

## Science Knowledge, Skills, Sequencing and Progression

	<b>EYFS</b>	<b>Key Stage 1</b>	<b>Lower Key Stage 2</b>	<b>Upper Key Stage 2</b>
<b>Working Scientifically</b>  <b>(to be delivered through teaching of subject content and not taught separately).</b>	Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions. (LA+U) Make comments about what they have heard and ask questions to clarify their understanding. (LA+U)	Ask simple scientific questions and recognise that there are different ways to answer them.	Ask relevant questions and use evidence to answer these.	Plan scientific enquiries to answer questions; use scientific evidence to answer these and support findings.
		Perform simple tests.	Set up practical enquiries and fair tests using a range of scientific equipment.	Set up practical enquiries and tests including controlling variables.
		Observe closely using simple equipment and collect data.	Make careful observations and begin to make accurate measurements.	Make systematic observations and take accurate measurements using a range of scientific equipment.
	Explore the natural world around them, making observations and drawing pictures of animals and plants. (UW)	Record findings eg as drawings, diagrams, photographs or in simple prepared format such as tables and charts.	Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.	Record and present data and results in a range of ways – eg scientific diagrams / labels, classification keys, tables, charts and graphs.
	Express their ideas and feelings about their experiences using full sentences. (S)		Report findings from investigations including oral and written explanations or presentations of results and conclusions.	Report findings from investigations: written explanations including causal relationships and conclusions.
	Offer explanations for why things might happen, making use of recently introduced vocabulary. (S)	Use observations and ideas to answer questions.	Use results to draw simple conclusions and suggest improvements and predictions for setting up further tests.	Continue to develop the ability to use test results to make predictions, set up further comparative / fair tests and draw conclusions.
		Identify and classify.		
				Identify scientific evidence that has been used to support or refute ideas or arguments.

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	<p>By the end of the <b>EYFS</b> children will:</p> <ul style="list-style-type: none"> <li>Explore the natural world around them, making observations and drawing pictures of animals and plants;</li> <li>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;</li> <li>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>		
	<b>Key Stage 1</b>	<b>Lower Key Stage 2</b>	<b>Upper Key Stage 2</b>
<b>Plants</b>	<p><b>Y1</b> Identify and name common plants. Identify and describe the basic structure of a variety of a flowering plant.</p> <p><b>Y2</b> Describe how seeds and bulbs grow. Describe how plants need water, light and a suitable temperature to grow.</p>	<p><b>Y3</b> Identify and describe the functions of different parts of flowering plants. Identify requirements of plants for life and growth 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.</p>	
<b>Living Things and their Habitats</b>	<p><b>Y2</b> Explore and compare the differences between things that are living, dead, and things that have never been alive. Identify living things live in habitats to which they are suited and how these provide basic needs of animals and plants. Identify and name a variety of plants and animals in their habitats. Describe how animals obtain their food from plants and other animals, using a simple food chain.</p>	<p><b>Y4</b> Recognise that living things can be grouped in a variety of ways and give reasons for classifying plants and animals. Use classification keys to help group, identify and name a variety of living things. Explain using food chains / webs how feeding relationships occur in a habitat. Identify producers, predators, prey, herbivores, carnivores, omnivores. Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p><b>Y5</b> Describe the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.</p> <p><b>Y6</b> Describe how living things are classified into broad groups according to characteristics and based on similarities and differences. Give reasons for classifying plants and animals based on specific characteristics.</p>
<b>Animals, including Humans</b>	<p><b>Y1</b> Identify and name a variety of animals including fish, amphibians, reptiles, birds and mammals. Identify carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals. Identify, name, draw and label the basic parts of the human body and relate to senses.</p> <p><b>Y2</b> Explain that animals, including humans, have offspring which grow into adults.</p>	<p><b>Y3</b> Explain 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 animals have skeletons and muscles for support, protection and movement.</p> <p><b>Y4</b> 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.</p>	<p><b>Y5</b> Describe the changes as humans develop to old age.</p> <p><b>Y6</b> 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 bodies function. Describe the ways in which nutrients and water are transported within animals, including humans.</p>

