

Science Long Term Plan

✓ AUTUMN 1	✓ ✓ AUTUMN 2	✓ ○ SPRING 1	✓ ○ SPRING 2	✓ ✓ SUMMER 1	✓ ✓ SUMMER 2
✓ YEAR 1/2 Cycle A ✓					
○	<ul style="list-style-type: none"> ✓ ✓ Everyday Materials ✓ To identify the difference between an object and the material which it is made from. ✓ To identify and name a variety of everyday materials - plastic, glass, rubber, wood, rock, paper, brick and metal. ✓ To identify and name different properties of materials. ✓ To identify whether materials are hard or soft. ✓ To identify whether materials are rough or smooth. ✓ To identify whether materials are dull or shiny. ✓ To identify whether materials are bendy or stiff. ✓ To identify whether materials are waterproof or absorbent. ✓ WS ✓ To group and sort materials, objects or living things based on their properties or features, with support. ✓ To begin to explain, with support, what the data gathered shows and how it can help answer questions. To use a variety of simple equipment to carry out scientific enquiries, with support. ✓ To begin to use, with support, simple scientific language, and vocabulary. ✓ To carry out simple tests, with support. ✓ To begin to notice, with support, patterns and relationships from observations. 	<ul style="list-style-type: none"> ✓ ✓ Animals Including Humans ✓ To identify, name, draw and label the basic parts of the human body e.g. head, elbow, stomach, knee, foot, wrist, chest, shoulder. ✓ To identify and name the 5 senses – sight, taste, smell, hearing, touch. To name the parts of the body associated with each sense e.g. nose and smell. ✓ To identify and name a variety of common animals across all groups (amphibians, birds, fish, mammals, reptiles). ✓ To identify and name groups of animals (amphibians, birds, fish, mammals, reptiles) based on their features. ✓ To identify similarities between different groups of animals e.g., their structure. ✓ To identify differences between different groups of animals e.g., their structure. ✓ To know what a carnivore is and name some examples. ✓ To know what an herbivore is and name some examples. ✓ To know what an omnivore is and to name some examples. ✓ WS ✓ To ask simple questions about the world around them, with support. (WS) ✓ To identify features or properties of materials, objects or living things, with support. (WS) ✓ To use observations, with support, to begin to suggest answers to questions. (WS) 	<ul style="list-style-type: none"> ✓ ✓ Seasonal Changes ✓ To name the four seasons: Spring, Summer, Autumn, Winter. To name the months associated with each season. ✓ To identify changes to the environment across the four seasons. ✓ To explain how the weather changes over the 4 seasons ✓ To describe that the day changes in length depending on which season we are in. ✓ WS ✓ To ask simple questions about the world around them, with support. (WS) ✓ To use a variety of simple equipment to carry out scientific enquiries, with support. (WS) To use simple measurements e.g., cm, metres, seconds, and grams, with support, when recording data. (WS) ✓ To observe simple changes over time, with support. (WS) ✓ To use observations, with support, to begin to suggest answers to questions. (WS) ✓ To record scientific enquiry data and observations, using scaffolded support and structured templates and frames e.g., labelled diagrams, labelled photographs. (WS) ✓ Plants ✓ To name the basic parts of a tree – root, trunk, branch, twig, leaf and bark. ✓ To name some deciduous trees e.g. oak, ash, birch, weeping willow. To name some 	<ul style="list-style-type: none"> ✓ ✓ Plants ✓ To name the basic parts of a flower - stem, root, flower, leaf and petal. To observe how some plants change over a long period of time - some trees lose their leaves, leaves change colour in Autumn, flowers die in the Winter, in Spring some plants emerge from the ground. ✓ WS ✓ To identify features or properties of materials, objects or living things, with support. (WS) ✓ To use observations, with support, to begin to suggest answers to questions. (WS) ✓ To record scientific enquiry data and observations, using scaffolded support and structured templates and frames e.g., labelled diagrams, labelled photographs. (WS) To begin to make careful observations, with support and guidance, when carrying out scientific enquiries. (WS) To observe simple changes over time, with support. (WS) To use a variety of simple equipment to carry out scientific enquiries, with support. (WS) To begin to describe how a test was carried out to find answers to questions, with scaffolded support. (WS) 	<ul style="list-style-type: none"> ✓ ✓ Everyday Materials ✓ To identify whether materials are waterproof or not waterproof. ✓ WS ✓ To carry out simple tests, with support. (WS) ✓ To explain, with support, why data need to be captured accurately. (WS) ✓ To identify features or properties of materials, objects or living things, with support. (WS) ✓ To group and sort materials, objects or living things based on their properties or features, with support. (WS) ✓ To use a variety of simple equipment to carry out scientific enquiries, with support. (WS) To begin to describe how a test was carried out to find answers to questions, with scaffolded support. (WS) ✓ To begin to make careful observations, with support and guidance, when carrying out scientific enquiries. (WS) ✓ To use observations, with support, to begin to suggest answers to questions. (WS)

