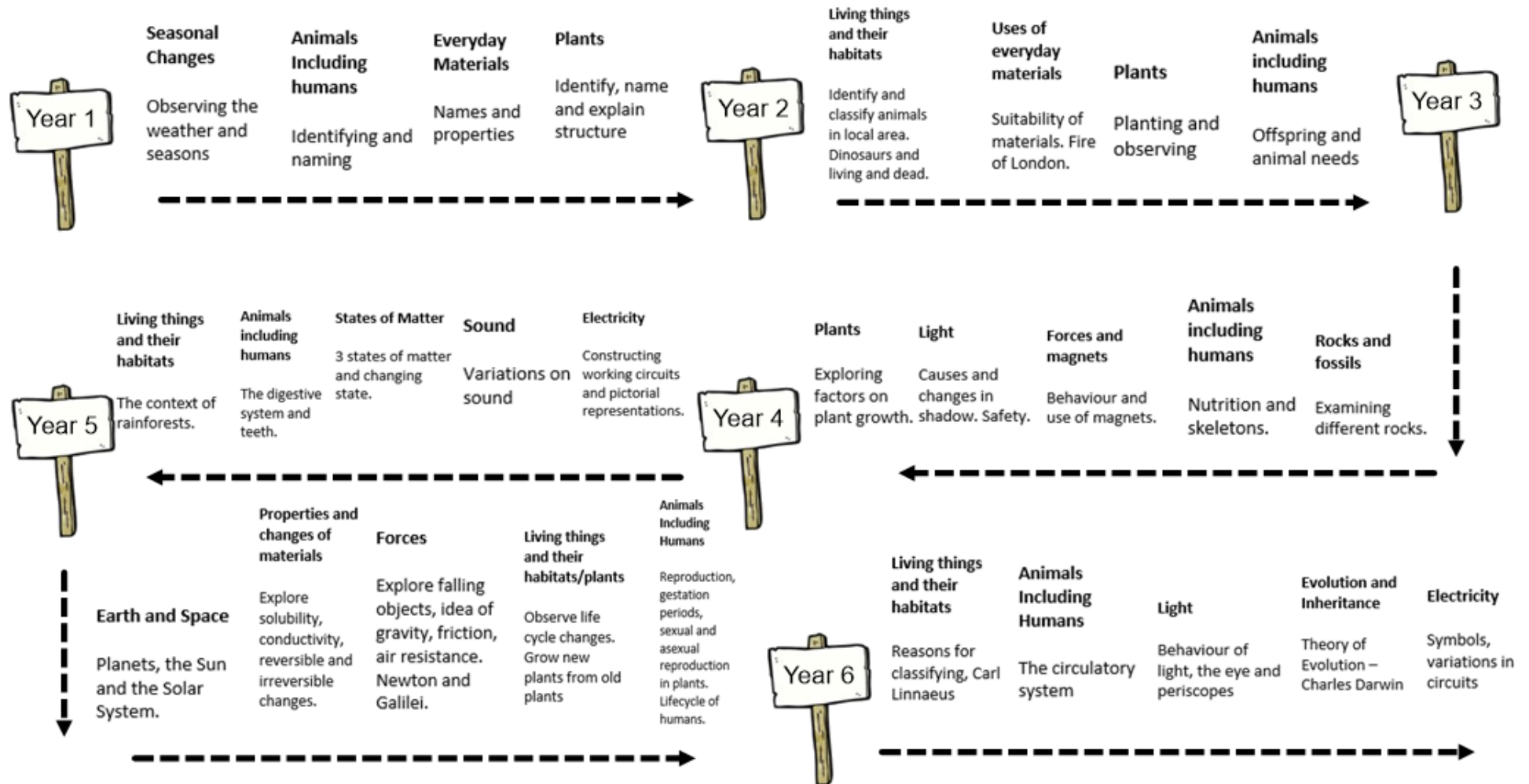


Science Curriculum Map



Year 1: Science Curriculum Map

Unit	Seasonal Changes – Autumn 1 and 2, Spring 1 and Summer 1 and 2	Animals, including Humans – Autumn 1	Plants –Spring 2	Everyday Materials: Summer 1
National Curriculum	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> observe changes across the 4 seasons observe and describe weather associated with the seasons and how day length varies 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals that are carnivores, herbivores and omnivores describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and name a variety of common wild and garden plants, including deciduous and evergreen trees identify and describe the basic structure of a variety of common flowering plants, including trees 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> distinguish between an object and the material from which it is made identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock describe the simple physical properties of a variety of everyday materials compare and group together a variety of everyday materials on the basis of their simple physical properties
Overview	<p>In this unit the children will spend time observing and reflecting on the seasonal changes that take place during August, September and October (how summer turns to autumn). They observe and identify changes in the weather, day length, plants and animals during this period of time.</p> <p>They should observe and describe the changes that occur during Autumn (e.g. leaves changing colour, days shortening).</p>	<p>Within the stories that they read, the children will discover a range different types of plants and animals. They will know what types of plants and animals could be found in hot and cold places and identify some of the differences between them (e.g. fur thickness)</p> <p>They will identify the parts of their body and explore their senses in a multi-sensory way.</p>	<p>In this unit, the children will learn to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. They will also identify and describe the basic structure of a variety of common flowering plants, including trees. Children will sketch common plants and observe them to identify similarities and differences.</p>	<p>Pupils will explore, name, discuss, raise and answer questions about everyday materials (particularly but not exclusively related to toys) so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. Pupils will explore and experiment with a wide variety of materials for example: brick, paper, fabrics, elastic, foil. They will investigate which materials would be best to make their puppets out of, based on the physical properties.</p> <p>They will observe and describe the changes that occur during winter.</p>

Progression

Observing

Take weather measurements and make observations over time (photos of what children are wearing through the year). Record time it gets dark each day. (This gathers evidence, over time, that day length changes and so do activities.)

Pattern seeking

At the end of the year, look for patterns in evidence e.g. Does it rain more in spring? Do we have more sunny days in the summer? Which was the coldest month?

Classifying

Classify animals they have seen/have first-hand experience of, choosing their own criteria to do so. Classify animals based on physical structure. Classify animals they have first-hand experience of based on what they eat (plants, other animals, both). (Complete this after the research.)

Observing

Observe animals in the local environment throughout the year.

Researching

Use secondary sources to name animals seen in the local environment that they may not currently be able to name (e.g. birds: magpie, blackbird).

Pattern seeking

Children generate questions for investigation such as: do people with longer arms have longer legs? Can more people identify prawn cocktail crisps than cheese and onion? Do all animals with ... have ...?

Comparative/fair testing

Can I taste the difference between different flavoured crisps/skittles/smarties?

