

Science

Curriculum progression Map

Level expected at the end of EYFS - We have selected the Early Learning Goals that link most closely to the Science National Curriculum.

<p>Personal, Social and Emotional Development (Managing Self)</p> <p>Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</p>	<p>Understanding the World (The Natural World)</p> <p>Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <p>Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</p> <p>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>
<p>Year 1 National Curriculum Expectations</p> <p>Pupils should be taught: Working scientifically 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:</p> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. <p>Plants</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>Year 2 National Curriculum Expectations</p> <p>Pupils should be taught: Working scientifically 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:</p> <ul style="list-style-type: none"> • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions. <p>Living Things & Their Habitats</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,

Animals, Including Humans

- 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.

Everyday Materials

- 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

Seasonal changes

- observe changes across the four seasons
- observe and describe weather associated with the seasons and how day length varies

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.

Plants

- observe and describe how seeds and bulbs grow into mature plants
- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Animals, Including Humans

- 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.

Uses of Everyday Materials

- 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.

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:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Plants

- 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.

Animals, Including Humans

- 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.

Rocks

- 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.

Light

- 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

Forces and magnets

- compare how things move on different surfaces
- notice that some forces need contact between two 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 two poles
- predict whether two magnets will attract or repel each other, depending on which poles are facing.

We follow the Hampshire model for what should be learned and how to assess it. In this document scientific ideas are divided into two types; scientific concepts (key ideas) and ideas that underpin scientific enquiry (working scientifically) although the ideas of science are divided into two, they are inextricably linked; one set means nothing without the other. The document identifies those powerful ideas that are relevant to primary aged pupils and are taught as part of primary science. They have called these key ideas, and have arranged them in way that shows how they are related to each other and how one idea builds upon another. These ideas can be used to formulate enquiries and investigations. As a school we have ensured that we have covered every key idea in our planning throughout year R, 1 and 2. These ideas are built upon ensuring that the prior learning has been embedded before moving onto the next stage.

Key Idea Overview - Science

	Y1 A1	Y1 A2	Y1 S1	Y1 S2	Y1 Su1	Y1 Su2	Y2 A1	Y2 A2	Y2 S1	Y2 S2	Y2 Su1	Y2 Su2
Variation& Evolution												
Some things are living, some were once living but now dead and some things have never lived				X			X					
Different animals and plants live in different places		X		X			X					
There is variation between all living things					X		X					
Living things are adapted to survive in different habitats							X					
Environmental change can affect the plants and animals that live there							X					
Animals												
There are many different animals with different characteristics					X			X				
All animals eventually die								X				
Animals have senses to help individuals survive. When animals sense things they are able to respond.								X				
Animals need food to survive				X				X				
Animals move in order to survive.								X				

Animals reproduce new animals when they reach maturity				X	X			X				
Animals need a variety of food to help them grow, repair their bodies, be active and stay healthy				X			X	X		X		
Different animals move in different ways to help them survive.								X		X		
Animals grow until they reach maturity and then don't grow any larger				X	X			X		X		
Exercise keeps animal's bodies in good condition and increases survival chances							X			X		
Plants												
Plants usually grow from seed and bulbs.		X	X	X		X						X
Plants need warmth, light and water to grow and survive												X
Flowering plants make seeds to reproduce and make more plants. Some plants die after producing seeds and others live for many generations.						X						X
Materials												
There are different materials	X								X			
Materials have describable properties	X								X			

[illegible]

Curriculum Overview Year One

	Y1 A1	Y1 A2	Y1 Sp1	Y1 Sp2	Y1 Su1	Y1 su2
Identify and name variety of common wild and garden plants incl. deciduous & evergreen trees		×	×	×		×
Identify and describe basic structure of variety common flowering plants incl. trees		×	×	×		
Identify and name variety of common animals fish, amphibians, reptiles, birds, mammals				×		
Identify and name variety carnivore, omnivore, herbivore					×	
Describe and compare structure of variety of animals (fish, amphibians, reptiles, birds, mammals including pets.)					x?	
Identify, name, draw, label basic parts of human body and say which part is associated with each sense.	×	not sense				
Distinguish btw object and material from which made.	×					
Identify and name variety everyday materials including wood, plastic, glass, metal, water & rock.	×					
Describe simple physical properties of variety of everyday materials	×					
Compare and group together variety of everyday materials on basis of simple physical properties	×					
Observe changes across four seasons		×			×	×
Observe and describe weather associated with seasons and how day length varies.						

