



## Science Overview of Skills and Progression

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	
<b>Working Scientifically</b>		During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: <ul style="list-style-type: none"> <li>☑ asking simple questions and recognising that they can be answered in different ways</li> <li>☑ observing closely, using simple equipment</li> <li>☑ performing simple tests</li> <li>☑ identifying and classifying</li> <li>☑ using their observations and ideas to suggest answers to questions</li> <li>☑ gathering and recording data to help in answering</li> </ul>		During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: <ul style="list-style-type: none"> <li>☑ asking relevant questions and using different types of scientific enquiries to answer them</li> <li>☑ setting up simple practical enquiries, comparative and fair tests</li> <li>☑ making 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>☑ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>☑ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>☑ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>☑ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>☑ identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>☑ using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>		During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: <ul style="list-style-type: none"> <li>☑ planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>☑ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>☑ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>☑ using 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 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>		
<b>Plants</b>	<b>National Curriculum</b> a) Develop an understanding of growth. b) Shows care and concern for living things and the environment. c) Make observations of plants and explain why some things occur, and talk about changes. d) Can talk about some of the things they have observed,	<b>National Curriculum</b> a) identify and name a variety of common wild and garden plants, including deciduous and evergreen trees b) identify and describe the basic structure of a variety of common flowering plants, including trees.	<b>National Curriculum</b> a) observe and describe how seeds and bulbs grow into mature plants b) find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	<b>National Curriculum</b> a) identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers b) 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 c) investigate the way in which water is transported within plants d) explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.				
		<b>Key Learning</b> Growing locally there will be a vast array of plants which all have specific names. These can be identified by looking at the key characteristics of the plant. Plants have common parts but they vary between the different types of plants. Some trees keep their leaves all year whilst other trees drop their leaves during autumn and grow them again during spring.	<b>Key Learning</b> Plants may grow from either seeds or bulbs. These then germinate and grow into seedlings which then continue to grow into mature plants. These mature plants may have flowers which then develop into seeds, berries, fruits etc. Seeds and bulbs need to be planted outside at particular times of the year and they will germinate and grow at different rates. Some plants are better suited to growing in full sun and some grow better in partial or full shade. Plants also need different amounts of water and space to grow well and stay healthy.	<b>Key Learning</b> a) Plants make their own food in their leaves to provide them with energy, growth, repair and reproduce. b) Leaves absorb sunlight and carbon dioxide. c) Plants have roots to provide support and to draw moisture from the soil, through stems to take water to the rest of the plant. d) The plant makes its food from water and carbon dioxide, using sunlight as energy, in the green parts of plants (mainly leaves). e) Flowering plants have evolved specific parts to carry out pollination, fertilization and seed growth. f) Seed dispersal improves chances of enough seeds germinating and growing to mature. g) Seeds and bulbs need the right conditions to germinate. They contain a food store for the first stages of growth (ie until the plant is able to produce its own food).				
		<b>Key vocabulary</b> Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud. Names of trees in the local area. Names of garden and wild flowering plants in the local area.	<b>Key Vocabulary</b> As for year 1 plus - light, shade, sun, warm, cool, water, grow, healthy	<b>Key Vocabulary</b> Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal – wind dispersal, animal dispersal, water dispersal				
		<b>Outcomes</b> Can name trees and other plants that they see regularly Can describe some of the key features of these trees and plants e.g. the shape of the leaves, the colour of the flower/blossom Can point out trees which lost their leaves and those that kept them the whole year Can point to and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green.  <b>End Point:</b> To use the knowledge learnt about plants to create a simple presentation using pictures	<b>Outcomes</b> Can describe how plants that they have grown from seeds and bulbs have developed over time Can identify plants that grew well in different conditions  <b>End Point:</b> Following nurturing a seed/bulb, record knowledge and observations through a plant diary	<b>Outcomes</b> Can explain the function of the parts of a flowering plant Can describe the life cycle of flowering plants, including pollination, seed formation, seed dispersal, and germination Can give different methods of pollination and seed dispersal, including examples  <b>End Point:</b> To use knowledge learnt about plants to draw and label a diagram of their created flowering plant to show its parts, their role and the method of pollination and seed dispersal				
	<b>National Curriculum</b> a) Children should be able to	<b>National Curriculum</b> a) identify and name a variety of common	<b>National Curriculum</b> a) notice that animals, including humans, have	<b>National Curriculum</b> a) identify that animals, including humans, need	<b>National Curriculum</b> a) describe the simple functions of the basic		<b>National Curriculum</b> a) identify and name the main parts of the	