Classifying

Allow children to classify leaves, flowers, and seeds, choosing their own criteria.

Observing

Observe a tree through the year. Observe a trail/patch to identify how plants change through the year.

Pattern seeking Based on observations, encourage children to identify patterns e.g. after comparing the size of leaves on different plants, children may suggest "bigger plants have bigger leaves.

Researching

Use secondary sources to name plants (including trees) based on observations of leaves, seeds, flowers, buds, and bark (Leafsnap UK)

Classifying

Classify objects made from the same material (e.g. lots of things made from plastic). Classify one object made from different materials (e.g. cups made of different materials). Classify paper/plastics/fabrics.

Comparative/fair testing

Test objects made of different materials to see how effective they are e.g. umbrellas/hats/coats for waterproofness, cloths/nappies for absorbency, socks for elasticity etc.

Year 2: Science Curriculum Map

Living things and their habitats – Autumn 1	Uses of Everyday Materials Spring 1	Plants – Summer 1	Animals including humans – Summer 2
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • observe and describe how seeds and bulbs grow into mature plants <p>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • notice that animals, including humans, have offspring which grow into adults • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene
<p>In this unit, the children will identify and classify animals in the local area. They need to be able to explain how the habitat suits the animals (e.g. temperature, habitats, food sources). Part of this work will be carried out with a trip to Lloyd Park to observe the birds that inhabit it. As part of their work on dinosaurs the children will explore the difference between things that are living, dead (as an irreversible change) and things that have never been alive. They will investigate what dinosaurs needed to stay alive and why they may have died out. The children will be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. They will raise and answer questions that help them to become familiar with the life processes that are</p>	<p>In this unit, the children will find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. They will do this by making clay tiles and looking at why clay is a suitable material for this. In relation to the Fire of London, the children will explore the materials the houses were made out of and how this spread the fire. They will investigate what materials would survive the fire and how some change.</p> <p>Furthermore, the children will explore irreversible changes such as dissolving, burning and melting. They will observe and record these changes and explore how plasticine can be squashed, float and sink when manipulated.</p>	<p>In this unit, the children will investigate the start of the growing cycle by planting a range of bulbs and seeds ready for spring (the different types can be decided by the children). They need to observe seeds and bulbs before planting. They need to discuss what conditions will be needed for the seeds and bulbs to grow.</p> <p>In the Summer term the children will look at growing sunflowers and the lifecycle of these. The pupils will use the local environment throughout the year to observe how different plants grow, including growing their own from seeds and bulbs. Pupils will be introduced to the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and</p>	<p>In this unit, the children will notice that animals, including humans, have offspring which grow into adults. They will find out about and describe the basic needs of animals, including humans, for survival.</p> <p>The children will also describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. As part of work on Florence Nightingale and Mary Seacole they will learn about the importance of hygiene to prevent the spread of germs.</p> <p>Pupils will be working scientifically by: observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; setting up a comparative test to</p>