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	Describe the basic needs of animals, including humans, for survival. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.		
<b>Evolution and Inheritance</b>			<b>Y6</b> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
<b>Materials</b>	<b>Y1 Everyday Materials</b> Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials. Describe the simple properties of a variety of everyday materials. Compare and group together materials based on their properties. <b>Y2 Uses of Materials</b> Identify and compare the suitability of a variety of everyday materials for particular uses. Find out how the shapes of solid objects can be changed by squashing, bending, twisting and stretching.	<b>Y3 Rocks</b> Compare and group rocks on their appearance / physical properties. Describe how fossils are formed. Recognise that soils are made from rocks and organic matter.  <b>Y4 States of Matter</b> Compare and group materials into solids, liquids and gases. Explain that some materials change state when they are heated or cooled, and measure the temperature in degrees Celsius (°C). Give reasons for changes to the state of water using the correct vocabulary, Identify evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	<b>Y5</b> 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. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials. 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. Demonstrate reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is difficult to reverse.
<b>Light and Sound</b>		<b>Y3 Light</b> 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.	<b>Y6</b> 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.

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		<p>Recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>Find patterns in the way that the size of shadows change.</p> <p><b>Y4 Sound</b></p> <p>Identify how sounds are made, associating some of them with something vibrating.</p> <p>Explain how sounds are heard (vibrations travel through various materials to the ear).</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p>	<p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p>Find patterns in the way that the size of shadows change (link to sunlight).</p> <p>Explain that light can be broken into colours.</p>
<b>Forces and Magnetism</b>		<p><b>Y3 Magnets</b></p> <p>Compare how things move on different surfaces.</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Compare and group together materials based on whether they are attracted to a magnet.</p> <p>Investigate how magnets attract some materials and not others and identify some magnetic materials.</p> <p>Observe how magnets attract or repel each other and predict whether magnets will attract or repel each other, depending on which poles are facing.</p>	<p><b>Y5</b> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p>Measure the size of a force.</p> <p>Explain that forces push / pull objects making them change shape.</p> <p>Explain the idea of speed.</p>
<b>Electricity</b>		<p><b>Y4</b> Identify common appliances that run on electricity.</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts.</p> <p>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.</p> <p>Recognise that a switch opens and closes a circuit (as above).</p> <p>Recognise some common conductors and insulators, and investigate these.</p>	<p><b>Y6</b> Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>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.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>
<b>Space</b>			<p><b>Y5</b> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p>

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			<p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies.</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p>Understand how the four seasons are linked to the movement of the Earth.</p>
<b>Seasons</b>	<p>Observe changes across the four seasons.</p> <p>Observe and describe weather associated with the seasons and how day length varies.</p>		

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Key Stage 1						
Year A						
	Prior Learning	Intent (children will learn)	Unit	Sequence of Lessons WALT (children will ...)	Vocabulary	Outcome / Composite
<b>Autumn A</b>	<p>EYFS</p> <p>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.</p> <p>Understand some important processes and changes in the natural world around them.</p>	<p>Pupils should be taught to:</p> <ol style="list-style-type: none"> <li>1. observe changes across the four seasons.</li> <li>2. observe and describe weather associated with the seasons and how day length varies.</li> </ol> <p>Pupils will explore and compare the differences between things that are living, dead, and things that have never been alive.</p> <p>They will 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>They will identify and name a variety of plants and animals in their habitats, including micro- habitats</p> <p>Pupils will 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>	<p>Working Scientifically (Y1)</p> <p>Seasonal changes (Y1)</p> <p>Living things and their habitats (Y2)</p>	<ol style="list-style-type: none"> <li>1. To observe seasonal changes</li> <li>2. Understand the difference between alive / not alive / never alive</li> <li>3. Understand and compare habitats</li> <li>4. Understand and compare micro-habitats</li> <li>5. Understand a food chain.</li> <li>6. Conduct a scientific investigation</li> </ol>	<p>Animal</p> <p>Dead</p> <p>Food Chain</p> <p>Habitat</p> <p>Living</p> <p>Local environment</p> <p>Micro-habitat</p> <p>Plant</p> <p>Seasons</p>	<p>Develop an understanding of seasonal changes, what a habitat and micro-habitat is, and which animals live there and why. Food chains.</p>
<b>Spring A</b>	<p>EYFS - Explore the natural world around them</p> <p>Understand some changes in the natural world.</p> <p>Seasonal changes (Y1/2)</p>	<p>Children will observe changes across the four seasons and observe and describe weather associated with the seasons.</p> <p>Children will learn how to identify and name a variety of common plants.</p>	<p>Seasonal changes</p> <p>Plants (Y1/2)</p> <p>Animals including Humans (Y1/2)</p>	<ol style="list-style-type: none"> <li>1. Observe changes across the four seasons and describe the weather associated with them.</li> <li>2. Identify and name a variety of wild and garden plants.</li> <li>3. Describe the basic structure of a variety of common flowering plants.</li> <li>4. Describe how seeds and bulbs grow in to mature plants.</li> </ol>	<p>Seasons</p> <p>Weather</p> <p>Bulb</p> <p>Deciduous</p> <p>Evergreen</p> <p>Experiment</p> <p>Fair test</p> <p>Flower</p> <p>Leaves</p>	<p>Children will make a seasonal collage, develop their knowledge of common plants and animals (including humans) and conduct an</p>