## Science Overview of Skills and Progression

<b>Animals, including Humans</b>	<p>identify different parts of their body.</p> <p>b) Have some understanding of healthy food and the need for variety in their diets.</p> <p>c) Be able to show care and concern for living things.</p> <p>d) Know the effects exercise has on their bodies.</p> <p>e) Have some understanding of growth and change.</p> <p>f) Can talk about things they have observed including animals.</p>	<p>animals including fish, amphibians, reptiles, birds and mammals</p> <p>b) identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>c) describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</p> <p>d) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p>	<p>offspring which grow into adults</p> <p>b) find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</p> <p>c) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p>	<p>the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p> <p>b) identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>parts of the digestive system in humans</p> <p>b) identify the different types of teeth in humans and their simple functions</p> <p>c) construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>a) describe the changes as humans develop to old age</p>	<p>human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>b) recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>c) describe the ways in which nutrients and water are transported within animals, including humans.</p>
		<p><b>Key Learning</b> Animals - 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. These key features can be used to identify them. Animals eat certain things - some eat other animals, some eat plants, some eat both plants and animals.</p> <p>Humans - Humans have keys parts in common, but these vary from person to person. Humans (and other animals) find out about the world using their senses. Humans have five senses – sight, touch, taste, hearing and smelling. These senses are linked to particular parts of the body.</p>	<p><b>Key Learning</b> Animals including humans have offspring which grow into adults. In humans and some animals these offspring will be young, such as babies or kittens, that grow into adults. 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. The young of some animals do not look like their parents e.g. tadpoles. All animals including humans have basic needs of feeding, drinking and breathing that must be satisfied in order to survive, and to grow into healthy adults they also need the right amounts and types of food and exercise. Good hygiene is also important in preventing infections and illnesses.</p>	<p><b>Key Learning</b> Animals, unlike plants which can make their own food, need to eat in order to get the nutrients they need. Food contains a range of different nutrients that are needed by the body to stay healthy – carbohydrates including sugars, protein, vitamins, minerals, fibre, fat, sugars, water. A piece of food will often provide a range of nutrients. Many animals have skeletons to support their bodies and protect vital organs. Muscles are connected to bones and move them when they contract. Movable joints connect bones.</p>	<p><b>Key Learning</b> Food enters the body through the mouth. Digestion starts when the teeth start to break the food down. Saliva is added and the tongue rolls the food into a ball. The food is swallowed and passes down the oesophagus to the stomach. Here the food is broken down further by being churned around and other chemicals are added. 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. The rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body. What is left is then stored in the rectum until it leaves the body through the anus when you go to the toilet. Humans have four types of teeth - incisors for cutting, canines for tearing, molars and premolars for grinding (chewing). Living things can be classified as producers, predators and prey according to their place in the food chain.</p>	<p><b>Key Learning</b> When babies are young they grow rapidly. They are very dependent on their parents. As they develop they learn many skills. At puberty, a child's body changes and develops primary and secondary sexual characteristics. This enables the adult to reproduce.</p>	<p><b>Key Learning</b> 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. 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. 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. Diet, exercise, drugs and lifestyle have an impact on the way our bodies function. They can affect how well our 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. Some conditions are caused by deficiencies in our diet e.g. lack of vitamins.</p>