Curriculum Overview Year Two

	Y2 A1	Y2 A2	Y2 S1	Y2 S2	Y2 Su1	Y2 Su2
Explore and compare diffs btw things that are living, dead, never alive.				X		
Identify that most living things live in habitats to which suited and describe how diff habitats provide for basic needs of different animals and plants, & how depend on each other	X					
Identify and name variety of plants and animals in habitats, including micro-habitats.	X					
Describe how animals obtain food from plants and other animals, idea of simple food chain, identify and name diff sources of food.				X		
Observe and describe how seeds and bulbs grow into mature plants.						X
Find out and describe how plants need water, light, suitable temp to grow and stay healthy.						X
Notice that animals, including humans, have offspring which grow into adults		X		X		
Find out and describe basic needs of animals, including humans, for survival (water, food, air)	X					
Describe importance for humans of exercise, eating right amounts of diff types of food, & hygiene.				X		

Key Ideas to be covered

Variation and Evolution	<p>Children should raise and seek to answer questions about the local environment; through seeking answers to these questions they will need to identify and study a variety of plants and animals within their habitat and observe how living things depend on each other. Identification should serve the question; identification serves little purpose on its own. Pupils will need support to identify the local wildlife, so identification charts that contain the local wildlife will need to be constructed.</p> <p>Pupils need to explore how the seasons affect local organisms. They could begin to relate the temperature changes through the year to how well plants grow or why some animals hibernate in winter.</p>
Animals	<p>Children should be encouraged to use names for the main parts of their body, including sense organs. They need to explore questions related to how senses aid survival? Children must explore how we hear with our ears and how we can make different sounds, and that these sounds can be described using terms high and low, loud and quiet.</p> <p>Children should use the local environment throughout the year to raise awareness and answer questions about animals in their habitat. They should understand how to take care of animals in their environment.</p> <p>Pupils should be introduced to the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans. They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth.</p>
Plants	<p>Children should have opportunities to grow a variety of flowers and vegetables, observing their growth, and identifying the conditions required for growth. This will lead children to start describing plants in terms of their flowers, petals, stem, leaves, roots, fruit, bulb and seed.</p> <p>Through the use of the local environment throughout the year, children should be encouraged to ask questions which will require them to identify and name a variety of common plants and trees.</p>
Materials	<p>Children can investigate the properties of a wide range of materials, including metals, plastic, wood, rocks and liquids. Investigations should always be purposeful.</p>
Forces	<p>Children should be provided with a variety of experiences with moving objects. Children need to understand the effects of pushing and pulling and the effect this has on a variety of objects.</p>
Earth and Space	<p>Children need to learn about how a number of things change with the seasons, including the weather, temperature and the number of daylight hours. They do not need to know why these things change.</p>
Scientific Enquiry	<p>Children should learn to gather evidence to describe the differences and similarities between different organisms, habitats and objects. They should gather evidence to describe how things change over time or as a result of something happening. Children should begin to gather evidence to describe the relationship between variables and patterns by identifying and seeking to quantify what must be changed and what must be measured.</p>

Year R	Autumn 1 Getting to know You	Autumn 2 Autumn Looking at the Past Christmas	Spring 1 Winter People Who Help Us	Spring 2 Traditional Tales Spring Easter	Summer 1 The Lost World	Summer 2 Mighty Minibeasts
Key Idea	Plants	Materials Earth and space	Earth and space	Materials	Animals Earth and space Scientific Enquiry	Animals Forces Earth and Space
Animals					Looking at dinosaurs and discussing whether they are herbivores, carnivores or omnivores. Discuss the fact that they are extinct.	To explore minibeasts and their habitats - where might you find different minibeasts? Sort minibeasts in a variety of ways looking at differences between them. Life cycle of a butterfly - observations of changes and stages over time.
Plants	To look closely at sunflower heads and describe what they can see. To use fine motor skills to remove seeds and dry out ready to plant in the spring.					

Materials		<p>To look at similarities and differences between toys.</p> <p>To understand different toys are made from different materials.</p> <p>To sort the toys into groups of materials they are made from.</p>		<p>To talk about and compare different textures/materials and decide which ones they would like to use for a bear collage.</p> <p>Walk in the local area to look at different types of houses and the materials used.</p> <p>Changes over time.</p>		
Forces						Floating and sinking - testing objects and then finding own objects from around their environment and predict whether they float and sink.
Earth and Space		To go on an Autumn walk. To talk about signs of Autumn To collect leaves looking at the shapes of the leaves and to discuss the differences.	To go on a winter walk. To talk about signs of Winter. Compile a list of winter words.		To go on a spring walk. Talk about signs of spring. What has changed - smell, feel, hear and see.	To go on a summer walk. Talk about signs of summer and how they differ from previous seasons.
Scientific Enquiry					Research different types of dinosaurs and create a class fact file of each dinosaur, comparing size, food.	