		<ul style="list-style-type: none"> ✓ To use simple secondary sources to find answers to questions, with support. (WS) 	<p>evergreen trees e.g. fir, laurel, holly.</p> <ul style="list-style-type: none"> ✓ To understand the difference between wild and garden flowering plants. ✓ To name some common wild and garden flowers and plants e.g. roses, daffodils, daisies, buttercups, bluebells, ivy, cherry blossom. To observe how some plants change over a long period of time - some trees lose their leaves, leaves change colour in Autumn, flowers die in the Winter, in Spring some plants emerge from the ground. 		
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			<p style="text-align: center;"><u>WS</u></p> <ul style="list-style-type: none"> ✓ To begin to recognise that simple questions can be answered in different ways, with support. (WS) ✓ To use a variety of simple equipment to carry out scientific enquiries, with support. (WS) ✓ To identify features or properties of materials, objects or living things, with support. (WS) ✓ To use observations, with support, to begin to suggest answers to questions. (WS) ✓ To ask simple questions about the world around them, with support. (WS) ✓ To group and sort materials, objects or living things based on their properties or features, with support. (WS) ✓ To begin to report findings from scientific enquiries in a range of ways: orally, written, labelled diagrams, with scaffolded support. (WS) ✓ To begin to use, with support, simple scientific language, and vocabulary. (WS) 		
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YEAR 1/2 Cycle B