		<p><b>Key vocabulary</b> Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, carnivore, herbivore, omnivore, reptiles, mammals, Senses, touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue</p>	<p><b>Key Vocabulary</b> Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta.</p>	<p><b>Key Vocabulary</b> Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints.</p>	<p><b>Key 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.</p>	<p><b>Key Vocabulary</b> Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty</p>	<p><b>Key Vocabulary</b> Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs and lifestyle</p>
		<p><b>Outcomes</b> Animals - Can name a range of animals which includes animals from each of the vertebrate groups Can describe the key features of these named animals Can label key features on a picture/diagram Can write descriptively about an animal Can write a What am I? riddle about an animal Can describe what a range of animals eat.</p> <p>Humans - Can play and lead 'Simon says'. During PE lessons, can follow instructions involving parts of the body Can label parts of the body on pictures and diagrams Can explore objects using different senses</p>	<p><b>Outcomes</b> Can describe how animals including humans have offspring which grow into adults, using the appropriate names for the stages Can state the basic needs of animals, including humans, for survival. Can state the importance for humans of exercise, eating the right amounts of different types of food and hygiene. Can name foods in each section of the Eatwell guide.</p>	<p><b>Outcomes</b> Can name the nutrients found in food  Can state that to be healthy we need to eat the right types of food to give us the correct amount of these nutrients  Can name some bones that make up their skeleton giving examples that support, help them move or provide protection  Can describe how muscles and joints help them to move.</p>	<p><b>Outcomes</b> Can sequence the main parts of the digestive system  Can draw the main parts of the digestive system onto a human outline  Can describe what happens in each part of the digestive system  Can point to the three different types of teeth in their mouth and talk about their shape and what they are used for  Can name producers, predators and prey within a habitat  Can construct food chains</p>	<p><b>Outcomes</b> Can explain the changes that takes place in boys and girls during puberty Can explain how a baby changes physically as it grows and also what it is able to do</p>	<p><b>Outcomes</b> Can draw a diagram of the circulatory system and label the parts and annotate it to show what the parts do Produces a piece of writing that demonstrates the key knowledge e.g. explanation text, job description of the heart</p>
	<p><b>End Point:</b> Using knowledge of animals, create an information sheet about an animal including its key features, needs and body parts.</p>	<p><b>End Point:</b> Show what they know about looking after a baby/animal by creating a parenting/pet owners' guide</p>	<p><b>End Point:</b> Using knowledge of food, nutrients, muscles and joints, create a poster for a supermarket giving information on the nutrients in and benefits of certain foods.</p>	<p><b>End Point:</b> In order to describe the journey of food through the body explaining what happens in each part and the importance the teeth play in the first stages of the journey, create a presentation including a labelled diagram.</p>	<p><b>End Point:</b> To indicate and explain stages in the growth and development of humans by drawing and labelling a timeline.</p>	<p><b>End Point:</b> Using the knowledge learnt about the impact of drugs and lifestyle on the body, create a health leaflet.</p>	
<b>Living things and their habitats</b>	<p><b>National Curriculum</b> Comments and questions about the place they live or the natural world.</p> <p>Shows care and concern for living things and the environment.</p> <p>Can talk about things they have observed such as plants and animals.</p> <p>Notices features of objects in their environment.</p> <p>Comments and asks</p>	<p><b>National Curriculum</b></p>	<p><b>National Curriculum</b></p> <p>a) explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>b) identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>c) identify and name a variety of plants and</p>	<p><b>National Curriculum</b></p>	<p><b>National Curriculum</b></p> <p>a) recognise that living things can be grouped in a variety of ways</p> <p>b) explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</p> <p>c) recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p><b>National Curriculum</b></p> <p>a) describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>b) describe the life process of reproduction in some plants and animals.</p>	<p><b>National Curriculum</b></p> <p>a) 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</p> <p>b) give reasons for classifying plants and animals based on specific characteristics.</p>



