

Science Curriculum overview

Year	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p align="center">EYFS prior learning to consider linked to national curriculum topics.</p> <p>Physical development Health and self-care: children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe. They manage their own basic hygiene and personal needs successfully, including dressing and going to the toilet independently.</p> <p>Understanding the world The world: children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.</p>						
<p align="center">Working scientifically KS1</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 						
Year 1	<p>Animals including humans Identify and name a variety of common animals' incl fish amphibians, reptiles, birds, mammals.</p> <p>Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>Describe and compare the structure of a variety of common animals</p> <p>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>Seasonal Changes Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies</p>	<p>Plants Identify and name a variety of common wild and garden plants, incl deciduous and evergreen trees</p> <p>Identify and describe the basic structure of a variety of common flowering plants including trees.</p>	<p>Materials Distinguish between an object and the material from which it is made.</p> <p>Identify and name a variety of everyday materials, incl wood, plastic, glass, metal, water and rock</p> <p>Describe the simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday material on the basis of their simple physical properties.</p>	

<p>Year 2</p>	<p>Animals including humans Notice that animals, including humans have offspring which grow into adults</p> <p>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>		<p>Plants Observe and describe how seeds and bulbs grow into mature plants</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</p>		<p>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</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>	<p>Living things and their environment 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</p> <p>Identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>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>
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LKS2 working scientifically

- ☐ 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.

Year 3	<p>Rocks and soils</p> <p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>Recognise that soils are made from rocks and organic matter</p>		<p>Light</p> <p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>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>	<p>Animals including humans</p> <p>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.</p> <p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement</p>	<p>Plants</p> <p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>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.</p> <p>Investigate the way in which water is transported within plants.</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p>	<p>Forces and magnets</p> <p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p> <p>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</p> <p>Describe magnets as having 2 poles.</p> <p>Predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p>
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Year 4	Animals including humans 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	Sound 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	Electricity 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	States of matter 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	All living things 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	
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UKS2 working scientifically

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Using test results to make predictions to set up further comparative and fair tests.
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
- Identifying scientific evidence that has been used to support or refute ideas or arguments

<p>Year 5</p>	<p>Animals including humans Describe the changes as humans develop to old age</p>	<p>Forces -explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object -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>	<p>Living things and their habitats -describe the differences in the life cycle of a mammal, an amphibian, an insect and a bird -describe the life process of reproduction in some plants and animals</p>	<p>Earth and Space -describe the movement of the Earth and other planets relative to the sun in the solar system -describe the movement of the moon to the Earth -describe the sun, Earth and moon as approximately spherical bodies -understand the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>	<p>Properties & Changes to Materials -compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity and response to magnets -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 soda</p>	
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Year 6		Animals including Humans -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	Light -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	Evolution and Inheritance -recognise that living things have changes over time and that the 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	All Living Things -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	Electricity -associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells 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
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For more detail refer to topic knowledge organiser for each term

Science Skills Map

	Attainment targets	
	End of KS1	End of KS2

	<p>Working scientifically KS1</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>LKS2 working scientifically</p> <ul style="list-style-type: none"> 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. 	<p>UKS2 working scientifically</p> <ul style="list-style-type: none"> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Using test results to make predictions to set up further comparative and fair tests. Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. Identifying scientific evidence that has been used to support or refute ideas or arguments
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Scientific Investigation Skills	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Children are beginning to ask their own simple questions with prompts and are beginning to be able to recognise that they can be answered in different ways. E.g. through research using a secondary source or by carrying out an investigation when choices are presented.</p> <p>Throughout all units of work With guidance, suggest simple ways to</p>	<p>Children ask simple questions and can suggest different ways of answering questions. Throughout all units of work.</p> <p>Children suggest simple ways to test ideas. Throughout all units of work Children can make observations and use simple equipment such as measuring cylinders and rulers.</p>	<p>Ask relevant questions with some promoting or question starters. Throughout all units of work Children will use different types of scientific enquiry to answer them teacher directed. Throughout all units Children can set up simple enquiries with support and given equipment.</p> <p>Light</p> <p>Plants</p>	<p>Children can ask relevant questions. Throughout all units of work Children will use different types of scientific enquiry to answer them teacher directed. Throughout all units Children can set up simple enquiries and choose from available appropriate equipment to do so.</p> <p>States of matter</p> <p>Plants</p>	<p>Children can plan different types of scientific enquiries to answer questions with support, including recognising and controlling variables where necessary.</p> <p>Materials</p> <p>Forces</p> <p>With some support, children can take measurements, using a</p>	<p>Children can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Light</p> <p>Electricity</p> <p>Children can take measurements, using a range of scientific equipment, with increasing accuracy and</p>