<p>Uses of Everyday Materials</p> <ul style="list-style-type: none"> ✓ To explain how the properties of a material make them suitable for certain jobs. ✓ To describe which of the following materials: wood, metal, plastic, glass, brick, rock, paper, and cardboard, we would use to make different objects referring to their properties. ✓ To explain that some materials can change shape when we do something to them e.g. squash, bend, stretch, twist. ✓ To identify and name some materials that can be stretched e.g., rubber. To identify and name some materials that can bend e.g., paper, some plastic, leather. ✓ To identify and name some materials that can be squashed e.g., rubber, foam, sponge. ✓ To identify and name some materials that can be twisted, wool, cotton. ✓ WS ✓ To group and sort materials, objects or living things based on their properties or features. (WS) ✓ To ask simple questions about the world around them. (WS) ✓ To begin to use simple scientific language, and vocabulary. (WS) ✓ To identify features or properties of materials, objects or living things. (WS) ✓ To use observations to begin to suggest answers to questions. (WS) ✓ To recognise that simple questions can be answered in different ways. (WS) To record scientific enquiry data and observations using structured templates and frames e.g., simple table, pictograms, tally charts, block diagrams and 	<p>Animals Including Humans</p> <ul style="list-style-type: none"> ✓ To identify and name animals that lay eggs. ✓ To identify and name animals that birth live young. ✓ To know that animals have offspring which grow into adults. To explain that some eggs hatch and the offspring may go through stages before they look like their parents e.g., tadpole to frog. To know that all animals need water, food, and air to survive. To know that if animals do not get enough food, air or water, they will eventually die. ✓ To know and explain why keeping clean is important. ✓ To explain that germs and viruses can spread if we don't keep ourselves clean and can make ourselves and other people ill. To explain how we can keep ourselves clean. ✓ To know and explain that exercise is important for us to keep healthy. 		<p>Plants</p> <ul style="list-style-type: none"> ✓ To know that mature plants grow from either seeds or bulbs ✓ To explain what conditions a seed needs to grow or germinate - water and nutrients. ✓ To know that seeds and bulbs like different conditions and may grow at different rates. ✓ To describe what happens when a seed germinates. ✓ To know that when a seed germinates it begins to grow into an adult plant. ✓ To describe what a plant needs to grow - water, sunlight, nutrients, and a suitable temperature. ✓ WS ✓ To begin to explain what the data gathered shows and how it can help answer questions. (WS) ✓ To begin to use simple scientific language, and vocabulary. (WS) To use simple secondary sources to find answers to questions. (WS) To use observations to begin to suggest answers to questions. (WS) 	<p>Living Things and Their Habitats</p> <ul style="list-style-type: none"> ✓ To know that everything in our world is either alive, dead or has never been alive. ✓ To explain the difference between things that are dead and things that have never been alive. ✓ To explain that living things, plants, and animals, live in habitats which suit them and provides them with what they need to survive: air, shelter, food, water. ✓ To name some habitats and some of the animals and plants that live within them e.g., woodland, garden, rainforests, deserts, and polar regions. ✓ To describe what a micro-habitat is and give an example of one in a larger habitat e.g. worms in soil in a garden. ✓ To explain that all habitats and micro-habitats provide the conditions that animals and plants need to survive.
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<ul style="list-style-type: none"> ✓ labelled diagrams. (WS) ✓ To use a variety of simple equipment to carry out scientific enquiries. (WS) ✓ To carry out simple tests. (WS) ✓ To begin to make careful observations when carrying out scientific enquiries. (WS) ✓ To begin to explain what the data gathered shows and how it can help answer questions. (WS) ✓ To begin to notice patterns and relationships from observations. (WS) 	<ul style="list-style-type: none"> ✓ To explain that exercise helps our build strong muscles and makes our heart strong too. ✓ To know and explain why different food groups and the amount of each we need is different for a balanced diet. ✓ WS ✓ To identify features or properties of materials, objects or living things. (WS) ✓ To group and sort materials, objects or living things based on their properties or 		<ul style="list-style-type: none"> ✓ To begin to report findings from scientific enquiries in a range of ways: orally, written, labelled diagrams. (WS) ✓ To use everyday units of measurements e.g., cm, metres, seconds, minutes, grams and kg, to record data, with support 	<ul style="list-style-type: none"> ✓ To know and explain the order of a food chain e.g. plant, herbivore, carnivore. ✓ To know that a food chain always starts with a plant. ✓ To know that if something happens to one part of a food chain, then it will impact the others. To explain that all habitats and microhabitats provide the conditions that animals and plants like to live. ✓ To give an example of a food chain. ✓ To understand that a food chain always starts with a plant.
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	<p>features. (WS) To begin to report findings from scientific enquiries in a range of ways: orally, written, labelled diagrams. (WS)</p> <ul style="list-style-type: none"> ✓ To carry out simple tests. (WS) To observe simple changes over time. (WS) ✓ To use a variety of simple equipment to carry out scientific enquiries. (WS) 		<ul style="list-style-type: none"> ✓ (WS) To observe simple changes over time. (WS) To carry out simple tests. (WS) To recognise that simple questions can be answered in different ways. (WS) ✓ To record scientific enquiry data and observations using structured templates and frames e.g., simple table, pictograms, tally charts, block diagrams and labelled diagrams. (WS) ✓ To begin to describe how a test was carried out to find answers to questions. (WS) ✓ To group and sort materials, objects or living things based on their properties or features. (WS) 	<ul style="list-style-type: none"> ✓ To understand that if something happens to one part of a food chain, then it will impact the others. <p>WS</p> <ul style="list-style-type: none"> ✓ To group and sort materials, objects or living things based on their properties or features. (WS)
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YEAR 3/4 Cycle A