<p>common to all living things. Pupils will be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'micro-habitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter). They will raise and answer questions about the local environment that help them to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals. Pupils will compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.</p> <p>Pupils will work scientifically by: sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They will describe how they decided where to place things, exploring questions and talk about ways of answering their questions. They could describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.</p>		<p>growth in plants. They will need to understand how we need plants in our diets and the importance of diet and exercise. They should link their knowledge of healthy living when making salads. They should understand how plants are a food source and then be able to construct simple food chains (e.g. grass, cow, human) .</p>	<p>show that plants need light and water to stay healthy.</p>
<p>Classifying Find things that are living/ dead /have never been alive and classify them. Classify mini beasts found in the environment based on physical structure.</p> <p>Observing Explore plants and animals in micro-habitats (under a rock, in a pond, in a meadow throughout the year.</p> <p>Researching Research what animals they have first-hand experience of eating.</p>	<p>Comparative/fair testing Which materials are best for the wheels? Which material would you choose for the frame?</p>	<p>Classifying Based on the children's own criteria: classify seeds classify bulbs.</p> <p>Observing over time Plant seeds and bulbs and observe how they grow</p> <p>Pattern seeking Children generate questions for investigation such as: Do big seeds germinate more quickly? Does it matter which way round you plant a bulb or seed? Which comes first, the root or the shoot?</p>	<p>Classifying Based on the children's own criteria: classify food items classify animals.</p> <p>Observing over time Observe a life cycle (e.g. caterpillars, chicks, farm animals). Observe how their body changes during/after exercise.</p> <p>Researching Research adult animals and their young</p>

Year 3: Science Curriculum Map

Unit	Rocks and Fossils – Autumn 1	Animals, including humans – Autumn 2	Forces and magnets – Spring 1	Light – Spring 2	Plants - Summer 2
National Curriculum	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat identify that humans and some other animals have skeletons and muscles for support, protection and movement 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between 2 objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise that they need light in order to see things and that dark is the absence of light notice that light is reflected from surfaces recognise that light from the sun can be dangerous and that there are ways to protect their eyes recognise that shadows are formed when the light from a light source is blocked by an opaque object find patterns in the way that the size of shadows change 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers 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 investigate the way in which water is transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal
Overview	<p>Linked with work in geography, pupils will explore different kinds of rocks and soils (linking back to UK work), including those in the local environment. Pupils will work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to</p>	<p>Pupils will continue to learn about the importance of nutrition and will be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.</p> <p>Pupils will work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about</p>	<p>Pupils will observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe).</p> <p>Pupils will work scientifically by: comparing how different things move and grouping them; raising</p>	<p>In this unit pupils will explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. They will learn about why it is important to protect their eyes from bright lights. They will look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.</p>	<p>Pupils will be introduced to the relationship between structure and function: the idea that every part has a job to do. They will explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction. Note: Pupils are introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens.</p> <p>Pupils will work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of</p>