Year One	Autumn 1 Pirates and Titanic	Autumn 2 The Wonderful World of Chocolate	Spring 1 Space	Spring 2 Farms	Summer 1 Castles	Summer 2 Journeys with Julia Donaldson
Key Idea	Animals Materials	Living things - plants	Seeds and bulbs Pushes and pulls	Plants Animals	Animals	Plants
Animals	<p>To identify and locate external parts of the body, including the sense organs.</p> <p>That body parts have different functions.</p> <p>Identify that all humans have the same body parts.</p>			<p><i>Animals grow until they reach maturity and then don't grow any larger.</i></p> <p><i>Animals produce new animals when they reach maturity.</i></p> <p>Identify the living things as those which feed, move and use their senses.</p> <p>Explain reasons for grouping plants and animals <i>eg woodlice and snails</i> move and, if necessary with prompting, group into alive and not-alive</p> <p>That the term 'animal' includes human</p> <p>That all animals, including humans, grow and change as they become older</p>	<p>That humans are similar to each other in some ways and different in others.</p> <p>To explore human variation making observations and comparisons</p> <p>That the term 'animal' includes human</p> <p>That all animals, including humans, grow and change as they become older</p>	
Plants		Different trees have leaves of different	That plants grow from seeds and	That plants provide food for humans.		Identify range of common plants in the

		<p>shapes and colours in autumn leaves can change colour before they fall Some trees lose their leaves in autumn & some do not Plants produce fruits and seeds to reproduce Not every seed produced is able to grow</p> <p>To make observations of trees and plants in the local environment.</p>	<p>bulbs.</p> <p>To make close observations, using correct vocabulary</p> <p>Identify and describe the basic structure of a flowering plant.</p>	<p>That plants grow from a seed to form a plant.</p> <p>To make observations of the plants.</p> <p>To use drawings to record their observations and to communicate what happened.</p> <p>That plants have leaves, stems, roots and flowers.</p> <p>To treat growing plants with care. <i>key idea: plants grow from seeds and bulbs.</i></p> <p>Identify the living things as those which feed, move and use their senses. Explain reasons for grouping plants and animals <i>eg woodlice and snails</i> move and, if necessary with prompting, group into alive and not-alive</p>		<p>local area.</p> <p>Make observations of the local area.</p>
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Materials	<p>To be able to distinguish between an object and the material from which it is made</p> <p>To be able to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock</p> <p>To be able to compare and group together a variety of everyday materials on the basis of their physical properties.</p>					
Forces			<p>That there are many sorts of movement which can be described in many ways</p> <p>That pushing or pulling things can make objects start or stop moving</p> <p>To identify similarities and differences between the movement of different objects</p> <p>To make suggestions about how objects can be made to move and to find out whether they were right</p> <p>To investigate how different pushes will affect an object.</p>			

Earth and Space						Identify range of common plants in the local area. make observations of the local area.
Scientific Enquiry	To be able to identify and classify. To be able to observe carefully , using simple equipment.	Use their observations and ideas to suggest answers.	To suggest questions about the ways in which different objects move.	To make and communicate observations and comparisons of humans and other animals	To make and communicate observations and comparisons of humans and other animals To ask questions and make suggestions about growing and getting older To make observations and comparisons of height	use their observations and ideas to suggest answers to questions Gather and record data to help in answering questions.

Year Two	Autumn 1 Rainforests	Autumn 2 Where in the world (Poles Apart)	Spring 1 Great Fire of London	Spring 2 It's Good to be me	Summer 1 Marvellous Machines	Summer 2 Summer Fun
Key Idea	Variation and adaptation. Animals in the local environment	Plants	Materials - grouping and changing	Animals-healthy living	Forces and movement	Plants
Variation and Evolution	<p>There is variation between all living things. Living things are adapted to survive in different habitats.</p> <p>identify that most living things live in habitats to which they are suited and describe how different habitats provide for basic needs of different animals and plants, & how they depend on each other.</p> <p>Identify some of the ways that living things are adapted to survive in different habitats.</p>					