<p><u>Rocks</u></p> <ul style="list-style-type: none"> ✓ To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties e.g., hard, soft, grains, crystals. ✓ To explain that a fossil is an imprint or the preserved remains, found in 	<p><u>Animals Including Humans</u></p> <ul style="list-style-type: none"> ✓ To know that skeletons are made of bones. ✓ To know that most animals, including humans, have skeleton. ✓ To know that skeletons support the animal's body. ✓ To identify and name parts of a skeleton 	<p><u>Light</u></p> <ul style="list-style-type: none"> ✓ To know that darkness is the absence of light. ✓ To explain that we need light in order to see things. To know that there are different sources of light. To name and identify different sources of light. ✓ To know we need to protect 	<p><u>Plants</u></p> <ul style="list-style-type: none"> ✓ To identify and describe the functions of the basic parts of a flowering plant: roots, stem/trunk, leaves, flower. ✓ To know that roots anchor the plant in place. ✓ To know that the stem holds the leaves and flowers up. ✓ To know that leaves use sunlight and water to produce the plant's food, and that this process is called photosynthesis. 	<p><u>Forces and Magnets</u></p> <ul style="list-style-type: none"> ✓ To know that a force is a push, pull or twist. ✓ To identify examples of different forces e.g., pulling a door open, pushing a trolley etc. ✓ To describe how things move on different surfaces, making comparisons. ✓ To know that friction is a contact force. ✓ To describe how friction can affect an object. ✓ To know that magnets have two poles. ✓ To know how magnets can attract or repel each other. ✓ To know that a magnetic forces can act at a distance. ✓ To use knowledge of magnets to predict whether the magnets will attract or repel each other, referring to their poles. ✓ To know that magnets attract some materials and not others.
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<p>rock, of something that was once living.</p> <ul style="list-style-type: none"> ✓ To describe, in simple terms, the process of how fossils are formed. To use observations of fossils to name living things they could be, making reasoned justifications. To explain and describe the process of weathering. ✓ To describe how weathering affects rocks, including the type of rocks. To know that soils are made from rocks and organic matter. <p>WS</p> <ul style="list-style-type: none"> ✓ To identify patterns and relationships from data and observations from science enquiries, with support. (WS) To report findings from scientific enquiries in a variety of ways, with support e.g., oral and written explanations, displays, presentation. (WS) 	<p>that protect parts of the body e.g. skull protects the brain.</p> <ul style="list-style-type: none"> ✓ To describe how skeletons protect important organs. ✓ To identify parts of the skeleton that allows animals to move. ✓ To explain that skeletons allow movement through different types of joints. ✓ To describe how muscles work, along with joints, to enable an animal's skeleton to move. ✓ To explain that animals, including humans, need the right types and amount of nutrition. ✓ To explain that animals cannot make their own food but get nutrition from what they eat. ✓ To describe and give examples of the effects of insufficient nutrition on the human body. 	<p>our eyes and our skin from the sun's harmful rays.</p> <ul style="list-style-type: none"> ✓ To know and name different opaque, translucent and transparent materials. To know that a shadow is formed when an object blocks light. ✓ To describe, with help, why a shadow has the same shape as the object casting it. ✓ To use knowledge of opaque materials to explain why they cast the best shadows. ✓ To understand that there are patterns in the way the size of the shadow can be changed. ✓ To know that light is reflected from the surface of objects into our eyes and that is how we see them. <p>WS</p> <ul style="list-style-type: none"> ✓ To plan, with support, which measurements and standard units (if applicable) to use to 	<ul style="list-style-type: none"> ✓ To explain how differences in plants e.g. root length, help their survival. ✓ To describe the process of transpiration. ✓ To know that roots absorb water and nutrients from the soil. ✓ To know that the stem transports water and nutrients around the plant. ✓ To know that some plants have flowers, and this enables the plant to reproduce. ✓ To name and identify the parts of a flower needed for pollination: stamen, stigma, ovary. 	<ul style="list-style-type: none"> ✓ To compare and group together everyday materials on whether they are magnetic or non-magnetic. ✓ To name and identify magnetic materials. <p>WS</p> <ul style="list-style-type: none"> ✓ To begin to ask relevant questions about the world around them. (WS) ✓ To structure questions, with support, to be answered in a scientific enquiry. (WS) ✓ To use a range of equipment appropriately, including data loggers (e.g., Lux meters), with support, to collect relevant data. (WS) ✓ To know, with support and scaffolding, the most appropriate way to record findings from scientific enquiries. (WS) ✓ To record findings from scientific enquiries using drawings, labelled diagrams, keys, bar charts and tables, with scaffolding and support. (WS) ✓ To analyse findings from scientific enquiries, with support, to find answers to a question. (WS) ✓ To begin to suggest ways to improve a scientific enquiry process, with support. (WS)
