



## Science Long Term Plan - Enquiry Questions



\*Scientific enquiry type

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Nursery</b>	How do we keep healthy?	Why do the leaves fall off the trees in Autumn?	What equipment can I use in Nursery to plays music and make sounds?	What floats and sinks?	How does a beanstalk grow?	How can we sort animals?
<b>Reception</b>	What can I see in Autumn? What's inside my body?	Can Penguins live in Sale?		What makes things move?	What vegetables can we grow in Sale?	Why do owls come out at night?
<b>Year One</b>		<b>Animals inc Humans</b> How can we organise all the zoo animals? <i>Identifying and Classifying</i>		<b>Everyday Materials</b> Is there a pattern in the types of materials that are used to make objects in a school? <i>Pattern Seeking</i>	<b>Plants</b> How does my sunflower change each week? <i>Observing over time</i>	
<b>Seasonal changes</b> How does my sunflower change each week? <span style="float: right;"><i>Observing over time</i></span>						
<b>Year Two</b>	<b>Living things and their habitats</b> Where do animals and plants live? <i>Identifying and Classifying</i>		<b>Use of everyday materials</b> Which boat floats the longest? <i>Observing over time</i>		<b>Plants</b> Do bigger seeds grow into bigger plants? <i>Pattern Seeking</i>	<b>Animals inc Humans</b> Do bananas make us run faster?
<b>Year Three</b>	<b>Animals including humans</b> Do male humans have larger skulls than female humans?	<b>Forces and magnets</b> Which materials are magnetic?	<b>Rocks</b> Who was Mary Anning and what did she discover? <i>Research</i>	<b>Plants</b> Which conditions help seeds germinate faster?	<b>Light</b> Is the sun the same brightness all day? <i>Observing over time</i>	

	Pattern Seeking	Identifying and Classifying		Comparative and fair testing		
<b>Year Four</b>	<b>Animals including humans</b> What impact does diet have on humans? Observing over time	<b>Living things and their habitats</b> How can we group living things from our local area? Research	<b>Electricity</b> How can you use electricity to make an alarm? Identifying and Classifying	<b>Sound</b> Can you explain how to alter the pitch and volume on different instruments? Pattern Seeking	<b>States of matter</b> How can you make water disappear? Comparative and fair test	
<b>Year Five</b>	<b>Properties and changes of materials</b> How does a sugar cube change as it is put in a glass of water? Identifying and Classifying	<b>Forces</b> What affects how well a parachute works? Comparative and Fair Testing	<b>Living things and their habitats</b> Can you identify all the stages in the life cycle of a bird? Research	<b>Earth and Space</b> How does the moon change over the period of a month? Observing over time	<b>Animals including humans</b> Is there a pattern between the size of an animal and their gestation periods? Pattern Seeking	
<b>Year Six</b>	<b>Animals including Humans</b> How does the length of time we exercise affect our heart rate? Comparative and Fair Testing	<b>Electricity</b> How does the voltage of the battery affect the brightness of a bulb? Pattern Seeking How would you group electrical components and appliances based on what electricity makes them do? Identifying and classifying	<b>Light</b> How can you change the direction of light? Observing over time	<b>Evolution and Inheritance</b> What happened when Charles Darwin visited the Galapagos Islands? Research		



# Science Long Term Plan -Early Years / National Curriculum Content

\*\*Working



Scientifically Objectives

Nursery	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer Term
	<ul style="list-style-type: none"> <li>Be increasingly independent in meeting their own care needs e.g. brushing teeth, using the toilet, washing and drying their hands thoroughly.</li> <li>Make healthy choices about food, drink, activity and toothbrushing</li> </ul>	<ul style="list-style-type: none"> <li>Talk about the differences between materials and changes they notice.</li> <li>Use all their senses in hands-on exploration of natural materials.</li> <li>Explore collections of materials with similar and/or different properties.</li> <li>Talk about what they see, using a wide vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>Explore how things work</li> </ul>	<ul style="list-style-type: none"> <li>Explore and talk about different forces they can feel</li> <li>Talk about the differences between materials and changes they notice.</li> </ul> <p>Explore how things work.</p>	<ul style="list-style-type: none"> <li>Plant seeds and care for growing plants.</li> <li>Understand the key features of the life cycle of a plant and an animal.</li> <li>Begin to understand the need to respect and care for the natural environment and all living things</li> </ul>

Reception	Autumn Term	Spring Term	Summer Term
	<p><b>Understanding the world</b></p> <ul style="list-style-type: none"> <li>Explore the natural world around them.</li> <li>Understand the effect of changing seasons on the natural world around them.</li> <li>Describe what they see, hear and feel whilst outside.</li> </ul>		

Year One	Autumn Term	Spring Term	Summer Term
	<b>Animals including Humans</b>	<b>Everyday Materials</b>	<b>Plants</b>

- ♣ 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.
- ♣ using their observations and ideas to suggest answers to questions
- ♣ identifying and classifying
- ♣ asking simple questions and recognising that they can be answered in different ways
- ♣ gathering and recording data to help in answering questions.