	whether they have grains or crystals, and whether they have fossils in them. Pupils will research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils will explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.	what would happen if humans did not have skeletons. They will research different food groups and how they keep us healthy and design meals based on what they find out.	questions and carrying out tests to find out how far things move on different surfaces; gathering and recording data to find answers their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.	Pupils will work scientifically by: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes. They should use this knowledge to design and make shadow puppets and create a short performance using changing shadow sizes.	fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They will observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.
Key Skills	<p>Classifying Based on the children's own criteria, classify rocks. (Likely to be by appearance at beginning and based on physical properties at end.) Look at different soils and discuss how they are similar/different</p> <p>Observing over time Observe how soil separates into different layers in water</p> <p>Comparative/ fair testing Test what happens when rocks are put in water. Test how quickly water runs through different types of soil.</p> <p>Researching How were fossils formed?</p>	<p>Pattern seeking Do 'healthy' drinks have less sugar? Do people with long arms throw further? Can people with short legs jump higher?</p> <p>Classifying animals Classify and sorting based on whether they are vertebrates or invertebrates</p> <p>Researching Look at food packaging to identify the amount of nutrients in different food items. Asking questions: what would happen if humans did not have skeletons?</p>	<p>Comparative/fair testing Test the strength of different magnets. Setting up a simple practical enquiry Recording data - table Recording findings using simple scientific language and labelled diagrams Reporting on findings Drawing simple conclusions</p> <p>Researching Find out how magnets are used in everyday life</p>	<p>Comparative/fair testing Test materials for reflectiveness and transparency Investigate shadows (size and shape)</p> <p>Classifying Based on children's own criteria: Classify light sources (lead to man-made/natural) Classify materials (lead to reflective/non-reflective or transparent, translucent or opaque)</p>	<p>Observing over time Observing celery (with roots and leaves) in coloured water. Gathering seeds and photographic evidence of blossoms/flowers and berries on a particular trail throughout the year</p> <p>Pattern seeking Investigate what happens when conditions are changed e.g. more/less light/water, change in temperature, nutrients. Recording findings – tables</p> <p>Research Researching functions of parts of flowering plants and different methods of seed dispersal/pollination.Classifying Based on the children's own criteria: sort materials (leading towards metal/non-metal and magnetic/not magnetic) sort toys (leading to what makes them move e.g. push/pull)</p>

Year 4: Science Curriculum Map

Unit	Electricity – Autumn 1	Sound – Autumn 2	States of matter – Spring 1	Animals, including humans – Summer 1	Living things and their habitats – Summer 2
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National Curriculum	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • compare and group materials together, according to whether they are solids, liquids or gases • observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things
Overview	<p>In this unit pupils will construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils will draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6.</p> <p>Pupils will work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.</p>	<p>In this unit, the children will learn how sounds are made and make links to vibrations travelling through a medium to the ear. They will explore patterns between pitch and the object that produced the sound as well as volume and the strength of the vibrations. The children will understand why sounds are fainter as the distance from the source increases.</p>	<p>Pupils will explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). Pupils will observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled. Note: Avoid using materials where heating is associated with chemical change, for example, through baking or burning as this will be covered in Year 5.</p> <p>Pupils will work scientifically by: grouping and classifying a variety of different materials into their states of matter; exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as</p>	<p>Pupils will be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions.</p> <p>Pupils will work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They will draw and discuss their ideas about the digestive system and compare them with models or images.</p>	<p>In this unit the children should build on their knowledge of living things from years 1, 2 and 3, and apply this to an unfamiliar context (rainforests). They should be able to identify and group different animals and plants found in the rainforest and use and develop classification keys. They will be able to construct simple food chains of rainforest animals. They will discuss what impact humans have on the rainforest and what threats this can cause to living things within these habitats.</p> <p>Pupils will work scientifically by: using and making simple guides or keys to explore and identify plants and animals; raising and answering questions based on animals that they have researched.</p>

			chocolate crispy cakes and ice-cream for a party). They will research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They will observe and record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.		
Progression	<p>Classifying Household appliances as electrical/ not electrical or batteries/ mains</p> <p>Comparative/fair testing Asking relevant questions – will this circuit work? Using results to draw simple conclusions and make predictions – would this bulb light in this circuit? Using scientific evidence to support findings</p> <p>Observing Observe water as a solid, liquid and gas. Watch it being heated and cooled. Observe puddle over time.</p>	<p>Comparative/fair testing Compare volume from different instruments. Compare how volume changes away from a source. Taking accurate measurements – volume Recording data and reporting on findings Using scientific evidence to support findings</p>	<p>Comparative/fair testing What affects melting rate of chocolate/ice? What affects rate of evaporation? Recording data Using results to draw simple conclusions Using scientific evidence to support findings</p> <p>Researching Research the water cycle or stages of the melting points of metals</p>	<p>Classifying Compare and contrast different types of teeth Recording finding using drawing and labelled diagrams Comparing the teeth of carnivores and herbivores</p> <p>Researching Asking relevant questions –why are teeth different? Researching the different parts of the digestive system. Researching what different animals eat within a specific environment, e.g. coral, polar, African grasslands, in order to construct food chains</p>	<p>Observing over time Making systematic and careful observations of living things in local environments Classifying living things in our environment based on our own criteria Recording findings charts and bar charts (living things found) Reporting on findings – presentations</p> <p>Researching Researching how environmental issues impact on living things</p>