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<ul style="list-style-type: none"> ✓ To use simple scientific language when recording findings, with support. (WS) ✓ To make careful observations to collect relevant data to answer a question. (WS) ✓ To record findings from scientific enquiries using drawings, labelled diagrams, keys, bar charts, and tables, with scaffoldings and support. (WS) ✓ To begin to select, with support, the most appropriate type of scientific enquiry to answer a question e.g., simple fair test, criteria for grouping, sorting, and classifying, comparative test etc. (WS) ✓ To plan, with support and scaffolding, what simple equipment is needed to gather relevant data. (WS) ✓ To gather data from scientific enquiries, with support, using notes, simple tables and standard units. (WS) ✓ To identify new questions to investigate based on the observations or data obtained from an enquiry, with support. (WS) To draw simple conclusion, with support, from results and observations, to answer a question. (WS) 	<ul style="list-style-type: none"> ✓ To explain that the size and age of an animal can affect the amount of nutrition it requires. 	<p style="text-align: center;">gather relevant data. (WS)</p> <ul style="list-style-type: none"> ✓ To use a range of equipment appropriately, including data loggers (e.g., Lux meters), with support, to collect relevant data. (WS) <ul style="list-style-type: none"> ✓ To take accurate measurements, with support, using standard units e.g., cm, metres, grams, Newtons etc.(WS) ✓ To use simple scientific language when recording findings, with support. (WS) ✓ To analyse finding from scientific enquiries, with support, to find answers to questions. (WS) To identify patterns and relationships from data and observations from science enquiries, with support. (WS) ✓ To plan, with support and scaffolding, what simple equipment is needed to gather relevant data. (WS) ✓ To decide, with support and structured scaffolds, the observations to make, including the frequency of observations, in order to find answers to a question. (WS) ✓ To use relevant scientific language to discuss and communicate findings, to suit a given audience, with support. (WS) ✓ To explain, with support, what needs to stay the same and what is changing in comparative and fair tests. (WS) ✓ To report findings from scientific enquiries in a variety of ways, with support, e.g., oral and written explanations, displays, presentations etc. (WS) ✓ To record findings from scientific enquiries using drawings, labelled diagrams, keys, bar chart and tables, with scaffolding and support. (WS) <ul style="list-style-type: none"> ✓ To structure questions, with support, to be answered in a scientific enquiry. (WS) 	<ul style="list-style-type: none"> ✓ To describe pollination as pollen, which is produced by the stamen, being transferred onto the stigma. ✓ To know that seeds are formed in the ovary. ✓ To know that pollination forms seeds, sometimes contained in berries or fruits. ✓ To know and explain the different ways seeds can be dispersed: wind, water, animals. ✓ To group and sort seeds on how they will be dispersed based on their common features. ✓ To describe germination as the part of a plant's life cycle when it begins to sprout and grow. ✓ To name the different stages in a plant's life cycle. ✓ To describe how a plant changes through each stage of its life cycle. ✓ To describe how humans can have a negative impact on the life cycle of a plant e.g. pollution in the soil harming roots. <p>WS</p> <ul style="list-style-type: none"> ✓ To use a range of equipment appropriately, including data loggers (e.g., Lux meters), with support, to collect relevant data. (WS) ✓ To make careful observations to collect relevant data to answer a question. (WS) ✓ To record findings from scientific enquiries using drawings, labelled diagrams, keys, bar charts and tables, with scaffolding and support. (WS) ✓ To use simple scientific language when recordings findings, with support. (WS) ✓ To identify similarities, differences and changes in data and observations, with support. (WS) 	<ul style="list-style-type: none"> ✓ To begin to make predictions more generally based on data or observation gathered and analysed. (WS) ✓ To report findings from scientific enquiries in a variety of ways, with support, e.g., oral and written explanations, displays, presentations. (WS) ✓ To use secondary sources to support explanations to scientific questions, with help. (WS) ✓ To make links between observations and data from scientific enquires and research from secondary sources, with support. (WS) ✓ To decide, with support and scaffolding, the most appropriate way to record findings from scientific enquires. (WS)
✓	YEAR 3/4 Cycle B			

