two poles – a north pole and a south pole.</li> <li>- If two like poles, e.g. two north poles, are brought together they will push away from each other – repel.</li> <li>- If two unlike poles, e.g. a north and south, are brought together they will pull together – attract.</li> <li>- For some forces to act, there must be contact e.g. a hand opening a door, the wind pushing the trees.</li> <li>- Some forces can act at a distance e.g. magnetism. The magnet does not need to touch the object that it attracts.</li> </ul> <p><b>Rocks</b></p> <ul style="list-style-type: none"> <li>- Rock is a naturally occurring material.</li> <li>- There are different types of rock e.g. sandstone, limestone, slate etc. which have different properties.</li> <li>- Rocks can be hard or soft.</li> <li>- They have different sizes of grain or crystal.</li> <li>- They may absorb water.</li> <li>- Rocks can be different shapes and sizes (stones, pebbles, boulders).</li> <li>- Soils are made up of pieces of ground down rock which may be mixed with plant and animal material (organic matter).</li> <li>- The type of rock, size of rock pieces and the amount of organic matter affect the property of the soil.</li> <li>- Some rocks contain fossils.</li> <li>- Fossils were formed millions of years ago.</li> <li>- When plants and animals died, they fell to the seabed. They became covered and squashed by other material. Over time the dissolving animal and plant matter is replaced by minerals from the water.</li> </ul>	<p><b>Animals, Including Humans</b></p> <ul style="list-style-type: none"> <li>- Animals, unlike plants which can make their own food, need to eat in order to get the nutrients they need.</li> <li>- Food contains a range of different nutrients – carbohydrates (including sugars), protein, vitamins, minerals, fats, sugars, water – and fibre that are needed by the body to stay healthy.</li> <li>- A piece of food will often provide a range of nutrients.</li> <li>- Humans, and some other animals, have skeletons and muscles which help them move and provide protection and support.</li> </ul>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>- Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom.</li> <li>- The roots absorb water and nutrients from the soil and anchor the plant in place.</li> <li>- The stem transports water and nutrients/minerals around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal.</li> <li>- The leaves use sunlight and water to produce the plant's food.</li> <li>- Some plants produce flowers which enable the plant to reproduce.</li> <li>- Pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination).</li> <li>- This forms seeds, sometimes contained in berries or fruits which are then dispersed in different ways.</li> <li>- Different plants require different conditions for germination and growth.</li> </ul> <p><b>Light</b></p> <ul style="list-style-type: none"> <li>- We see objects because our eyes can sense light.</li> <li>- Dark is the absence of light.</li> <li>- We cannot see anything in complete darkness.</li> <li>- Some objects, for example, the sun, light bulbs and candles are sources of light.</li> <li>- Objects are easier to see if there is more light.</li> <li>- Some surfaces reflect light.</li> <li>- Objects are easier to see when there is less light if they are reflective.</li> <li>- The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light.</li> <li>- Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light.</li> <li>- The size of the shadow depends on the position of the source, object and surface.</li> </ul>
<b>Disciplinary Knowledge</b>	<ul style="list-style-type: none"> <li>• <b>ask</b> relevant questions and <b>list</b> different types of scientific enquiries to answer them</li> <li>• <b>set up</b> simple practical enquiries, comparative and fair tests</li> <li>• <b>make</b> systematic and careful observations and, where appropriate, <b>take</b> measurements using standard units and a range of equipment, including thermometers and data loggers</li> <li>• <b>gather, record</b> and <b>present</b> data in a variety of ways to help in answering questions</li> <li>• <b>describe</b> findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• report on findings from enquiries, including oral and written <b>descriptions</b>, displays or presentations of results and conclusions</li> <li>• <b>list</b> results to draw simple conclusions and suggest improvements.</li> <li>• <b>identify</b> changes related to simple scientific ideas and processes</li> </ul>	<ul style="list-style-type: none"> <li>• <b>ask</b> relevant questions and <b>apply</b> different types of scientific enquiries to answer them</li> <li>• set up clearly <b>sequenced</b> practical enquiries, comparative and fair tests</li> <li>• <b>make</b> systematic and careful observations and, where appropriate, <b>take accurate</b> measurements using standard units and a range of equipment, including thermometers and data loggers</li> <li>• gather, record, <b>classify</b> and present data in a variety of ways to help in answering questions</li> <li>• <b>explain</b> findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• report on findings from enquiries, including oral and written <b>explanations</b>, displays or presentations of results and conclusions</li> <li>• <b>compare and contrast</b> results, drawing simple conclusions and suggest improvements.