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	Living things and their habitats (Y1/2)	<p>They will identify and describe the basic structure of a flowering plant and describe how seeds and bulbs grow into mature plants. They will find out what plants need to survive.</p> <p>Identify, sort and name a variety of common animals.</p> <p>Label the basic parts of the human body.</p>		<ol style="list-style-type: none"> <li>5. Conduct an experiment to explore whether plants need, water light and a suitable temperature to grow.</li> <li>6. Identify and name a variety of animals including birds, reptiles, fish, amphibians and mammals.</li> <li>7. Identify and name a variety of common animals that are carnivores, omnivores and herbivores.</li> <li>8. Describe and compare the structure of a variety of common animals.</li> <li>9. Identify, name and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ol>	<p>Mature Plant Roots Seed Stem Structure</p> <p>Amphibians Bird Carnivore Fish Herbivore Mammals Omnivore Reptiles Senses</p>	experiment on what plants need to grow.
<b>Summer A</b>	<p>EYFS: Offer explanations for why things might happen.</p> <p>Y1 and Y2: Working Scientifically: make and use observations; perform simple tests</p> <p>Y2 children will have explored the properties of some everyday materials.</p>	<p>Children will learn to distinguish between an object and the material from which it is made. They will identify and name a variety of everyday materials and identify possible uses for them. They will describe simple physical properties of a variety of everyday materials and compare and group them by these properties. They will compare the suitability of materials for different purposes and find out how the shapes of solid objects made from some materials can be changed.</p>	<p>Seasonal Changes</p> <p>Everyday Materials (Y1 and Y2)</p>	<ol style="list-style-type: none"> <li>1. Observe changes across the four seasons.</li> <li>2. Distinguish between an object and the material from which it is made.</li> <li>3. Describe the simple physical properties of a variety of everyday materials.</li> <li>4. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</li> <li>5. Compare the suitability of a variety of materials for different purposes.</li> <li>6. Ask scientific questions and make predictions.</li> <li>7. Make observations and record findings.</li> </ol>	<p>Absorbent Flexible Materials Properties Rigid Transparent Waterproof</p>	Children will conduct an experiment to design a tent for a teddy, making predictions and observations and recording their findings.