**Science Overview of Skills and Progression**

	questions about their familiar world.		animals in their habitats, including micro-habitats d) 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.				
		<b>Key Learning</b>	<b>Key Learning</b> All objects are either living, dead or have never been alive. 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). 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). 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. The habitat provides the basic needs of the animals and plants – shelter, food and water. 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. These micro-habitats have different conditions e.g. light or dark, damp or dry. These conditions affect what plants and animals live there. The plants and animals in a habitat depend on each other for food and shelter etc. The way that animals obtain their food from plants and other animals can be shown in a food chain.	<b>Key Learning</b>	<b>Key Learning</b> Living things can be grouped (classified) in broad groupings such as microorganisms, plants and animals according to their features. Classification keys can be used to identify and name living things.  Living things live in a habitat which provides an environment to which they are suited (year 2 learning). These environments may change naturally e.g. through flooding, fire, earthquakes etc. Humans also cause the environment to change. 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. These environments also change with the seasons; different living things can be found in a habitat at different times of the year	<b>Key Learning</b> As part of their life cycle plants and animals reproduce. Most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg. Animals including humans have offspring which grow into adults. In humans and some animals these offspring will be born live, such as babies or kittens, and then grow into adults. In other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults. Some young undergo a further change before becoming adults e.g. caterpillars to butterflies. This is called a metamorphosis. 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. Sexual reproduction occurs through pollination, usually involving wind or insects.	<b>Key Learning</b> Living things can be formally grouped according to characteristics. Plants and animals are two main groups but there are other living things that do not fit into these groups and can further be sub-divided e.g. micro-organisms such as bacteria and yeast, and toadstools and mushrooms. Plants can make their own food whereas animals cannot. Animals can be divided into two main groups – those that have backbones (vertebrates) and those that do not (invertebrates). Vertebrates can be divided into five small groups – fish, amphibians, reptiles, birds and mammals. Each group has common characteristics. Invertebrates can be divided into a number of groups including insects, spiders, snails and worms. Plants can be divided broadly into two main groups – flowering plants and non-flowering plants.
		<b>Key vocabulary</b>	<b>Key Vocabulary</b> Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, names of local habitats e.g. pond, woodland etc., names of micro-habitats e.g. under logs, in bushes etc.	<b>Key Vocabulary</b>	<b>Key Vocabulary</b> Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	<b>Key Vocabulary</b> Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings	<b>Key Vocabulary</b> Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering
		<b>Outcomes</b>	<b>Outcomes</b> Can find a range of items outside that are living, dead and never lived Can name a range of animals and plants that live in a habitat and micro-habitats that they have studied Can talk about how the features of these animals and plants make them suitable to the habitat Can talk about what the animals eat in a habitat and how the plants provide shelter for them Can construct a food chain that starts with a plant and has the arrows pointing in the correct direction	<b>Outcomes</b>	<b>Outcomes</b> Can draw the life cycle of a range of animals identifying similarities and differences between the life cycles Can explain the difference between sexual and asexual reproduction and give examples of how plants reproduce in both ways Can name living things living in a range of habitats, giving the key features that helped them to identify them Can give examples of how an environment may change both naturally and due to human impact	<b>Outcomes</b> Can draw the life cycle of a range of animals identifying similarities and differences between the life cycles Can explain the difference between sexual and asexual reproduction and give examples of how plants reproduce in both ways	<b>Outcomes</b> Can give examples of animals in the five vertebrate groups and some of the invertebrate groups Can give the key characteristics of the five vertebrate groups and some invertebrate groups Can compare the characteristics of animals in different groups Can give examples of flowering and non-flowering plants
			<b>End Point</b> Using knowledge of habitats and food chains, create a poster of an animal in its habitat, labelling whether its surroundings are living, dead or never been alive, what it eats and what it may be eaten by.		<b>End Point</b> Can present their learning about changes to the environment in different ways e.g. campaign video, persuasive letter.	<b>End Point:</b> Can present their understanding of the life cycle of a range of animals in different ways e.g. drama, pictorially, chronological reports, creating a game	<b>End Point:</b> Can use classification materials to identify unknown plants and animals/ Can create classification keys for plants and animals
Seasonal Change	<b>National Curriculum</b>	<b>National Curriculum</b> a) observe changes across the four seasons b) observe and describe weather associated with the seasons and how day length varies.	<b>National Curriculum</b>	<b>National Curriculum</b>	<b>National Curriculum</b>	<b>National Curriculum</b>	<b>National Curriculum</b>
		<b>Key Learning</b> In the UK, the day length is longest at mid-summer (about	<b>Key Learning</b>	<b>Key Learning</b>	<b>Key Learning</b>	<b>Key Learning</b>	<b>Key Learning</b>



