



## EYFS Science Knowledge

<b>PD / EAD curriculum area</b>	<b>Children in Reception will be learning to:</b>		
	<p><b>AUTUMN:</b></p> <p>Understanding the World  <b>NATURAL WORLD</b>            Children can explore the natural world around them describing what they see, hear and feel.            Children can make observations and by discussion of animals and plants.            Children can discuss how the seasons change and observe this (trees, flowers, weather)</p>	<p><b>SPRING:</b></p> <p>Understanding the World  <b>NATURAL WORLD</b>            Children can make observations and pictures of animals and plants.            Children can discuss how the seasons change and observe and record this (trees, flowers, weather)            Children observe and discuss how states of matter change (ice, cooking)</p>	<p><b>SUMMER:</b></p> <p>Physical Development  <b>HEALTH AND HYGIENE</b>            Children can talk about:            -how to cross the road safely            - why a good night’s sleep is important            - screen time at home            - why we brush our teeth            - how exercise affects our body            - what foods are healthy for us.</p> <p>Understanding the World  <b>NATURAL WORLD:</b>            Children can talk about some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.            Children can discuss how the seasons change and the similarities and differences between the four seasons.</p>

<b>National Curriculum Aims</b>	<p><b>KS1</b> – The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. ‘Working scientifically’ is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary at a level consistent with their increasing</p>
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word reading and spelling knowledge at key stage 1.

**LKS2** – The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. ‘Working scientifically’ is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

**UKS2** – The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. ‘Working and thinking scientifically’ is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read, spell and pronounce scientific vocabulary correctly.

	Y1/2	Y3/4	Y5/6
<b>Unit 1 – Working Scientifically</b>	<p>Knows how to ask simple questions and recognise that they can be answered in different ways.</p> <p>Knows how to observe closely, using simple equipment.</p> <p>Knows how to perform simple tests.</p> <p>Knows how to identify and classify.</p> <p>Knows how to use their observations and ideas to suggest answers to questions.</p> <p>Knows how to gather and record data to help</p>	<p>Knows how to ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Knows how to set up simple practical enquiries, comparative and fair tests.</p> <p>Knows how to 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>Knows how to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Knows how to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p> <p>Knows how to record data and results of increasing complexity using scientific</p>



	<p>in answering questions.</p>	<p>Knows how to gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Knows how to record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Knows how to report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Knows how to use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Knows how to identify differences, similarities or changes related to simple scientific ideas and processes. using straightforward scientific evidence to answer questions or to support their findings.</p>	<p>diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Knows how to use test results to make predictions to set up further comparative and fair tests.</p> <p>Knows how to report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.</p> <p>Knows how to identify scientific evidence that has been used to support or refute ideas or arguments.</p>
<p><b>Unit 2 – Animals Including Humans</b></p>	<p>Knows how to identify and describe a variety of common animals (fish, amphibians, reptiles, birds, mammals).</p> <p>Knows how to identify and name a variety of common animals (carnivores, herbivores, omnivores).</p> <p>Knows how to describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds, and mammals, including pets).</p> <p>Knows how to 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>Knows that animals, including humans, have offspring which grow into adults.</p> <p>Knows how to find out about and describe the basic needs of animals, including humans, for survival (water, food, air).</p> <p>Knows how to describe the importance for</p>	<p>Knows 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>Knows that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Knows how to describe the simple functions of the basic parts of the digestive system in humans.</p> <p>Knows how to identify the different types of teeth in humans and their simple functions.</p> <p>Knows how to construct and interpret a variety of food chains, identifying producers, predators and prey.</p>	<p>Knows how to describe the changes as humans develop to old age.</p> <p>Knows how to draw a timeline to indicate stages in the growth and development of humans. Learn about the changes experienced in puberty.</p> <p>Knows how to research the gestation periods of other animals and compare them with humans; find out and record the length and mass of a baby as it grows.</p> <p>Knows how to identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Knows how to recognise the impact of diet, exercise, drugs and lifestyle, on the way their bodies function.</p> <p>Knows how to describe the ways in which nutrients and water are transported within animals, including humans.</p>