### Year B

	Prior Learning	Intent (children will learn)	Unit	Sequence of Lessons WALT (children will ...)	Vocabulary	Outcome / Composite
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<p><b>Autumn B</b></p>	<p>EYFS: Explore the natural world; offer explanations about why things happen.</p> <p>Explore the natural world around them, making observations and drawing pictures of animals and plants (Y1)</p> <p>Working Scientifically (Y1)</p>	<p>To understand seasonal change; To identify living things and their habitats; Use simple food chains</p>	<p>Seasonal Changes (Y1)  Living Things and their Habitats (Y2)</p>	<ol style="list-style-type: none"> <li>1. WALT: know the names of seasons and which season we are in now (children will share their knowledge and sort activities and natural phenomena according to season)</li> <li>2. WALT: know the difference between alive, dead and never alive (children will sort, classify and record their findings)</li> <li>3. WALT: understand what a habitat is (children will consider and compare different types of habitats and what lives in them)</li> <li>4. WALT: (as above)</li> <li>5. WALT: Understand what a microhabitat is (children will consider and compare different types of microhabitats and what lives in them)</li> <li>6. WALT: understand a simple food chain (children will make a variety of food chains)</li> <li>7. WALT: work scientifically (children will complete a “choice chamber” experiment)</li> </ol>	<p>Animal Dead Food Chain Habitat Living Local environment Micro-habitat Plant Science Season</p>	<p>Children will be able to identify different food chains, habitats and microhabitats. They will work scientifically to conduct a micro-habitat experiment.</p>
<p><b>Spring B</b></p>	<p>EYFS: 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>Working Scientifically Observe closely using simple equipment and collect data (Y1)</p> <p>Seasonal Changes (Y2)</p>	<p>To work scientifically; to understand seasonal change; to explore the properties of everyday materials.</p>	<p>Working Scientifically Seasonal Changes (Y1)  Everyday Materials (Y2)</p>	<ol style="list-style-type: none"> <li>1. WALT: understand what a material is (children will identify and name a variety of everyday materials)</li> <li>2. WALT: compare a variety of everyday materials (children will investigate objects and identify their materials and uses)</li> <li>3. WALT: describe simple physical properties of everyday materials (children will use technical language to describe materials)</li> <li>4. WALT: evaluate the properties of a variety of materials (children will test materials and use technical language to describe their properties)</li> <li>5. WALT: identify the differences between man-made and natural materials (children will understand that some materials occur naturally and others are not)</li> <li>6. WALT: understand the damage litter causes (children will learn how and why we recycle and pass their knowledge to others)</li> </ol>	<p>Absorbent Flexible Magnetic Material Opaque Property Transparent Waterproof</p>	<p>Children will complete an egg drop science experiment to test different materials.</p>
<p><b>Summer B</b></p>	<p>Working scientifically; seasonal change. EYFS Offer explanations for why things might happen, making use of recently introduced vocabulary. explore the properties of everyday materials. Living Things and their Habitats (Y2)</p>	<p>To understand seasonal change; to identify survival needs for humans and animals</p>	<p>Working Scientifically. Seasonal Changes (Y1)  Animals including Humans (Y2)</p>	<ol style="list-style-type: none"> <li>1. WALT: identify a variety of common animals</li> <li>2. WALT: understand basic survival needs of humans</li> <li>3. WALT: understand the basic needs and habitats of some wild animals</li> <li>4. WALT: understand that animals have offspring which grow into adults</li> <li>5. WALT: identify and name parts of human bodies</li> <li>6. WALT: to use our senses to classify things into groups</li> </ol>	<p>Amphibian Carnivore Herbivore invertebrate Mammal Omnivore Reproduction Senses</p>	<p>Use the knowledge they have gained to complete a senses investigation</p>



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Lower Key Stage 2						
Year A						
	Prior Learning	Intent (children will learn)	Unit	Sequence of Lessons WALT (children will ...)	Vocabulary	Outcome / Composite
<b>Autumn A</b>	<p>EYFS Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p> <p style="text-align: center;">Working Scientifically (KS1)</p> <p>Everyday Materials (Y2)</p>	<p>To develop an understanding of the nature, processes and methods of science through different types of enquiries.</p> <p>To gain a conceptual understanding of the specific disciplines of biology, chemistry and physics.</p>	States of Matter (Y4)	<p>WALT: understand that materials can be classified into different states. Begin to use simple practical enquiries. Use scientific evidence to support findings.</p> <p>WALT: answer questions about gas using evidence from scientific enquiries and to record findings using drawings</p> <p>WALT: understand, through practical tasks, that materials change state when they are heated or cooled and to describe this process using scientific language</p> <p>WALT: ask a question about evaporation and set up a practical enquiry that will provide the scientific evidence to answer it</p> <p>WALT: identify the main stages of the water cycle and define key words related to the cycle.</p> <p>WALT: know that water moves in a cycle due to changes in temperature causing the water to change from one state to another</p>	<p>Condensation</p> <p>Evaporation</p> <p style="text-align: center;">Gas</p> <p style="text-align: center;">Liquid</p> <p style="text-align: center;">Particle</p> <p>Precipitation</p> <p style="text-align: center;">Solid</p> <p style="text-align: center;">States of matter</p> <p>Water Cycle</p>	<p>Science Fair within LKS2 phase where children will design an experiment to demonstrate their knowledge and understanding of states of matter.</p> <p>Children will present their learning to their peers in the role of a science expert.</p>
<b>Spring A</b>	<p style="text-align: center;">Plants (Y1/2)</p> <p>Identify and describe the basic structure of a flowering plant and describe how seeds and bulbs grow into mature plants; find out what plants need to survive.</p> <p style="text-align: center;">Living Things and their Habitats (Y2)</p>	<p>Children will explore the conditions that plants need to grow and what can impact on this.</p> <p>Children will learn to recognise the 7 life</p>	<p style="text-align: center;">Plants and how they grow (Y3)</p> <p style="text-align: center;">Living Things and their Habitats (Y4)</p>	<p>WALT: explore the requirements of plants for life and growth.</p> <p>WALT: identify, locate and describe the function of different parts of flowering plants.</p> <p>WALT: identify, locate and describe the function of the roots in a plant</p> <p>WALT: investigate the way in which water is transported in plants</p> <p>WALT: explore the lifecycle of a plant</p> <p>WALT: assessment</p> <p>WALT: develop descriptions using relative scientific language and vocabulary</p>	<p>Dispersal</p> <p>Formation</p> <p>Growth</p> <p>Nutrients</p> <p>Pollination</p> <p style="text-align: center;">Roots</p> <p style="text-align: center;">Seed</p> <p style="text-align: center;">Stem</p> <p>Adaptation</p> <p style="text-align: center;">Classify</p> <p>Environment</p>	<p>To have a deeper understanding of how plants survive and reproduce.</p> <p>To explore new scientific skills whilst</p>