	<p>test ideas. Throughout all units of work</p> <p>Make observations by looking and begin to use simple equipment such as measuring cylinders and rulers with support. Children might be prompted to observe a specific thing through questioning.</p> <p>Animals including humans</p> <p>Seasonal changes</p> <p>Materials</p> <p>Light</p> <p>Plants</p> <p>Use observations to suggest answers to questions with prompts. Eg. What does x show us about y?</p> <p>Seasonal changes</p> <p>Animals including humans</p> <p>Materials</p> <p>Light</p> <p>Plants</p> <p>Record data in ways such as drawing or simple block charts or pictograms (Year 1 do not cover ways of presenting data through</p>	<p>Animals including humans</p> <p>Living things and their environment</p> <p>Materials</p> <p>Plants</p> <p>Children can use their observations to suggest answers to questions. These answers may not be correct but the link between what they have observed and the answer is apparent and is beginning or does make scientific sense.</p> <p>Animals including humans</p> <p>Living things and their environment</p> <p>Materials</p> <p>Plants</p> <p>Children record data in ways such as drawing, block charts or tables, pictograms as is relevant and appropriate to the investigation.</p> <p>Materials</p> <p>Plants</p>	<p>Rocks, soils and fossils</p> <p>Forces</p> <p>Children are beginning to make systematic and careful observations with questioning from adult to guide them and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Light</p> <p>Plants</p> <p>Rocks, soils and fossils</p> <p>Forces</p> <p>Children gather record, classify and present data in a variety of ways with support to help in answering questions. Children draw, use bar charts, pictograms and tables.</p> <p>Light</p> <p>Plants</p> <p>Children begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables with support.</p>	<p>Sound</p> <p>All living things</p> <p>Electricity</p> <p>Children can make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>States of matter</p> <p>Plants</p> <p>Sound</p> <p>Children gather record, classify and present data in a variety of ways to help in answering questions. Children draw, use bar charts, pictograms and tables.</p> <p>States of matter</p> <p>Plants</p> <p>Sound</p> <p>All living things</p> <p>Children begin to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables with support.</p>	<p>range of scientific equipment taking repeat readings when appropriate.</p> <p>Materials</p> <p>Forces</p> <p>Children are beginning to record data and results using scientific diagrams and labels, tables, scatter graphs, bar and line graphs with some support.</p> <p>Materials</p> <p>Forces</p> <p>Children are beginning to use test results to make predictions to set up further comparative and fair tests with support and questioning to prompt.</p> <p>Materials</p> <p>Forces</p> <p>Children can report and present findings from enquiries including research, with direction from teacher towards conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations with support. Throughout all</p>	<p>precision, taking repeat readings when appropriate</p> <p>Light</p> <p>Children can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Animals including humans</p> <p>Light</p> <p>All living things</p> <p>Electricity</p> <p>Children can use test results to make predictions to set up further comparative and fair tests.</p> <p>Light</p> <p>Electricity</p> <p>Children can report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</p>
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	<p>statistics in Maths in year one.)</p> <p>Seasonal changes</p> <p>Materials</p> <p>Light</p> <p>Plants</p>		<p>Animals including humans</p> <p>Light</p> <p>Plants</p> <p>Rocks, soils and fossils</p> <p>Forces</p> <p>Children are beginning to report on findings with support through questioning to prompt, including oral and written explanations, displays or presentations of results and conclusions as relevant and appropriate to the investigation.</p> <p>Light</p> <p>Plants</p> <p>Rocks, soils and fossils</p> <p>Forces</p> <p>Children are beginning to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions with support and the use of question starters.</p> <p>Light</p> <p>Plants</p> <p>Rocks, soils and fossils</p>	<p>Animals including humans</p> <p>States of matter</p> <p>Plants</p> <p>Sound</p> <p>All living things</p> <p>Electricity</p> <p>Children are able report on findings, including oral and written explanations, displays or presentations of results and conclusions as relevant and appropriate to the investigation. Throughout all units Children can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions with support and the use of question starters.</p> <p>States of matter</p> <p>Plants</p> <p>Sound</p> <p>Electricity</p> <p>Children can identify differences, similarities or changes related to simple scientific ideas and processes. Throughout all units Children can use</p>	<p>units Children are beginning to identify scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Throughout all units Children can identify scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Animals including humans</p> <p>Light</p> <p>Electricity</p> <p>Evolution</p>
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			<p>Forces</p> <p>Children are beginning to identify differences, similarities or changes related to simple scientific ideas and processes. Throughout all units Children are beginning to use straightforward scientific evidence to answer questions or to support their findings with the use of sentence starters and prompts. Throughout all units</p>	<p>straightforward scientific evidence to answer questions or to support their findings.</p> <p>States of matter</p> <p>Plants</p> <p>Sound</p> <p>Electricity</p>		
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Learning in EYFS:

Science

The EYFS framework is structured very differently to the national curriculum as it is organised across seven areas of learning rather than subject areas. The aim of this document is to help subject leaders to understand how the skills taught across EYFS feed into national curriculum subjects.

This document demonstrates which statements from the 2020 Development Matters are prerequisite skills for science within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and FourYear-Olds and Reception to match the programme of study for science.

The most relevant statements for science are taken from the following areas of learning:

- Communication and Language
- Physical Development
- Understanding the World

Science		
Three and FourYear-Olds	Communication and Language	<ul style="list-style-type: none"> • Understand ‘why’ questions, like: “Why do you think the caterpillar got so fat?”
	Physical Development	<ul style="list-style-type: none"> • Make healthy choices about food, drink, activity and toothbrushing.
	Understanding the World	<ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Begin to make sense of their own life-story and family’s history. • Explore how things work. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice.
Reception	Communication and Language	<ul style="list-style-type: none"> • Learn new vocabulary. • Ask questions to find out more and to check what has been said to them. • Articulate their ideas and thoughts in well-formed sentences. • Describe events in some detail. • Use talk to work out problems and organise thinking and activities. Explain how things work and why they might happen. • Use new vocabulary in different contexts.

Reception Continued	Physical Development		<ul style="list-style-type: none"> • Know and talk about the different factors that support their overall health and wellbeing: <ul style="list-style-type: none"> - regular physical activity - healthy eating - toothbrushing - sensible amounts of ‘screen time’ - having a good sleep routine - being a safe pedestrian
	Understanding the World		<ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel while they are outside. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them.
ELG	Communication and Language	Listening, Attention and Understanding	<ul style="list-style-type: none"> • Make comments about what they have heard and ask questions to clarify their understanding.
	Personal, Social and Emotional Development	Managing Self	<ul style="list-style-type: none"> • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
	Understanding the World	The Natural World	<ul style="list-style-type: none"> • Explore the natural world around them, making observations and drawing pictures of animals and plants. • 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. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.