<p><u>Animals Including Humans</u></p> <ul style="list-style-type: none"> ✓ To identify and name the different type of teeth – incisors, canines, molars. ✓ To describe the simple function of each type of tooth. ✓ To identify features of the structure of a typical tooth. ✓ To know why good oral hygiene is important. ✓ To describe ways to support good oral hygiene. ✓ To know and name the basic parts of the digestive system: mouth, oesophagus, stomach, small intestine, large intestine, anus. ✓ To describe the simple functions of the basic parts of the digestive system. ✓ To know how to construct and interpret food chains. ✓ To identify producers, predators and prey in a food chain. ✓ To know how energy is transferred through a food chain. 	<p><u>States of Matter</u></p> <ul style="list-style-type: none"> ✓ To know the properties of solids, liquids and gases. ✓ To identify materials as solids, liquids or gases. ✓ To group materials according to whether they are solids, liquids or gases. ✓ To know the particle structure of a solid, liquid and gas. ✓ To know what a non-Newtonian 	<p><u>Electricity</u></p> <ul style="list-style-type: none"> ✓ To know and name appliances that use electricity. ✓ To use knowledge of appliances to group them on whether they use main electricity or batteries. ✓ To know how to construct a simple series electrical circuit. ✓ To identify and name the basic parts of a series electrical circuit - cells, wires, bulbs, switches, buzzers. 	<p><u>Sound</u></p> <ul style="list-style-type: none"> ✓ To know sound is a type of energy. To know that sound is caused by something vibrating. ✓ To know that sounds travel through a medium to the ear. ✓ To know that the further the distance from a sound source, the fainter the sound, due to weaker vibrations. 	<p><u>Living Things and Their Habitats</u></p> <ul style="list-style-type: none"> ✓ To know that living things can be grouped according to some of their features and characteristics. ✓ To know that classification keys can be used to groups, identify and names a variety of living things. ✓ To use knowledge of classification keys to group, identify and name living things in the local and wider
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<ul style="list-style-type: none"> ✓ To know that energy in a food chain is provided by the Sun. ✓ To know and describe how changes to environments or populations can have implications to food chains. <p><u>WS</u></p> <ul style="list-style-type: none"> ✓ To report findings from scientific enquiries in a variety of ways e.g., oral and written explanations, displays and presentations. (WS) ✓ To draw simple conclusions from results to find answers to a question. (WS) ✓ To identify similarities, differences and changes in data and observations. (WS) To make careful and systematic observations to collect relevant data to answer a question. (WS) ✓ To gather data from scientific enquiries using notes, simple tables and standard units. (WS) ✓ To record findings from scientific enquiries using drawings, labelled diagrams, keys, bar charts and tables, with support. (WS) ✓ To ask relevant questions about the world around them. (WS) ✓ To structure questions to be answered in a scientific enquiry. (WS) ✓ To decide, with support, the observations to make, including the frequency of observations, in order to find answers to a question. (WS) 	<p>substance is.</p> <ul style="list-style-type: none"> ✓ To know that some materials change state when they are heated and cooled. ✓ To know the temperature at which some materials change state. To know and describe the process of evaporation. ✓ To know and describe the process of condensing. ✓ To know and describe the roles played by evaporations and condensation in the water cycle. To know the relationship between temperature and rate of evaporation. <p><u>WS</u></p> <ul style="list-style-type: none"> ✓ To make careful and systematic observations to collect relevant data to answer a question. (WS) To record findings from scientific enquiries using drawings, labelled diagrams, keys, bar charts and tables, with support. (WS) To use simple scientific language when recording findings. (WS) To report findings from scientific enquiries in a variety of ways e.g., oral and written explanations, displays, presentations. (WS) To use secondary sources 	<ul style="list-style-type: none"> ✓ ✓ To know what a complete series circuit is: complete loop, batter. To identify whether a lamp in a series circuit will light using knowledge of a complete circuit. To know that a switch opens and closes a circuit. ✓ To identify whether a lamp in a series circuit will light using knowledge of a switch. ✓ To know an electrical conductor allows electricity to