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	Identify living things and their habitats; Use simple food chains	processes common to all living things.		WALT: recognise that living things can be grouped in a variety of ways WALT: explore and name a variety of living things in my local environment WALT: explore and use classification keys to group living things WALT: assessment	Exoskeleton Invertebrate Key Pollution Vertebrate	gaining a deeper understanding of living things and their habitats.
<b>Summer A</b>	Children study light as a separate topic. However, as part of their KS1 seasonal changes topic, children will have observed and talked about changes in the weather and the seasons and will have talked about the dangers of looking at the sun directly.	Children will recognise that they need light in order to see things and that dark is the absence of light. They will learn to identify light sources, explore what happens when light reflects off mirrors or other reflective materials and think of ways to protect themselves from the Sun. They will investigate which materials make the best/worst shadows and conduct an experiment to find out about the relationship between the height of a light source and the length of a shadow.	Light (Y3)	WALT: recognise that there needs to be light in order to see things and that darkness is the absence of light. WALT: notice that light is reflected from surfaces. WALT: recognise that light from the Sun can be dangerous and that there are ways to protect your eyes and skin from the Sun. WALT: recognise that shadows are formed when light from a light source is blocked by an opaque object. WALT: find patterns in the way that the length of shadows change. WALT: know that light is reflected from surfaces (mirrors).	Dark Light source Luminous Opaque Reflect Shadow Translucent Transparent	See Intent
Year B						
	Prior Learning	Intent (children will learn)	Unit	Sequence of Lessons WALT (children will ...)	Vocabulary	Outcome / Composite
<b>Autumn B</b>	Animals Including Humans (Y1) - Identify, name, draw and label the basic parts of the human body and relate to senses. Explain that animals, including humans, have offspring which grow into adults.	Understand the digestive system and function of teeth.	Working scientifically Animals including Humans (Y4)	1. Identify parts of the digestive system 1 2. Identify parts of the digestive system 2 3. Identify different teeth and describe their functions 4. Plan and conduct an investigation 5. Present the results of an investigation 6. Know how to look after our teeth.	Decay Digestion Digestive System Function Organ Prevention	Present the results of an experiment in a scientific way.
	EYFS Make comments about what they have heard and ask questions to clarify their understanding.  Working scientifically (Y1)	Identify how sounds are made, recognise how vibrations travel to the ear, find patterns in pitch/volume, recognise	Working scientifically Sound (Y4)	1. Understand how sounds are made. 2. Understand that vibrations travel into our ears. 3. Recognise how sounds are heard by the ear.	Noise Pinnae Pitch Sound Vibration	Children will make string telephones to investigate sound