- ♣ 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.
- ♣ asking simple questions and recognising that they can be answered in different ways
- ♣ observing closely,
- ♣ identifying and classifying
- ♣ using their observations and ideas to suggest answers to questions
- ♣ gathering and recording data to help in answering questions.
- ♣ performing simple tests

- ♣ 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.
- ♣ asking simple questions and recognising that they can be answered in different ways
- ♣ observing closely,
- ♣ identifying and classifying
- ♣ using their observations and ideas to suggest answers to questions
- ♣ gathering and recording data to help in answering questions.
- ♣ performing simple tests

**Seasonal Changes**

- ♣ observe changes across the four seasons
- ♣ observe and describe weather associated with the seasons and how day length varies.
- ♣ gathering and recording data to help in answering questions.
- ♣ observing closely, using simple equipment

Year Two	Autumn Term	Spring Term	Summer 1	Summer 2
	Living things and their habitats	Use of everyday materials	Plants	Animals

- ♣ 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
- ♣ asking simple questions and recognising that they can be answered in different ways
- ♣ identifying and classifying

- ♣ 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.
- ♣ performing simple tests
- ♣ observing closely, using simple equipment

- ♣ 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.
- ♣ gathering and recording data to help in answering questions

- ♣ 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.
- ♣ using their observations and ideas to suggest answers to questions

Year Three	Autumn Term	Spring 1	Spring 2	Summer 1	Summer 2
	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>♣ 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</li> <li>♣ identify that humans and some other animals have skeletons and muscles for support, protection and movement.</li> <li>♣ asking relevant questions and using different types of scientific enquiries to answer them</li> <li>♣ identifying differences, similarities or changes related to simple scientific ideas and processes</li> </ul>	<p><b>Rocks</b></p> <ul style="list-style-type: none"> <li>♣ compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>♣ describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>♣ recognise that soils are made from rocks and organic matter.</li> <li>♣ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> </ul>	<p><b>Forces and Magnets</b></p> <ul style="list-style-type: none"> <li>♣ compare how things move on different surfaces</li> <li>♣ notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>♣ observe how magnets attract or repel each other and attract some materials and not others</li> <li>♣ 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</li> <li>♣ describe magnets as having two poles</li> <li>♣ predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> <li>♣ gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</li> <li>♣ using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>♣ recognise that they need light in order to see things and that dark is the absence of light</li> <li>♣ notice that light is reflected from surfaces</li> <li>♣ recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>♣ recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> <li>♣ find patterns in the way that the size of shadows change</li> <li>♣ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>♣ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> </ul>	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>♣ identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>♣ 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</li> <li>♣ investigate the way in which water is transported within plants</li> <li>♣ explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> <li>♣ setting up simple practical enquiries, comparative and fair tests</li> <li>♣ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> </ul>

Year Four	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer Term
	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>♣ recognise that living things can be grouped in a variety of ways</li> <li>♣ explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>♣ recognise that environments can change and that this can sometimes pose dangers to living things.</li> <li>♣ reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>♣ gathering, recording, classifying and presenting data in a variety of ways to help in answering question</li> </ul>	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>♣ describe the simple functions of the basic parts of the digestive system in humans</li> <li>♣ identify the different types of teeth in humans and their simple functions</li> <li>♣ construct and interpret a variety of food chains, identifying producers, predators and prey.</li> <li>♣ using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>♣ using straightforward scientific evidence to answer questions or to support their findings.</li> </ul>	<p><b>States of matter</b></p> <ul style="list-style-type: none"> <li>♣ compare and group materials together, according to whether they are solids, liquids or gases</li> <li>♣ 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)</li> <li>♣ identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> <li>♣ setting up simple practical enquiries, comparative and fair tests</li> <li>♣ making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> </ul>	<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>♣ identify how sounds are made, associating some of them with something vibrating</li> <li>♣ recognise that vibrations from sounds travel through a medium to the ear</li> <li>♣ find patterns between the pitch of a sound and features of the object that produced it</li> <li>♣ find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>♣ recognise that sounds get fainter as the distance from the sound source increases.</li> <li>♣ identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>♣ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> </ul>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>♣ identify common appliances that run on electricity</li> <li>♣ construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>♣ 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</li> <li>♣ recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>♣ recognise some common conductors and insulators, and associate metals with being good conductors.</li> <li>♣ asking relevant questions and using different types of scientific enquiries to answer them</li> </ul>

Year Five	Autumn	Spring 1	Spring 2	Summer 1	Summer 2
	<p><b>Properties and changes of materials</b></p> <ul style="list-style-type: none"> <li>♣ 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</li> <li>♣ know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>♣ use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>♣ give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>♣ demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>♣ 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.</li> <li>♣ planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> </ul>	<p><b>Forces</b></p> <ul style="list-style-type: none"> <li>♣ explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>♣ identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>♣ recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</li> <li>♣ using test results to make predictions to set up further comparative and fair tests</li> <li>♣ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>♣ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> </ul>	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>♣ describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>♣ describe the life process of reproduction in some plants and animals</li> </ul>	<p><b>Earth and Space</b></p> <ul style="list-style-type: none"> <li>♣ describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>♣ describe the movement of the Moon relative to the Earth</li> <li>♣ describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>♣ use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</li> <li>♣ reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</li> </ul>	<p><b>Animals including Humans</b></p> <ul style="list-style-type: none"> <li>♣ describe the changes as humans develop to old age.</li> <li>♣ identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>



Year Six	Autumn Term	Spring 1	Spring 2	Summer Term
	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>♣ identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>♣ recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>♣ describe the ways in which nutrients and water are transported within animals, including humans.</li> <li>♣ reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations set up further comparative and fair tests</li> <li>♣ taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> </ul>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>♣ associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>♣ 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</li> <li>♣ use recognised symbols when representing a simple circuit in a diagram.</li> <li>♣ recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> </ul>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>♣ recognise that light appears to travel in straight lines</li> <li>♣ 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</li> <li>♣ 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</li> <li>♣ use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> <li>♣ planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> </ul>	<p><b>Evolution and Inheritance</b></p> <p>recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <ul style="list-style-type: none"> <li>♣ recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>♣ identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</li> <li>♣ identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>