## Science Overview of Skills and Progression

		16 hours) and gets shorter each day until mid-winter (about 8 hours) before getting longer again. The weather also changes with the seasons. In the UK, it is usually colder and rainier in Winter and hotter and dryer in the Summer. The change in weather causes many other changes; some examples are numbers of minibeasts found outside, seed and plant growth, leaves on trees and type of clothes worn by people.					
		<b>Key vocabulary</b> Weather (sunny, rainy, windy, snowy etc.), seasons (Winter, Summer, Spring, Autumn), sun, sunrise, sunset, day length	<b>Key Vocabulary</b>	<b>Key Vocabulary</b>	<b>Key Vocabulary</b>	<b>Key Vocabulary</b>	<b>Key Vocabulary</b>
		<b>Outcomes</b> Can name the four seasons and identify when in the year they occur. Can describe weather in different seasons over a year. Can describe days as being longer (in time) in the summer and shorter in the winter. Can describe other features that change through the year	<b>Outcomes</b>	<b>Outcomes</b>	<b>Outcomes</b>	<b>Outcomes</b>	<b>Outcomes</b>
		<b>End Point:</b> Demonstrate their knowledge of the seasons and weather changes in different ways e.g. making a weather forecast video, writing seasonal poetry, creating seasonal artwork					
<b>Materials</b>	<b>National Curriculum</b>	<b>National Curriculum Everyday materials</b> a) distinguish between an object and the material from which it is made b) identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock c) describe the simple physical properties of a variety of everyday materials d) compare and group together a variety of everyday materials on the basis of their simple physical properties.	<b>National Curriculum Use of everyday materials</b> a) identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses b) find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	<b>National Curriculum Rocks</b> a) compare and group together different kinds of rocks on the basis of their appearance and simple physical properties b) describe in simple terms how fossils are formed when things that have lived are trapped within rock c) recognise that soils are made from rocks and organic matter.	<b>National Curriculum States of Matter</b> a) compare and group materials together, according to whether they are solids, liquids or gases b) 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) c) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	<b>National Curriculum Properties &amp; changes of materials</b> a) compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets b) know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution c) use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating d) give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic e) demonstrate that dissolving, mixing and changes of state are reversible changes f) 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.	<b>National Curriculum</b>
		<b>Key Learning</b> All objects are made of one or more materials. Some objects can be made from different materials e.g. plastic, metal or wooden spoons. Materials can be described by their properties e.g. shiny, stretchy, rough etc. Some materials e.g. plastic can be in different forms with very different properties.	<b>Key Learning</b> 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. 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. A material can be suitable for different purposes	<b>Key Learning</b> Rock is a naturally occurring material. There are different types of rock e.g. sandstone, limestone, slate etc. which have different properties. Rocks can be hard or soft. They have different sizes of grain or crystal. They may absorb water. Rocks can be different shapes and sizes (stones, pebbles, boulders). Soils are made up of pieces of ground down rock which may be mixed with plant and animal material (organic matter). The type of rock, size of rock piece and the amount	<b>Key Learning</b> A solid keeps its shape and has a fixed volume. A liquid has a fixed volume but changes in shape to fit the container. A liquid can be poured and keeps a level, horizontal surface. A gas fills all available space; it has no fixed shape or volume. 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. Each individual grain demonstrates the properties of a solid.	<b>Key Learning</b> Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets. Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment. Mixtures can be separated by filtering, sieving and evaporation. Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes	<b>Key Learning</b>



### Science Overview of Skills and Progression

			and an object can be made of different materials. 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 of the material or depend on how the material has been processed e.g. thickness.	of organic matter affect the property of the soil. Some rocks contain fossils. Fossils were formed millions of years ago. 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.	Melting is a state change from solid to liquid. Freezing is a state change from liquid to solid. The freezing point of water is 0oC. 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. Water boils when it is heated to 100oC. 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. Evaporation happens more quickly if the temperature is higher, the liquid is spread out or it is windy. Condensation is the change back from a gas to a liquid caused by cooling. Water at the surface of seas, rivers etc. evaporates into water vapour (a gas). This rises, cools and condenses back into a liquid forming clouds. 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.	such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.	
		<b>Key vocabulary</b> 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	<b>Key Vocabulary</b> Names of materials – increased range from year 1 Properties of materials - as for year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing. Bend/bending, stretch/stretching	<b>Key Vocabulary</b> Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil	<b>Key Vocabulary</b> Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	<b>Key Vocabulary</b> Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve reversible/non-reversible change, burning, rusting, new material	<b>Key Vocabulary</b>
		<b>Outcomes</b> Can describe the properties of different materials	<b>Outcomes</b> Can name an object, say what material it is made from, identify its properties and make a link between the properties and a particular use Can label a picture or diagram of an object made from different materials For a given object can identify what properties a suitable material needs to have Whilst changing the shape of an object can describe the action used Can use the words flexible and/or stretchy to describe materials that can be changed in shape and stiff and/or rigid for those that cannot Can recognise that a material may come in different forms which have different properties	<b>Outcomes</b> Can name some types of rock and give physical features of each  Can explain how a fossil is formed  Can explain that soils are made from rocks and also contain living/dead matter	<b>Outcomes</b> Can create a concept map, including arrows linking the key vocabulary Can name properties of solids, liquids and gases Can give everyday examples of melting and freezing Can give everyday examples of evaporation and condensation Can describe the water cycle	<b>Outcomes</b> Can use understanding of properties to explain everyday uses of materials. For example, how bricks, wood, glass and metals are used in buildings Can explain what dissolving means, giving examples Can name equipment used for filtering and sieving Can use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving Can describe some simple reversible and non-reversible changes to materials, giving examples	<b>Outcomes</b>
		<b>End Points:</b> Label a picture or diagram of an object made from different materials	<b>End Point:</b> Use knowledge and experiment findings to select appropriate material for a purpose e.g. Which material is the best for a rain hat?	<b>End Point:</b> Can present in different ways their knowledge and understanding of how fossils are formed e.g. in role play, comic strip, chronological report, stop-go animation etc.	<b>End Point:</b> Using knowledge and understanding of the water cycle, write a story of a water droplet	<b>End Point:</b> Using knowledge and skills learnt about materials, explain the results from their investigations involving dissolving and non-reversible change- include knowledge about properties.	
Forces	National Curriculum	National Curriculum	National Curriculum	<b>National Curriculum Forces &amp; Magnets</b> a) compare how things move on different surfaces b) notice that some forces need contact between two objects, but magnetic forces can act at a distance c) observe how magnets attract or repel each other and attract some materials and not others d) compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials e) describe magnets as having two poles f) predict whether two magnets will attract or repel each other, depending on which poles are facing.	National Curriculum	<b>National Curriculum Forces</b> a) explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object b) identify the effects of air resistance, water resistance and friction, that act between moving surfaces c) recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	National Curriculum