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	Use observations and ideas to answer questions.	that sounds become fainter with distance.		<ol style="list-style-type: none"> <li>4. Ask relevant questions.</li> <li>5. Investigate pitch.</li> <li>6. Investigate sound</li> </ol>	Volume	
<b>Spring B</b>	<p>Working Scientifically (KS1) Observe closely using simple equipment and collect data.</p> <p>Everyday Materials (Y1) Describe the simple properties of a variety of everyday materials. Compare and group together materials based on their properties.</p>	For pupils to recognise and identify different types of rocks.	Working scientifically Rocks (Y3)	<ol style="list-style-type: none"> <li>1. Compare and group rocks</li> <li>2. Compare rocks based on their properties</li> <li>3. Understand how some types of rocks are formed</li> <li>4. Explain that the Earth is made from rocks and soils</li> <li>5. Present the results of an investigation</li> <li>6. Investigate how fossils are formed</li> </ol>	Crust Decay Fossil Geologist Igneous Impermeable Inner core Mantle Metamorphic Microbe Permeable Sedimentary Soil	Present the results of an experiment in a scientific way.
	<p>Working Scientifically (KS1) Record findings eg as drawings, diagrams, photographs or in simple prepared format such as tables and charts.</p>	Understand the components of an electrical circuit	Working scientifically Electricity (Y4)	<ol style="list-style-type: none"> <li>1. Identify common appliances that use electricity.</li> <li>2. Construct a simple circuit and name the parts of the circuit.</li> <li>3. Identify if a bulb will light up in a circuit.</li> <li>4. Recognise common conductors and insulators.</li> <li>5. Investigate different switches.</li> <li>6. Review our learning of electricity</li> </ol>	Battery Circuit Components Conductor Insulator	Children will create a fully functioning electric circuit.
<b>Summer B</b>	<p>Animals including Humans (Y2): Children will have learned the basic needs of animals and humans for survival and can describe the importance of exercise and eating the right amounts of different types of food.</p>	Children will learn about the importance of nutrition and will find out how different parts of the body of different functions.	Working Scientifically Animals including Humans (Y3)	<ol style="list-style-type: none"> <li>1. Identify the animals including humans need the right types of nutrition.</li> <li>2. Understand that humans/animals get nutrition from what they eat.</li> <li>3. Identify humans and some animals have skeletons and muscles.</li> <li>4. Identify the main body parts associated with skeletons and muscles.</li> <li>5. Identify and group animals with and without skeletons.</li> <li>6. Compare the diets of different animals.</li> </ol>	Energy Healthy Invertebrate Nutrients Tendons Vertebrate	Children will demonstrate their understanding of what foods keep us healthy. (Link to DT Super Salads)
	Working Scientifically (KS1):	Identify magnetic materials, to form	Working Scientifically	<ol style="list-style-type: none"> <li>1. Compare how things move on different surfaces.</li> </ol>	Attract Force	Conduct an investigation

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	Ask simple scientific questions and recognise that there are different ways to answer them. Observe closely using simple equipment and collect data. Perform simple tests.	an understanding of how magnets work.	Forces and Magnets (Y3)	<ol style="list-style-type: none"> <li>Notice that some forces need contact between two objects.</li> <li>Observe how magnets attract or repel each other.</li> <li>Compare and group together everyday materials on a basis of whether that are attracted by a magnet.</li> <li>Describe magnets as having two poles.</li> <li>Predict whether two magnets will attract or repel each other.</li> </ol>	Friction Magnet Magnetic force Magnetic pole Pull Push Repel	in to which everyday materials are magnetic.
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### Upper Key Stage 2

#### Year A

	Prior Learning	Intent (children will learn)	Unit	Sequence of Lessons WALT (children will ...)	Vocabulary	Outcome / Composite
<b>Autumn A</b>	<p>Scientific Enquiry Set up practical enquiries and fair tests using a range of scientific equipment. Record findings using simple scientific language, drawings, labelled diagrams, bar charts and tables. Use results to draw simple conclusions and suggest improvements and predictions for setting up further tests.</p> <p>Ask relevant questions and use evidence to answer these. Record findings using simple scientific language, drawings, labelled</p>	<p>5e1: explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>5e2: identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Describe the movement of the Moon relative to the Earth. Describe the Sun, Earth and Moon as approximately spherical bodies. Use the idea of the Earth's rotation to explain day and night and the</p>	<p>Forces (Y5)</p> <p>Earth and Space (Y5)</p>	<ol style="list-style-type: none"> <li>Understand what a force is - label forces on a diagram</li> <li>Know what gravity and resistance are</li> <li>Know the difference between weight and mass</li> <li>Understand the effects of air resistance</li> <li>plan and conduct an experiment on the effects of air resistance</li> <li>I can explain the effects of water resistance.</li> <li>I can identify streamlined shapes.</li> <li>I can minimise the effects of water resistance on an object.</li> <li>explain the effects of friction on a moving vehicle.</li> <li>investigate the effects of friction created by different materials.</li> <li>recognise and control variables in an investigation.</li> </ol> <p>Lesson 1</p> <ul style="list-style-type: none"> <li>Understand what a planet/star/satellite is.</li> <li>Understand meaning of orbit and revolve</li> <li>Relative sizes of Earth Sun and Moon</li> <li>Understand gravity/ mass differences between moon and earth</li> </ul> <ol style="list-style-type: none"> <li>How do we know that the earth is round; Why we have night and day.</li> <li>How shadows form and change</li> </ol>	<p>air resistance, force, friction, Galileo Galilei, gravity, investigation, mass, measure, observe, parachute, prediction, pull, push, results, variables, water resistance</p> <p>Asteroid, axis, comet, galaxy, gravity, leap year, meteorite, orbit, phases of the moon, planet, rotating, solar, sphere, star, time zone, universe</p>	<p>To understand what a force is To understand the effect a variety of forces have on objects To explain the effect of friction on objects To use this knowledge to carry out investigations</p> <p>Describe the movement of the earth, moon and sun, know the planets in the solar system and where they are in relation to each other</p>