</li> <li>• identify changes related to simple scientific ideas and processes and <b>formulate further questions</b>.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>ask</b> relevant questions and <b>create</b> different types of scientific enquiries to answer them</li> <li>• set up clearly <b>sequenced</b> practical enquiries, comparative and fair tests.</li> <li>• <b>make</b> systematic and careful observations and, where appropriate, <b>take accurate</b> measurements using standard units and a range of equipment, including thermometers and data loggers</li> <li>• gather, record, classify and present data in a variety of ways to help <b>reflect</b> upon the answers to questions</li> <li>• <b>make generalisations</b> about findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</li> <li>• <b>discuss</b> findings from enquiries, including oral and written <b>explanations</b>, displays or presentations of results and conclusions</li> <li>• <b>evaluate</b> results, drawing simple conclusions and suggest improvements.</li> <li>• identify changes related to simple scientific ideas and processes, and <b>hypothesise</b>.</li> </ul>
<b>Vocabulary</b>	<p>Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine</p> <p>light, light source, Sun, sunlight, dangerous</p>	<p>Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole</p>	<p>rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, soil, types of soil (e.g. peaty, sandy, chalk, clay) photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport</p>
<b>Significant Scientific Figures</b>	<p>Marie Curie Adelle Davis Percy Shaw</p>	<p>Sir. Isaac Newton</p>	<p>Anjana Khatwar William Smith Joseph Banks George Washington Carver</p>





# Progression in Science








Year Four			
Science	Autumn	Spring	Summer
	 Electricity  Living things and their habitats  States of matter	 Sound  Living things and their habitats	 Animals, including humans  Living things and their habitats
<b>Substantive Knowledge</b>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>- Many household devices and appliances run on electricity.</li> <li>- Some plug in to the mains and others run on batteries.</li> <li>- An electrical circuit consists of a cell or battery connected to a component using wires.</li> <li>- If there is a break in the circuit, a loose connection or a short circuit, the component will not work.</li> <li>- A switch can be added to the circuit to turn the component on and off.</li> <li>- Metals are good conductors so they can be used as wires in a circuit.</li> <li>- Non-metallic solids are insulators except for graphite (pencil lead).</li> <li>- Water, if not completely pure, also conducts electricity.</li> </ul> <p><b>Habitats</b></p> <ul style="list-style-type: none"> <li>- These environments also change with the seasons; different living things can be found in a habitat at different times of the year.</li> </ul> <p><b>States of Matter</b></p> <ul style="list-style-type: none"> <li>- A solid keeps its shape and has a fixed volume.</li> <li>- A liquid has a fixed volume but changes in shape to fit the container.</li> <li>- A liquid can be poured and keeps a level, horizontal surface.</li> <li>- A gas fills all available space; it has no fixed shape or volume.</li> <li>- Granular and powdery solids like sand can be confused with liquids because they can be poured, but when poured they form a heap and they do not keep a level surface when tipped.</li> <li>- Each individual grain demonstrates the properties of a solid.</li> <li>- Melting is a state change from solid to liquid.</li> <li>- Freezing is a state change from liquid to solid. The freezing point of water is 0oC.</li> <li>- Boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid.</li> <li>- Water boils when it is heated to 100oC.</li> <li>- Evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid.</li> <li>- Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy.</li> <li>- Condensation is the change back from a gas to a liquid caused by cooling.</li> <li>- Water at the surface of seas, rivers etc. evaporates into water vapour (a gas).</li> <li>- This rises, cools and condenses back into a liquid forming clouds.</li> <li>- When too much water has condensed, the water droplets in the cloud get too heavy and fall back down as rain, snow, sleet etc. and drain back into rivers etc. This is known as precipitation. This is the water cycle</li> </ul>	<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>- A sound produces vibrations which travel through a medium from the source to our ears.