**Science Overview of Skills and Progression**

		<b>Key Learning</b>	<b>Key Learning</b>	<p><b>Key Learning</b> A force is a push or a pull. When an object moves on a surface, the texture of the surface and the object affect how it moves. 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. A magnet attracts magnetic material. Iron and nickel and other materials containing these e.g. stainless steel, are magnetic. The strongest parts of a magnet are the poles. Magnets have two poles – a north pole and a south pole. If two like poles e.g. two north poles, are brought together they will push away from each other – repel. If two unlike poles e.g. a north and south, are brought together they will pull together – attract. For some forces to act there must be contact e.g. a hand opening a door, the wind pushing the trees. Some forces can act at a distance e.g. magnetism. The magnet does not need to touch the object that it attracts.</p>	<b>Key Learning</b>	<p><b>Key Learning</b> A force causes an object to start moving, stop moving, speed up, slow down or change direction. Gravity is a force that acts at a distance. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall. 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. 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. Pulleys, levers and gears are all mechanisms, also known as simple machines.</p>	<b>Key Learning</b>	
		<b>Key vocabulary</b>	<b>Key Vocabulary</b>	<p><b>Key Vocabulary</b> 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>	<b>Key Vocabulary</b>	<p><b>Key Vocabulary</b> Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears</p>	<b>Key Vocabulary</b>	
		<b>Outcomes</b>	<b>Outcomes</b>	<p><b>Outcomes</b> Can give examples of forces in everyday life Can give examples of objects moving differently on different surfaces Can name a range of types of magnets (bar, ring, button, horseshoe) and show how the poles attract and repel Can draw diagrams using arrows to show the attraction and repulsion between the poles of magnets</p>	<b>Outcomes</b>	<p><b>Outcomes</b> Can demonstrate the effect of gravity acting on an unsupported object Can give examples of friction, water resistance and air resistance Can give examples of when it is beneficial to have high or low friction, water resistance and air resistance Can demonstrate how pulleys, levers and gears work</p>	<b>Outcomes</b>	
				<p><b>End Point:</b> Using results from completed experiments, make predictions for further tests e.g. it will spin for longer on this surface than that, but not as long as it spun on that surface</p>		<p><b>End Point:</b> To demonstrate clearly the effects of using levers, pulleys and gears, draw a diagram to show these in action and the forces used.</p>		
Light	National Curriculum	National Curriculum	National Curriculum	<p><b>National Curriculum</b> a) recognise that they need light in order to see things and that dark is the absence of light b) notice that light is reflected from surfaces c) recognise that light from the sun can be dangerous and that there are ways to protect their eyes d) recognise that shadows are formed when the light from a light source is blocked by an opaque object e) find patterns in the way that the size of shadows change.</p>	National Curriculum	National Curriculum	National Curriculum	<p><b>National Curriculum</b> a) recognise that light appears to travel in straight lines b) 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 c) 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 d) use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>
		<b>Key Learning</b>	<b>Key Learning</b>	<p><b>Key Learning</b> We see objects because our eyes can sense light. Dark is the absence of light. We cannot see anything in complete darkness. Some objects, for example the sun, light bulbs and candles are sources of light. Objects are easier to see if there is more light. Some surfaces reflect light. Objects are easier to see when there is less light if they are reflective. 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. Shadows are formed on a surface when an opaque or</p>	<b>Key Learning</b>	<b>Key Learning</b>	<b>Key Learning</b>	<p><b>Key Learning</b> Light appears to travel in straight lines and we see objects when light from them goes into our eyes. 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.  Objects that block light (are not fully transparent) will cause shadows. Because light travels in straight lines the shape of the shadow will be the same as the outline shape of the object.</p>