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	diagrams, bar charts and tables.	apparent movement of the sun across the sky. Understand how the four seasons are linked to the movement of the Earth.		4. Why we have seasons 5. Phases of the moon 6. Planets in our solar system		
<b>Spring A</b>	<p>KS1 History: Mary Anning Rocks (Y3) Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>Animals including Humans Animals, including humans, have offspring which grow into adults (Y2) Identify that humans and some other animals have skeletons and muscles for support, protection and movement (Y3) Identify the different types of teeth in humans and their simple functions (Y4)</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 recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p> <p>Describe the changes as humans develop to old age</p>	<p>Working Scientifically Evolution and Inheritance (Y6)</p> <p>Working Scientifically Animals including humans (Y5)</p>	<p>1. Explain the scientific concept of inheritance. 2. Understand of the scientific meaning of adaptation. 3. Identify the key ideas of the theory of evolution. 4. Identify evidence for evolution from fossil records. 5. Understand how human beings have evolved. 6. Explain how adaptations can result in both advantages and disadvantages.</p> <p>1. Describe the changes in human development 2. Explain how babies grow and 3. Explain the changes and puberty 4. Describe the changes as humans develop to old age 5. Report findings from enquiries, including oral and written explanations of results in the context of the gestation period for animals. 6. Reporting and presenting findings from enquiries, including causal relationships by analysing data on gestation periods and life expectancies of animals.</p>	<p>Adaptation Adaptive traits Charles Darwin DNA Evolution Fossil Genes Habitat Inheritance Inherited traits Natural selection Variation</p> <p>Adolescence Adulthood Asexual reproduction Fertilisation Gestation Life expectancy Lifecycle Menstruation Prenatal Puberty Reproduce Sexual reproduction</p>	<p>The children will understand how the human race has evolved</p> <p>The children will describe the changes in human development</p>
<b>Summer A</b>	<p>Y3/4 Working Scientifically</p> <p>Y3 – Light unit Children will have learned to</p>	Explore the way that light behaves, including light sources, reflection and shadows. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles,	<p>Working Scientifically</p> <p>Light (Y6)</p>	<p>1. How we see- understand light travels in straight lines and we can see because light travels in a straight line from an object to our eye. 2. Understand how light travels by investigating by angles of incidents and reflection.</p>	<p>Filter Incident ray Light Light source Periscope</p>	Understand how light travels and behaves.

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<p>identify light sources, explore what happens when light reflects off mirrors or other reflective materials and think of ways to protect themselves from the sun.</p> <p>Y3/4 Working Scientifically</p> <p>Y4 – Electricity Understand the components of an electrical circuit</p>	<p>objects looking bent in water, and coloured filters (they do not need to explain why these phenomena occur).</p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>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.</p>	<p>Working Scientifically</p> <p>Electricity (Y6)</p>	<ol style="list-style-type: none"> <li>3. Investigate refraction and how refraction changes the direction in which light travels.</li> <li>4. Explain how prisms split light and create colour wheels. Investigate how light enables us to see colour</li> <li>5. Understand why shadows are the same shape of the object that casts them.</li> </ol> <ol style="list-style-type: none"> <li>1. Recognise symbols in a circuit diagram</li> <li>2. Observe and explain the effects of differing voltages in a circuit</li> <li>3. Plan an investigation to see the brightness of a bulb or loudness of a buzzer</li> <li>4. Conduct an investigation to record the data and report findings</li> <li>5. Understand why a circuit is not working and fix the problem</li> </ol>	<p>Prism Rainbow Reflected ray Reflection Refraction</p> <p>Amps Cell/battery Circuit Current Electrons Resistance Symbol Voltage</p>	<p>Understand how a circuit diagram can be represented in symbols.</p> <p>Understand how different voltages have different effect on electrical components. To know how to mend a broken circuit.</p>
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### Year B