pass through it without difficulty. ✓ To know and name some common conductors. ✓ To know that some materials, like metals, are good conductors of electricity. ✓ To know electricity cannot pass through an electrical insulator easily. ✓ To know and name some common insulators. <p><u>WS</u></p> <ul style="list-style-type: none"> ✓ To make careful and systematic observations to collect relevant data to answer a question. (WS) To record findings from scientific enquiries using drawings, labelled diagrams, keys, bar charts and tables, with support. (WS) To make predictions more generally based on data or observations 	<ul style="list-style-type: none"> ✓ ✓ To know that the volume of a sound is how loud or how quiet it is. ✓ To know that stronger vibrations create a louder sound. ✓ To know that pitch is how high or low a sound is. <p><u>WS</u></p> <ul style="list-style-type: none"> ✓ To make careful and systematic observations to collect relevant data to answer a question. (WS) To record findings from scientific enquiries using drawings, labelled diagrams, keys, bar charts and tables, with support. (WS) To plan which measurements and standard units (if applicable) to use to gather relevant data. (WS) To gather data from scientific enquiries using notes, simple tables, and standard units. (WS) To analyse findings from scientific enquiries to find answers to a question. (WS) ✓ To identify patterns and relationships from data and observations from science enquiries. (WS) ✓ To structure questions to be answered in a scientific enquiry. (WS) ✓ To select, with support, the most appropriate type of scientific enquiry 	<p>environment.</p> <ul style="list-style-type: none"> ✓ To know that environments can change which can pose danger to living things. ✓ To know some environmental changes are due to mankind e.g., an oil spill. ✓ To know that some environmental changes occur naturally e.g., flood or earthquake. <p><u>WS</u></p> <ul style="list-style-type: none"> ✓ To select, with support, the most appropriate type of scientific enquiry to answer a question e.g. simple fair test, criteria for grouping, sorting and classifying, comparative test etc. (WS) To record findings from scientific enquiries using drawings, labelled diagrams, keys, bar charts and tables, with support. (WS) To use secondary sources to support explanations to scientific questions. (WS)
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	<p>to support explanations to scientific enquiries. (WS)</p> <ul style="list-style-type: none"> ✓ To make links between observations and data from scientific enquiries and research from secondary sources. (WS) <p>To explain what needs to stay the same and what is changing in a comparative and fair test. (WS) To decide, with support, the observation to make, including the frequency of observations, in order to find answers to a question. (WS) To identify new questions to investigate based on the observations or data obtained from an enquiry. (WS)</p> <ul style="list-style-type: none"> ✓ To begin to suggest ways to improve a scientific enquiry process. (WS) 	<p>gathered and analysed. (WS)</p> <ul style="list-style-type: none"> ✓ To decide the most appropriate way to record findings from scientific enquiries. (WS) ✓ To select, with support, the most appropriate type of scientific enquiry to answer a question e.g. simple fair test, criteria for grouping, sorting and classifying, comparative test etc. (WS) To report findings from scientific enquiries in a variety of ways e.g., oral and written explanations, displays, presentations. (WS) To explain what needs to stay the same and what is changing in comparative and fair tests. (WS) To plan, with support, what simple equipment is needed to gather relevant data. (WS) ✓ To use relevant scientific language to discuss and communicate findings, to suit a given audience. (WS) ✓ To identify patterns and 	<p>to answer a question e.g. simple fair test, criteria for grouping, sorting and classifying, comparative test etc. (WS) To use a range of equipment appropriately, including data loggers (e.g., Lux meters) to collect relevant data. (WS)</p> <ul style="list-style-type: none"> ✓ To explain what needs to stay the same and what is changing in comparative and fair tests. (WS) ✓ To draw simple conclusions from results and observations to answer a question. (WS) ✓ To identify similarities, difference and changes in data and observations. (WS) 	
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		<ul style="list-style-type: none"> ✓ relationships from data and observations from science enquiries. (WS) ✓ To ask relevant questions about the world around them. (WS) 		
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YEAR 5/6 Cycle A