### Science Overview of Skills and Progression

				translucent object is between a light source and the surface and blocks some of the light. The size of the shadow depends on the position of the source, object and surface.			
		<b>Key vocabulary</b>	<b>Key Vocabulary</b>	<b>Key Vocabulary</b> Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous	<b>Key Vocabulary</b>	<b>Key Vocabulary</b>	<b>Key Vocabulary</b> As for year 3 plus straight lines, light rays.
		<b>Outcomes</b>	<b>Outcomes</b>	<b>Outcomes</b> Can describe how we see objects in light and can describe dark as the absence of light Can state that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses Can define transparent, translucent and opaque Can describe how shadows are formed by objects blocking light.	<b>Outcomes</b>	<b>Outcomes</b>	<b>Outcomes</b> Can describe with diagrams or models as appropriate how light travels in straight lines either from sources or reflected from other objects into our eyes. Can describe with diagrams or models as appropriate how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape.
				<b>End Point:</b> Using knowledge of shadows and how these change in different lighting conditions, create a short informative video clip.			<b>End Point:</b> Explain how evidence from enquiries shows that light travels in straight lines through an explanation text about light.
Electricity	National Curriculum	National Curriculum	National Curriculum	National Curriculum	National Curriculum	National Curriculum	National Curriculum
		<b>Key Learning</b>	<b>Key Learning</b>	Key Learning	<b>Key Learning</b> Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. An electrical circuit consists of a cell or battery connected to a component using wires. If there is a break in the circuit, a loose connection or a short circuit the component will not work. A switch can be added to the circuit to turn the component on and off. Metals are good conductors so they can be used as wires in a circuit. Non-metallic solids are insulators except for graphite (pencil lead). Water, if not completely pure, also conducts electricity	<b>Key Learning</b>	<b>Key Learning</b> Adding more cells to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. If you use a battery with a higher voltage, the same thing happens. Adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers, each motor will spin more slowly and each buzzer will be quieter. 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. You can use recognised circuit symbols to draw simple circuit diagrams.
		<b>Key vocabulary</b>	<b>Key Vocabulary</b>	<b>Key Vocabulary</b>	<b>Key Vocabulary</b> 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 as this is taught in year 6	<b>Key Vocabulary</b>	<b>Key Vocabulary</b> Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage  NB 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
		<b>Outcomes</b>	<b>Outcomes</b>	<b>Outcomes</b>	<b>Outcomes</b>	<b>Outcomes</b>	<b>Outcomes</b>