Year 5: Science Curriculum Map

Unit	Earth and Space – Autumn 1	Forces – Spring 1	Properties and changes of materials – Spring 2	Living things and their habitats – Summer 1	Animals including humans – Summer 2
National Curriculum	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe the movement of the Earth and other planets relative to the sun in the solar system 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe the changes as humans develop to old age

	<ul style="list-style-type: none"> describe the movement of the moon relative to the Earth describe the sun, Earth and moon as approximately spherical bodies use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky 	<ul style="list-style-type: none"> identify the effects of air resistance, water resistance and friction, that act between moving surfaces recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect 	<p>(electrical and thermal), and response to magnets</p> <ul style="list-style-type: none"> know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic demonstrate that dissolving, mixing and changes of state are reversible changes explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda 	<ul style="list-style-type: none"> describe the life process of reproduction in some plants and animals 	
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Overview</p>	<p>In this unit, the children will learn to describe the Earth, sun and moon as roughly spherical bodies and describe the movement of Earth and other planets relative to the sun. They should be able to explain day and night using a model of the Earth and Sun. Pupils will learn that the Sun is a star at the centre of our solar</p>	<p>This unit follows on from work done on magnets in Year 3. Pupils will explore falling objects and raise questions about the effects of air resistance. They will explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall. They should experience forces that make things begin to move, get faster or slow down. Pupils should explore the effects of friction on movement and find out how it slows or stops moving objects. Pupils will explore the effects of levers, pulleys</p>	<p>In this unit, the children will build on their knowledge of materials and their properties to understand why certain materials are used for different purposes. They will build a deeper understanding of properties such as solubility and conductivity (electrical and thermal) and investigate changes in materials that occur in the process of dissolving to form a solution as well as</p>	<p>Pupils will study and raise questions about their local environment throughout the year. They will observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment. They will try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs.</p>	<p>In this unit the children will observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow. Pupils will work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows. They will find out about the work of naturalists and animal behaviourists, for example, David Attenborough, Jane Goodall and Dian Fossey. Pupils will find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals (not inc. humans as this</p>

	<p>system and that it has eight planets.</p> <p>They will understand that a moon is a celestial body that orbits a planet. They will also understand the movement and phases of the moon – why it appears to change shape.</p>	<p>and simple machines on movement. Pupils will find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p> <p>Pupils will work scientifically by: exploring falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. They will explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.</p>	<p>reversing this process. They will investigate different ways to separate mixtures and understand the difference between reversible and irreversible changes.</p> <p>Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4. They should explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognizing that melting and dissolving are different processes. This should be done by engaging in practical investigations.</p> <p>Pupils will explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. They will find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.</p> <p>Pupils might work scientifically by: carrying out tests to answer questions, for example, ‘Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?’ They might compare materials in order to make a switch in a circuit. They could observe and compare the changes that take place, for example, when burning</p>		<p>will be covered in Year 6 SRE). Pupils will construct a timeline to indicate stages in the growth and development of humans. They will learn about the changes experienced in puberty (this is covered as part of SRE programme).</p>
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Progression	<p>Researching Identifying scientific evidence that has been used to support or refute ideas or arguments – models of the solar system</p> <p>Researching to compare the time of day at different places on the Earth through internet links and direct communication</p> <p>Observing over time Measure shadows throughout the day</p>	<p>Comparative/fair testing Air resistance Carrying out a scientific enquiry into air resistance (effective paper aeroplane shapes)– identifying and controlling variables Taking measurements, with a range of scientific equipment accurately and precisely and, taking repeat readings (distance) Recording data and results using scientific diagrams, tables and graphs Using test results from air resistance investigations to make predictions to set up further comparative and fair tests (water resistance experiment) Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations Water resistance Planning a scientific enquiry into water resistance (boats in gutter of water, plasticine in a cylinder of liquid easier with more viscose liquid e.g. with bubble bath)– identifying and controlling variables Friction Compare friction by using a forcemeter – trainers or weighted match box to pull along surfaces</p>	<p>Comparative/ fair testing Test solids for solubility and compare rates of solubility Taking measurements, with a range of scientific equipment accurately and precisely and, taking repeat readings Recording data and results using tables, scatter graphs, bar and line graphs Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations. Was the change reversible or irreversible e.g. melting vs burning? Which materials would be good for a tent? Good to make a tea bag from? Good to keep things warm/cold?</p> <p>Observing over time Observing rusting and uncoated nails in different liquids (remove coating with sandpaper)</p> <p>Classifying After observing what happens when solids are added to liquids, classify the materials based on the outcomes.</p>	<p>Classifying Classify animals according to their life cycle</p> <p>Observing over time Grow from cuttings and observe whether they grow roots/stem/leaf/flower. Grow from, and harvest, bulbs through the year. (Observe strawberry/spider plants through the year.</p> <p>Pattern seeking Children generate questions such as: Do larger mammals have longer gestation periods? Do larger animals live longer? Do smaller animals lay more eggs?</p> <p>Observing over time Observing changes in an animal over a period of time by hatching chicks</p> <p>Researching Research how gardeners asexually reproduce plants.</p>	<p>Researching Researching characteristics of humans at different points in development. Writing questions for an expert like a doctor, nurse or health visitor.</p>