</li> <li>- Different mediums such as solids, liquids and gases can carry sound, but sound cannot travel through a vacuum (an area empty of matter).</li> <li>- The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound.</li> <li>- The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. Therefore, sounds decrease in volume as you move away from the source.</li> <li>- A sound insulator is a material which blocks sound effectively.</li> <li>- Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.</li> </ul> <p><b>Habitats</b></p> <ul style="list-style-type: none"> <li>- These environments also change with the seasons; different living things can be found in a habitat at different times of the year.</li> </ul>	<p><b>Animals, Including Humans</b></p> <ul style="list-style-type: none"> <li>- Living things can be grouped (classified) in different ways according to their features.</li> <li>- Classification keys can be used to identify and name living things.</li> <li>- Humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing).</li> <li>- Food enters the body through the mouth.</li> <li>- Digestion starts when the teeth start to break the food down.</li> <li>- Saliva is added and the tongue rolls the food into a ball.</li> <li>- The food is swallowed and passes down the oesophagus to the stomach.</li> <li>- Here the food is broken down further by being churned around and other chemicals are added.</li> <li>- The food passes into the small intestine. Here nutrients are removed from the food and leave the digestive system to be used elsewhere in the body.</li> <li>- The rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body.</li> <li>- What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet.</li> <li>- Living things can be classified as producers, predators and prey according to their place in the food chain.</li> </ul> <p><b>Habitats</b></p> <ul style="list-style-type: none"> <li>- Living things live in a habitat which provides an environment to which they are suited (Year 2 learning).</li> <li>- These environments may change naturally e.g. through flooding, fire, earthquakes etc. Humans also cause the environment to change.</li> <li>- This can be in a good way (i.e. positive human impact, such as setting up nature reserves) or in a bad way (i.e. negative human impact, such as littering).</li> <li>- These environments also change with the seasons; different living things can be found in a habitat at different times of the year.</li> </ul>
<b>Disciplinary Knowledge</b>	<ul style="list-style-type: none"> <li>• <b>ask</b> relevant questions and <b>list</b> different types of scientific enquiries to answer them</li> <li>• <b>set up</b> simple practical enquiries, comparative and fair tests</li> <li>• <b>make</b> systematic and careful observations and, where appropriate, <b>take</b> measurements using standard units and a range of equipment, including thermometers and data loggers</li> <li>• <b>gather, record</b> and <b>present</b> data in a variety of ways to help in answering questions</li> <li>• <b>describe</b> findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• report on findings from enquiries, including oral and written <b>descriptions</b>, displays or presentations of results and conclusions</li> <li>• <b>list</b> results to draw simple conclusions and suggest improvements.</li> <li>• <b>identify</b> changes related to simple scientific ideas and processes</li> </ul>	<ul style="list-style-type: none"> <li>• <b>ask</b> relevant questions and <b>apply</b> different types of scientific enquiries to answer them</li> <li>• set up clearly <b>sequenced</b> practical enquiries, comparative and fair tests</li> <li>• <b>make</b> systematic and careful observations and, where appropriate, <b>take accurate</b> measurements using standard units and a range of equipment, including thermometers and data loggers</li> <li>• gather, record, <b>classify</b> and present data in a variety of ways to help in answering questions</li> <li>• <b>explain</b> findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>• report on findings from enquiries, including oral and written <b>explanations</b>, displays or presentations of results and conclusions</li> <li>• <b>compare and contrast</b> results, drawing simple conclusions and suggest improvements.</li> <li>• identify changes related to simple scientific ideas and processes and <b>formulate further questions</b>.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>ask</b> relevant questions and <b>create</b> different types of scientific enquiries to answer them</li> <li>• set up clearly <b>sequenced</b> practical enquiries, comparative and fair tests.</li> <li>• <b>make</b> systematic and careful observations and, where appropriate, <b>take accurate</b> measurements using standard units and a range of equipment, including thermometers and data loggers</li> <li>• gather, record, classify and present data in a variety of ways to help <b>reflect</b> upon the answers to questions</li> <li>• <b>make generalisations</b> about findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</li> <li>• <b>discuss</b> findings from enquiries, including oral and written <b>explanations</b>, displays or presentations of results and conclusions</li> <li>• <b>evaluate</b> results, drawing simple conclusions and suggest improvements.</li> <li>• identify changes related to simple scientific ideas and processes, and <b>hypothesise</b></li> </ul>