Animals		<p>That animals (including humans) are alive and different from non-living things</p> <p>That animals have life processes e.g. grow, move, feed, have young, have senses, get rid of waste, breathe</p> <p>Animals have senses to help individuals survive.</p> <p>Find out and describe basic needs of animals, including humans, for survival (water, food, air)</p> <p>Describe how animals obtain food from plants and other animals, idea of simple food chain, identify and name different sources of food.</p> <p>Identify and name a variety of plants and animals in their habitats. Map a habitat and identify its habitats.</p> <p>Identify and name a variety of plants and animals in their habitats by</p>		<p>That humans need water and food to stay alive</p> <p>That there are many different foods</p> <p>To understand that humans need to eat a wide variety of foods.</p> <p>To understand that we need to eat these foods in different proportions.</p> <p>To record information in drawing and charts</p> <p>That over time we need water and a variety of foods, although occasional treats are all right (no such thing as a 'bad' food). That we need exercise to stay healthy</p> <p>To make and record observations and to make simple comp that sometimes we take medicines when we get ill, these help us to get better</p> <p>That medicines are useful but are drugs not foods, and can be dangerous</p> <p>That some people need medicines to keep them alive and healthy .</p>		
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		<p>identifying minibeasts in microhabitats. Gather and record data in answering questions by investigating the preferred habitat of minibeasts. Identify how an animal is suited to its habitat. Explain how living things in a habitat depend on each other.</p>				
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<p>Plants</p>	<p>identify and name a variety of plants and animals in their habitats. Map a habitat and identify its inhabitants.</p> <p>Identify and name a variety of plants and animals in their habitats by identifying minibeasts in microhabitats.</p> <p>Gather and record data to help in answering questions by investigating the preferred habitat of minibeasts.</p>					<p>Observe and describe how seeds and bulbs grow into mature plants by planting seeds and bulbs. Perform simple tests by setting up a comparative test to understand what plants need to germinate and grow. Observe and describe how seeds and bulbs grow into mature plants by understanding the life cycle of plants. Use their observations and ideas to suggest answers to questions by giving ways we can tell that plants are living Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy by comparing the growth of seedlings under different conditions. Gather and record data to help in answering questions by measuring the results of a comparative test things.</p>
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Materials			<p>Identify and compare suitability of a variety of everyday materials including wood, plastic, metal, glass, brick, rock, paper, cardboard for particular uses by identifying the uses of different materials.</p> <p>Identify and classify the uses of everyday materials in the context of the local area.</p> <p>To gather and record data to help in answering questions.</p> <p>Identify and compare the suitability of a variety of everyday materials for particular uses.</p> <p>Find out how the shape of solid objects made from certain materials can be changed by squashing, stretching, bending or twisting.</p>			
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Forces					<p>That pushes or pulls can make things speed up or slow down or change direction</p> <p>To explain how to make familiar objects move faster or slower</p> <p>To suggest questions about ways in which different objects move.</p> <p>That pushes/ pulls are examples of forces.</p> <p>Find out how the shape of solid objects made from certain materials can be changed by squashing, stretching, bending or twisting.</p>	
Earth and Space						<p>Identify range of common plants in the local area.</p> <p>Make observations of the local area.</p>
Scientific Enquiry	<p>To record information in drawing and charts</p> <p>To make and record observations and to make simple comparisons.</p>	.	<p>Gather and record data to use in answering questions.</p> <p>Observe closely, using simple equipment. Perform a simple test by comparing the rate of ice melting in a comparative test.</p>		<p>To make measurements of distance using standard/non-standard units</p> <p>To decide whether their comparison was fair</p> <p>To suggest a question to test and predict what will happen</p> <p>To decide what to do and what measurements to take</p> <p>To make measurements and record these in a prepared table</p>	<p>Observe and describe how seeds and bulbs grow into mature plants by comparing the growth of seeds and bulbs</p> <p>Observe closely, using simple equipment by measuring and recording the growth</p>

					To use results to make comparisons and evaluate whether the test was fair To say whether the prediction was correct and to try to explain the results	of seeds and bulbs
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Long study:

Year Group	Question	Type of enquiry	Aspect of working scientifically being taught	Data recording that will be taught	Key aspects being developed
Year R	What affect does seasonal change have on our pond area?	Comparing differences and changes.	Animals need food to survive. Animals move in order to survive. Plants need water, warmth and light to grow and survive. Different animals and plants live in different places.	Accurate reading of temperature, accurate counting, using identification charts, how to fill in a table.	Animals need food to survive. Animals move in order to survive. Plants need water, warmth and light to grow and survive. Different animals and plants live in different places.
Year One	How do the seasons change the way our trees grow in school?	Comparing differences and changes.	Plants usually grow from seeds and blubs. Plants need warmth, light and water to grow and survive.	Accurate reading of temperature, accurate counting, using identification charts, how to fill in a table.	Plants usually grow from seeds and blubs. Plants need warmth, light and water to grow and survive.
Year Two	What is the effect of allowing an area of the school field to grow and not mowing it?	Describing the effect of a changing habitat.	Gathering evidence to describe how things change over time as a result of something happening.	Accurate measuring of soil temperature, annotations of pictures and completing tables and tallies.	Plants need water, warmth and light to grow and survive. Animals need food to survive.

					<p>Different animals and plans live in different places.</p> <p>Environmental change can affect the plants and animals that live there.</p>
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