Year 6 Science Curriculum Map

Unit	Living things and their habitats – Autumn 1	Animals, including humans – Autumn 2	Light – Spring 1	Evolution and inheritance - Summer 1	Electricity - Summer 2
National Curriculum	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals give reasons for classifying plants and animals based on specific characteristics 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function describe the ways in which nutrients and water are transported within animals, including humans 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram
Overview	<p>Pupils will build on their learning about grouping living things in year 4 by looking at the classification system in more detail. They will be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible, they will classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). The children will learn about classification system of Carl Linnaeus.</p>	<p>Pupils will build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function. The children will carry out experiments exploring how pulse rate is affected by varying degrees of exercise. Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body.</p>	<p>Pupils will build on the work on light in year 3, exploring the way that light behaves, including light sources, reflection and shadows. They will link their understanding of light to early cameras (e.g. pin-hole cameras) and use of lights in filming today. They will study how the eye works and allows us to see.</p> <p>Pupils will work scientifically by: deciding where to place mirrors to move light; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works; by making a pin-hole camera. They will also extend their experience of light by looking at a range of phenomena including</p>	<p>Building on what they learned about fossils in the topic on rocks in year 3, pupils will find out more about how living things on earth have changed over time. They will be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, labradors are crossed with poodles. They will also appreciate that variation in offspring over time can make animals more or less able to survive in particular</p>	<p>Building on their work in year 4, pupils will construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors. They will learn how to represent a simple circuit in a diagram using recognised symbols.</p> <p>Note: Pupils will learn only about series circuits, not parallel circuits. Pupils will be taught to take the</p>

			<p>rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).</p>	<p>environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox. Pupils will find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution. <i>Note: At this stage, pupils are not expected to understand how genes and chromosomes work.</i></p>	<p>necessary precautions for working safely with electricity.</p> <p>Pupils will work scientifically by: systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit. Children will investigate how to affect the brightness of a bulb.</p>
Progression	<p>Classifying Classification of living things in our local environment</p> <p>Classify animals according to Carl Linnaeus' system.</p> <p>Classify plants into flowering, mosses, ferns and conifers, based on specific characteristics. Create a branching database/dichotomous key to classify a set of living things.</p> <p>Researching Research the difference between bacteria, virus and fungi to give reasons why these are not plants or animals. Research how micro-organisms can be helpful or harmful.</p>	<p>Comparative/ fair testing Exercise and pulse experiment</p> <p>Planning and enquiry to answer a question (recognising and controlling variable for fair test)</p> <p>Taking measurements, with a range of scientific equipment accurately and precisely and, taking repeat readings</p> <p>Recording data and results using tables and scatter graphs and line graphs</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations</p> <p>Observing Observe pulse rate before, during and after exercise</p> <p>Pattern seeking Do older people have lower pulse rates?</p>	<p>Comparative/ fair testing Investigate the shape of shadows and link this to light travelling in straight lines.</p>	<p>Researching Identifying scientific evidence that has been used to support or refute ideas or arguments – evidence for evolution</p> <p>Observing and raising questions about local animals and how they are adapted to their environment</p> <p>Researching Researching how some living things are adapted to survive in their habitats including extreme conditions, for example, cactuses, penguins and camels.</p> <p>Classifying (to show variation within a species) Classify a species of plant e.g. daffodils, tulips, lilies.</p>	<p>Comparative/ fair testing Experimenting with voltage – brightness and volume (adding more bulbs/cells to a circuit)</p> <p>Systematically identifying the effect of changing one component at a time in a circuit</p> <p>Planning and enquiry to answer a question (recognising and controlling variable for fair test)</p> <p>Recording data and results using scientific diagrams and labels (of circuits)</p> <p>Using test results to make predictions for further testing – from lamp to buzzer</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations</p>