	Prior Learning	Intent (children will learn)	Unit	Sequence of Lessons WALT (children will ...)	Vocabulary	Outcome / Composite
<b>Autumn B</b>	<p>Living things and their Habitats (Y3): Identify and describe the functions of different parts of flowering plants. Identify requirements of plants for life and growth and how they vary from plant to plant.</p> <p>Living Things and their Habitats (Y4): Recognise that living things can be grouped in a variety of ways and give reasons for classifying plants and animals</p>	<p>To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird and reproduction in plants and animals.</p> <p>Describe how things are classified and give reasons based on certain characteristics.</p>	<p>Working Scientifically Living Things and Habitats: Lifecycles) (Y5)</p> <p>Working Scientifically Living Things and Habitats (Y6):</p>	<ol style="list-style-type: none"> <li>1. Sexual reproduction in plants.</li> <li>2. Asexual reproduction in plants</li> <li>3. Animal reproduction.</li> <li>4. Animal life-cycles - mammals</li> <li>5. Animal life-cycles - insects, birds and amphibians.</li> <li>6. Naturalists.</li> </ol> <ol style="list-style-type: none"> <li>1. Classification 1</li> <li>2. Classification 2 (Sweets)</li> <li>3. Linnaean System</li> <li>4. Micro-organisms life-cycle</li> <li>5. Micro-organism experiment.</li> </ol>	<p>Asexual reproduction Fertilise Gestation Life cycle Metamorphosis Pollination Mammal Amphibian Insect</p> <p>Bacteria Cassidy Characteristics Key Linnaean system Microscope Species Taxonomist</p>	<p>What the unit builds to (sort of final outcome for subject)</p> <p>What the unit builds to (sort of final outcome for subject)</p>

## Science Knowledge, Skills, Sequencing and Progression

<p><b>Spring B</b></p>	<p>Animals including Humans: Know the skeletal and muscular system (Y4)</p> <p>Animals including Humans: understand the digestive system (Y4)</p>	<p>To identify and name main parts of human circulatory system. Recognise the impact of diet, exercise, drugs and lifestyle. Describe the ways nutrients are transported in animals.</p> <p>To know about important scientists. To understand the gestation periods of humans and other animals. Know the human lifecycle. Use water to carry out activities working scientifically.</p>	<p>Working Scientifically Animals including Humans (Y6)</p> <p>Working Scientifically Animals including Humans (Y5)</p>	<ol style="list-style-type: none"> <li>1. Understand the function of the heart.</li> <li>2. Know the main parts of the circulatory system.</li> <li>3. Plan an investigation to find out what factors affect pulse rates.</li> <li>4. Describe the way nutrients and water are transported around animals.</li> <li>5. Recognise the impact of diet and exercise on the body.</li> <li>6. Recognise the impact of drugs not the body.</li> </ol> <ol style="list-style-type: none"> <li>1. Research important scientists including female scientists.</li> <li>2. Gestation periods of mammal. Timeline of a human life</li> <li>3. Life cycle of a human from conception to old age</li> <li>4. 5. and 6. Just add water. Stem activities about water carried out as a circus of tasks. Focussing on practical experiments and working scientifically.</li> </ol>	<p>Alcohol Artery Blood vessel Circulatory system Deoxygenated Drug Heart Nutrients Oxygenated Vein</p> <p>Adolescence Asexual reproduction Fertilisation Gestation Life cycle Life expectancy Menstruation Pre-natal Puberty Reproduce Sexual reproduction</p>	<p>Use knowledge to plan a deathly lifestyle presentation - make links to P.S.H.E. and 5 Ways to Wellbeing</p> <p>Design own experiments about water and make links to Geography</p>
<p><b>Summer B</b></p>	<p>Rocks (Y3) - Compare and group rocks on their appearance / physical properties.</p> <p>Electricity and Magnetism (Y4) - construct simple circuits.</p> <p>States of Matter (Y4) - Compare and group materials into solids, liquids and gases.</p>	<p>Build on a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials.</p>	<p>Working Scientifically Properties and Changes of Materials (Y5)</p>	<ol style="list-style-type: none"> <li>1. To compare materials according to their properties</li> <li>2. Investigate thermal conductors and insulators.</li> <li>3. Investigate which electrical conductors make a bulb shine brightest</li> <li>4. Investigate materials that will dissolve.</li> <li>5. Use different processes to separate mixtures of materials.</li> <li>6. Identify and explain irreversible and chemical changes.</li> </ol>	<p>Condensing Conductor Dissolve Evaporating Freezing Gases Insulator Liquids Materials Melting Solids Thermal Transparency</p>	<p>Understand materials and how they relate to everyday life.</p>