**Science Overview of Skills and Progression**

					<p>Can make electric circuits Can control a circuit using a switch Can name some metals that are conductors Can name materials that are insulators</p>		<p>the working of particular components, such as the brightness of bulbs can be changed by increasing or decreasing the number of cells or using cells of different voltages</p> <p>Can draw circuit diagrams of a range of simple series circuits using recognised symbols</p>
					<p><b>End Point:</b> Using knowledge of circuits, insulators, conductors and different materials, create a DT project with a circuit and a switch.</p>		<p><b>End Point:</b> Using knowledge of circuits and symbols, predict the results of an experiment and give your reasons.</p>
Sound	National Curriculum	National Curriculum	National Curriculum	National Curriculum	<p><b>National Curriculum</b></p> <p>a) identify how sounds are made, associating some of them with something vibrating b) recognise that vibrations from sounds travel through a medium to the ear c) find patterns between the pitch of a sound and features of the object that produced it d) find patterns between the volume of a sound and the strength of the vibrations that produced it e) recognise that sounds get fainter as the distance from the sound source increases.</p>	National Curriculum	National Curriculum
		Key Learning	Key Learning	Key Learning	<p><b>Key Learning</b></p> <p>A sound source produces vibrations which travel through a medium from the source to our ears. Different mediums such as solids, liquids and gases can carry sound but sound cannot travel through a vacuum (an area empty of matter). The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. 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. A sound insulator is a material which blocks sound effectively. 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.</p>	Key Learning	Key Learning
		Key vocabulary	Key Vocabulary	Key Vocabulary	<p><b>Key Vocabulary</b></p> <p>Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation</p>	Key Vocabulary	Key Vocabulary
		Outcomes	Outcomes	Outcomes	<p><b>Outcomes</b></p> <p>Can name sound sources and state that sounds are produced by the vibration of the object. Can state that sounds travel through different mediums such as air, water, metal Can give examples to demonstrate how the pitch of a sound are linked to the features of the object that produced it Can give examples of how to change the volume of a sound e.g. increase the size of vibrations by hitting or blowing harder Can give examples to demonstrate that sounds get fainter as the distance from the sound source increases</p>	Outcomes	Outcomes



### Science Overview of Skills and Progression

					<b>End Point:</b> Using knowledge of how sounds travel, how to increase or decrease pitch/volume and how loudness can be reduced by moving or sound insulation, write a guide for a music venue.			
Earth & Space	National Curriculum	<b>National Curriculum</b> a) describe the movement of the Earth, and other planets, relative to the Sun in the solar system b) describe the movement of the Moon relative to the Earth c) describe the Sun, Earth and Moon as approximately spherical bodies d) use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	National Curriculum					
		Key Learning	Key Learning	Key Learning	Key Learning	<b>Key Learning</b> The Sun is a star. It is at the centre of our solar system. There are 8 planets (can choose to name them, but not essential). These travel around the Sun in fixed orbits. Earth takes 365 days to complete its orbit around the Sun. The Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (here it is day) and half is facing away from the Sun (night). As the Earth rotates the Sun appears to move across the sky. The Moon orbits the Earth. It takes about 28 days to complete its orbit. The Sun, Earth and Moon are approximately spherical.	Key Learning	
		Key vocabulary	Key Vocabulary	Key Vocabulary	Key Vocabulary	Key Vocabulary	<b>Key Vocabulary</b> Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune) spherical, solar system, rotates, star, orbit, planets	Key Vocabulary
		Outcomes	Outcomes	Outcomes	Outcomes	Outcomes	<b>Outcomes</b> Can create a voice over for a video clip or animation Can show using diagrams the movement of the Earth and Moon Can explain the movement of the Earth and Moon Can show using diagrams the rotation of the Earth and how this causes day and night Can explain what causes day and night	Outcomes
							<b>End Point:</b> Using knowledge and skills learnt about Earth, Space, Day/Night and time zones, create a labelled model to explain the relationship between the Earth, Sun and moon.	
Evolution & Inheritance	National Curriculum	National Curriculum	<b>National Curriculum</b> a) recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago b) recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents c) identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.					
		Key Learning	Key Learning	Key Learning	Key Learning	Key Learning	<b>Key Learning</b> All living things have offspring of the same kind, as features	



**Science Overview of Skills and Progression**

							<p>in the offspring are inherited from the parents. Due to sexual reproduction, the offspring are not identical to their parents and vary from each other.</p> <p>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.</p> <p>Fossils give us evidence of what lived on the Earth millions of year ago and provide evidence to support the theory of evolution. More recently scientists such as Darwin and Wallace observed how living things adapt to different environments to become distinct varieties with their own characteristics.</p>
		Key vocabulary	<p><b>Key Vocabulary</b> Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils</p>				
		Outcomes	Outcomes	Outcomes	Outcomes	Outcomes	<p><b>Outcomes</b> Can explain the process of evolution Can give examples of how plants and animals are suited to an environment Can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth Give examples of living things that lived millions of years ago and the fossil evidence we have to support this Can give examples of fossil evidence that can be used to support the theory of evolution</p>
							<p><b>End Point:</b> Using knowledge and skills learnt about Evolution, create a documentary about how an animal of plant has evolved over time.</p>