<b>Vocabulary</b>	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain	solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol N.B. Children in Year 4 do not need to use standard symbols for electrical components, as this is taught in Year 6. Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate
<b>Significant Scientific Figures</b>	Washington Sheffield	Lord Kelvin Daniel Fahrenheit Anders Celsius William Derham James West and Gerhard M. Sessler Alexander Graham Bell	Garrett Morgan Lewis Howard Latimer Thomas Edison Carl Linnaeus





# Progression in Science








Year Five			
Science	Autumn	Spring	Summer
	 		 
<b>Substantive Knowledge</b>	<p><b>Materials and Their Properties</b></p> <ul style="list-style-type: none"> <li>- Materials have different uses depending on their properties and state (liquid, solid, gas).</li> <li>- Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.</li> <li>- Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.</li> <li>- Mixtures can be separated by filtering, sieving and evaporation.</li> <li>- Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials, and these are not reversible.</li> </ul> <p><b>Forces</b></p> <ul style="list-style-type: none"> <li>- A force causes an object to start moving, stop moving, speed up, slow down or change direction.</li> <li>- Gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall.</li> <li>- Air resistance, water resistance and friction are contact forces that act between moving surfaces. The object may be moving through the air or water, or the air and water may be moving over a stationary object.</li> <li>- A mechanism is a device that allows a small force to be increased to a larger force. The pay back is that it requires a greater movement. The small force moves a long distance and the resulting large force moves a small distance, e.g. a crowbar or bottle top remover.</li> <li>- Pulleys, levers and gears are all mechanisms, also known as simple machines.</li> </ul>	<p><b>Earth and Space</b></p> <ul style="list-style-type: none"> <li>- The Sun is a star. It is at the centre of our solar system.</li> <li>- There are 8 planets (can choose to name them, but not essential). These travel around the Sun in fixed orbits.</li> <li>- Earth takes 365<math>\frac{1}{4}</math> days to complete its orbit around the Sun.</li> <li>- The Earth rotates (spins) on its axis every 24 hours.</li> <li>- As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night).</li> <li>- As the Earth rotates, the Sun appears to move across the sky.</li> <li>- The Moon orbits the Earth. It takes about 28 days to complete its orbit.</li> <li>- The Sun, Earth and Moon are approximately spherical.</li> </ul>	<p><b>Animals, Including Humans</b></p> <ul style="list-style-type: none"> <li>- As part of their life cycle, plants and animals reproduce.</li> <li>- Most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg.</li> <li>- Animals, including humans, have offspring which grow into adults.</li> <li>- In humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults.</li> <li>- In other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults.</li> <li>- Some young undergo a further change before becoming adults e.g. caterpillars to butterflies. This is called a metamorphosis.</li> <li>- Plants reproduce both sexually and asexually. Bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent. - Gardeners may force plants to reproduce asexually by taking cuttings.</li> <li>- Sexual reproduction occurs through pollination, usually involving wind or insects</li> </ul> <p><b>Living Things and Their Habitats</b></p> <ul style="list-style-type: none"> <li>- When babies are young, they grow rapidly. - They are very dependent on their parents.</li> <li>- As they develop, they learn many skills.</li> <li>- At puberty, a child's body changes and develops primary and secondary sexual characteristics.</li> <li>- This enables the adult to reproduce.</li> </ul> <p><b>This needs to be taught alongside PSHE and the new statutory requirements for relationships and health education.</b></p>