	<p>humans of exercise, eating the right amounts of different types of food, and hygiene.</p>		
<p><b>Unit 3 – Evolution and Inheritance</b></p>			<p>Knows that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Knows that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>Knows how to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>
<p><b>Unit 4 – Plants</b></p>	<p>Knows how to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p> <p>Knows how to identify and describe the basic structure of a variety of common flowering plants, including trees.</p> <p>Knows how to observe and describe how seeds and bulbs grow into mature plants.</p> <p>Knows how to find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>Knows how to identify and describe the functions of different parts of flowering plants; roots, stem / trunk, leaves and flowers.</p> <p>Knows how to 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>Knows how to investigate the way in which water is transported within plants.</p> <p>Knows how to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	
<p><b>Unit 5 – Everyday Materials</b></p>	<p>Knows how to distinguish between an object and the material from which it is made.</p> <p>Knows how to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.</p> <p>Knows how to describe the simple physical properties of a variety of everyday materials.</p> <p>Knows how to compare and group together a variety of everyday materials on the basis of</p>		



	their simple physical properties.		
<b>Unit 6 - Rocks</b>		<p>Knows how to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>Knows how to describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>Knows how to recognise that soils are made from rocks and organic matter.</p>	
<b>Unit 7 – Forces and Magnets</b>		<p>Knows how to compare how things move on different surfaces.</p> <p>Knows that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Knows how to observe how magnets attract or repel each other and attract some materials and not others.</p> <p>Knows how to 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>Knows that magnets have two poles.</p> <p>Knows how to predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p>Knows that unsupported objects fall towards the Earth because of the force of gravity acting between the earth and the falling object.</p> <p>Knows how to identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>Knows that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>
<b>Unit 8 – States of Matter</b>		<p>Knows how to compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>Knows that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius.</p> <p>Knows how to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	



<b>Unit 9 – Properties and Changes of Materials</b>			<p>Knows how to compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>Knows that some liquids will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Knows how to use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Knows how to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Knows how to demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>Knows 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 acid on bicarbonate of soda.</p>
<b>Unit 10 – Living Things and their Habitats</b>	<p>Knows how to explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>Knows how to 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>Knows how to identify and name a variety of plants and animals in their habitats, including micro-habitats.</p> <p>Knows how to describe how animals obtain</p>	<p>Knows that living things can be grouped in a variety of ways.</p> <p>Knows how to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>Knows that environments can change and that this can sometimes pose dangers to living things.</p>	<p>Knows how to describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p>Knows how to describe the life processes of reproduction in some plants and animals.</p> <p>Knows how to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</p> <p>Knows how to give reasons for classifying plants and animals based on specific characteristics.</p>



	<p>their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p>		
<b>Unit 11 – Seasonal Changes</b>	<p>Knows how to observe changes across the four seasons. Knows how to observe and describe weather associated with the seasons and how day length varies.</p>		
<b>Unit 12 - Light</b>		<p>Knows how to recognise that they need light in order to see things and that dark is the absence of light. Knows that light is reflected from surfaces. Knows that light from the sun can be dangerous and that there are ways to protect their eyes. Knows that shadows are formed when light from a light source is blocked by an opaque object. Knows how to find patterns in the way that the size of shadows change.</p>	<p>Knows that light appears to travel in straight lines. Knows how to 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. Knows that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Knows how to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>
<b>Unit 13 – Earth and Space</b>			<p>Knows how to describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Knows how to describe the movement of the Moon relative to the Earth. Knows how to describe the Sun, Earth and Moon as approximately spherical bodies. Knows how to use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky.</p>
<b>Unit 14 - Electricity</b>		<p>Knows how to identify common appliances that run on electricity. Knows how to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and</p>	<p>Knows how to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Knows how to compare and give reasons for variations in how components function,</p>



		<p>buzzers.</p> <p>Knows how to identify whether or not a lamp will light in a simple series electrical circuit, based on whether or not the lamp is part of a complete loop with a battery.</p> <p>Knows that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Knows how to recognise some common conductors and insulators, and associate metals with being good conductor.</p>	<p>including the brightness of bulbs, the loudness of buzzers and the on / off position of switches.</p> <p>Knows how to use recognised symbols when representing a simple circuit in a diagram.</p>
<b>Unit 15 - Sound</b>		<p>Knows how to identify how sounds are made, associating some of them with something vibrating.</p> <p>Knows that vibrations from sounds travel through a medium to the ear.</p> <p>Knows how to find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Knows how to find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Knows that sounds get fainter as the distance from the sound source increases.</p>	