<b>Disciplinary Knowledge</b>	<ul style="list-style-type: none"> <li>- <b>plan</b> different types of scientific enquiries to answer questions.</li> <li>- <b>take</b> measurements, using a range of scientific equipment, with increasing accuracy and precision.</li> <li>- <b>record</b> data and results of increasing complexity using scientific diagrams and labels, tables, bar and line graphs.</li> <li>- <b>describe</b> test results.</li> <li>- <b>report and present</b> findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations</li> <li>- <b>identify</b> scientific evidence that has been used to support or refute ideas or arguments</li> </ul>	<ul style="list-style-type: none"> <li>- plan different types of scientific enquiries to answer questions, including <b>recognising and controlling</b> variables where necessary</li> <li>- take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking <b>repeat</b> readings, when appropriate, to <b>compare and contrast</b>.</li> <li>- record data and results of increasing complexity using scientific diagrams and labels, <b>classification keys</b>, tables, <b>scatter graphs</b>, bar and line graphs</li> <li>- <b>analyse</b> test results.</li> <li>- report and present findings from enquiries, including conclusions, <b>causal relationships and explanations</b>, in oral and written forms such as displays and other presentations</li> <li>- <b>formulate questions</b> about scientific evidence that has been used to support or refute ideas or arguments</li> </ul>	<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, to <b>make generalisations</b>.</li> <li>- <b>evaluate</b> data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>- analyse test results to <b>make predictions</b> to set up further comparative and fair tests</li> <li>- report and present findings from enquiries, including conclusions, causal relationships and explanations of and <b>evaluate</b> trust in results, in oral and written forms such as displays and other presentations</li> <li>- <b>Create theories</b> about scientific evidence that has been used to support or refute ideas or arguments</li> </ul>
<b>Vocabulary</b>	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears  Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit	Puberty – the vocabulary to describe sexual characteristics  life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers, bulbs, cuttings
<b>Significant Scientific Figures</b>	Stephanie Kwolek Spencer Silver Ruth Benerito	Archimedes Galileo Galilei Isaac Newton Orville and Wilbur Wright  Margaret Hamilton Neil deGrasse Tyson Tim Peake Mae Jemison	Virginia Apgar Robert Winston  Eva Crane Agnes Arbor





# Progression in Science



Year Six			
Science	Autumn	Spring	Summer
	 	 	
<b>Substantive Knowledge</b>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>- Adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound.</li> <li>- If you use a battery with a higher voltage, the same thing happens.</li> <li>- Adding more bulbs to a circuit will make each bulb less bright.</li> <li>- Using more motors or buzzers, each motor will spin more slowly, and each buzzer will be quieter.</li> <li>- Turning a switch off (open) breaks a circuit so the circuit is not complete, and electricity cannot flow. Any bulbs, motors or buzzers will then turn off as well.</li> <li>- use recognised circuit symbols to draw simple circuit diagrams.</li> </ul> <p><b>Animals, Including Humans</b></p> <ul style="list-style-type: none"> <li>- The heart pumps blood in the blood vessels around to the lungs. Oxygen goes into the blood and carbon dioxide is removed. The blood goes back to the heart and is then pumped around the body.</li> <li>- Nutrients, water and oxygen are transported in the blood to the muscles and other parts of the body where they are needed. As they are used, they produce carbon dioxide and other waste products.</li> <li>- Carbon dioxide is carried by the blood back to the heart and then the cycle starts again as it is transported back to the lungs to be removed from the body. This is the human circulatory system.</li> <li>- Diet, exercise, drugs and lifestyle have an impact on the way our bodies function. They can affect how well out heart and lungs work, how likely we are to suffer from conditions such as diabetes, how clearly we think, and generally how fit and well we feel.</li> <li>- Some conditions are caused by deficiencies in our diet e.g. lack of vitamins.</li> </ul> <p><b>This needs to be taught alongside PSHE and the new statutory requirements for relationships and health education.</b></p>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>- Light appears to travel in straight lines, and we see objects when light from them goes into our eyes.</li> <li>- The light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen.</li> <li>- Objects that block light (are not fully transparent) will cause shadows.</li> <li>- Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.</li> </ul> <p><b>Living Things and Their Habitats</b></p> <ul style="list-style-type: none"> <li>- Living things can be formally grouped according to characteristics.</li> <li>- Plants and animals are two main groups but there are other living things that do not fit into these groups e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms.</li> <li>- Plants can make their own food whereas animals cannot.</li> <li>- Animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates).</li> <li>- Vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals. Each group has common characteristics.</li> <li>- Invertebrates can be divided into a number of groups, including insects, spiders, snails and worms.</li> <li>- Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants.</li> </ul>	<p><b>Evolution and Inheritance</b></p> <ul style="list-style-type: none"> <li>- All living things have offspring of the same kind, as features in the offspring are inherited from the parents.</li> <li>- Due to sexual reproduction, the offspring are not identical to their parents and vary from each other.</li> <li>- Plants and animals have characteristics that make them suited (adapted) to their environment. If the environment changes rapidly, some variations of a species may not suit the new environment and will die. If the environment changes slowly, animals and plants with variations that are best suited survive in greater numbers to reproduce and pass their characteristics on to their young. Over time, these inherited characteristics become more dominant within the population. Over a very long period of time, these characteristics may be so different to how they were originally that a new species is created. This is evolution.</li> <li>- Fossils give us evidence of what lived on the Earth millions of year ago and provide evidence to support the theory of evolution.</li> <li>- More recently, scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics.</li> </ul>
<b>Disciplinary Knowledge</b>	<ul style="list-style-type: none"> <li>- <b>plan</b> different types of scientific enquiries to answer questions.</li> <li>- <b>take</b> measurements, using a range of scientific equipment, with increasing accuracy and precision.</li> <li>- <b>record</b> data and results of increasing complexity using scientific diagrams and labels, tables, bar and line graphs.</li> <li>- <b>describe</b> test results.</li> <li>- <b>report and present</b> findings from enquiries, including conclusions, in oral and written forms such as displays and other presentations</li> <li>- <b>identify</b> scientific evidence that has been used to support or refute ideas or arguments</li> </ul>	<ul style="list-style-type: none"> <li>- plan different types of scientific enquiries to answer questions, including <b>recognising and controlling</b> variables where necessary</li> <li>- take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking <b>repeat</b> readings, when appropriate, to <b>compare and contrast</b>.</li> <li>- record data and results of increasing complexity using scientific diagrams and labels, <b>classification keys</b>, tables, <b>scatter graphs</b>, bar and line graphs</li> <li>- <b>analyse</b> test results.</li> <li>- report and present findings from enquiries, including conclusions, <b>causal relationships and explanations</b>, in oral and written forms such as displays and other presentations</li> <li>- <b>formulate questions</b> about scientific evidence that has been used to support or refute ideas or arguments</li> </ul>	<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, to <b>make generalisations</b>.</li> <li>- <b>evaluate</b> data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>- analyse test results to <b>make predictions</b> to set up further comparative and fair tests</li> <li>- report and present findings from enquiries, including conclusions, causal relationships and explanations of and <b>evaluate</b> trust in results, in oral and written forms such as displays and other presentations</li> <li>- <b>Create theories</b> about scientific evidence that has been used to support or refute ideas or arguments</li> </ul>
<b>Vocabulary</b>	<p>Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle</p> <p>Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage</p> <p>N.B.Children do not need to understand what voltage is, but will use volts and voltage to describe different batteries. The words "cells" and "batteries" are now used interchangeably.</p>	<p>light, light source, Sun, sunlight, dangerous, straight lines, light rays</p> <p>vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, warm-blooded, cold-blooded, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers</p>	<p>offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils, evolve, evolution</p>
<b>Significant Scientific Figures</b>	<p>Marie Maynard Daly Dr Daniel Hale Williams Ibn al-Nafis Alessandro Volta</p> <p>William Harvey Hertha Marks Ayrton Nikola Tesla</p>	<p>Hedy Lamarr Carl Linnaeus Libbie Hymen Alexander Fleming</p>	<p>Charles Darwin Mary Leakey</p>