✓ **Living Things and Their Habitats**

- ✓ To explain the differences in the lifecycles of mammals, amphibians, insects, and birds.
- ✓ To know most mammals give birth to live offspring and that they look like their adult parent.
- ✓ To know that some animals experience metamorphosis e.g., caterpillar to butterfly.
- ✓ To know that metamorphosis supports survival in some species.
- ✓ To know that most animals reproduce sexually.
- ✓ To know that some animals from some broad groups (birds, reptiles, amphibians) lay eggs to produce young.
- ✓ To know the different features of different types of eggs.
- ✓ To know that eggs can be fertilised internally or externally.
- ✓ To know that some plants reproduce using sexual reproduction known as pollination.
- ✓ To know that some plants reproduce asexually e.g., bulbs and tubers.

WS

- ✓ To select and plan the most appropriate type of scientific enquiry to answer a scientific question, with support. (WS)
- ✓ To plan and select, with support, the most appropriate equipment needed to take accurate measurements to gather relevant data. (WS)
- ✓ To record data accurately using scientific diagrams and labels, tables, scatter graphs, bar and line graphs, with support. (WS)
- ✓ To use relevant and accurate scientific language to discuss, communicate

Animals Including Humans

- ✓ To know that humans change as they grow older.
- ✓ To know the stages of the human life cycle.
- ✓ To describe the different features of the different stages of the human life cycle.
- ✓ To know and describe the physical changes (e.g., appearance) that occur from adulthood to old age. To know that puberty occurs during adolescence.
- ✓ To know that puberty is when sexual development occurs. To know that a gestation period is the length of time a foetus develops in the womb.

WS

- ✓ To explore ideas and identify different kinds of questions, with support, to be answered in scientific enquiry. (WS)
- ✓ To record data and results of increasing complexity accurately using scientific diagrams and label, tables, scatter graphs, bar and line graphs, with support. (WS)
- ✓ To analyse results and form conclusions which answer scientific enquiry questions, with support. (WS)
- ✓ To use relevant and accurate scientific language to discuss, communicate and justify scientific ideas, with support. (WS)
- ✓ To report and present findings from scientific enquiries in a variety of ways (presentations, displays etc.), including both oral and written

Earth and Space

- ✓ To know that the Sun, Earth and Moon are approximately spherical bodies.
- ✓ To know that the Sun is a star. To know and name the eight planets in the Solar System.
- ✓ To know that an orbit is the path of an object around a particular point in space.
- ✓ To know that the planets in the Solar System orbit the Sun. To know that the planets orbit the Sun in and ellipse shape.
- ✓ To know that the Earth rotates at an angle.
- ✓ To know that the Earth's rotation on its axis causes day and night. To know that the Earth's rotation is the movement that appears to cause the Sun to move across the sky.
- ✓ To know that one full rotation of the Earth is approximately 24 hours; a day.
- ✓ To know that a moon is a celestial body that makes an orbit around a planet.
- ✓ To know that planets in the Solar System have different numbers of moons.
- ✓ To know that the Moon orbits the Earth.

Forces

- ✓ To know that a force is a push, pull or twist and to give everyday examples of these in action.
- ✓ To know that levers, pulleys and gears are simple machines.
- ✓ To know that a lever has a fulcrum, load, and effort.
- ✓ To know that levers, pulleys and gears are simple machines.
- ✓ To explain that some simple machines allow a smaller force to have a greater effect.
- ✓ To describe how movement increases when turning a small force into a bigger force.
- ✓ To know that gravity is a pulling force.
- ✓ To use knowledge of gravity to explain why unsupported objects fall towards the Earth.
- ✓ To know the difference between mass and weight e.g., mass is constant, weight is affected by gravitational force.
- ✓ To know that the mass of an object does not affect the time taken for it to fall to the ground.
- ✓ To use knowledge of friction as a contact force, to explain what causes it e.g., the resistance that one surface/object has when moving over another.
- ✓ To use knowledge of friction to explain how different surfaces affect friction.
- ✓ To explain how to increase or reduce friction.
- ✓ To know that air resistance is a pushing force.
- ✓ To describe air resistance as a force that is caused by air particles colliding with any object that moves through it.
- ✓ To use force arrows to show the size and direction of a force.
- ✓ To know that water resistance is a force that uses friction to slow things down as they move through water.

Properties and Changes of Materials

- ✓ To use knowledge of a material's/object's multiple properties e.g., hardness and ability to compress, to explain and justify its uses.
- ✓ To use knowledge of magnetism to explain why some materials are more magnetic than others.
- ✓ To use knowledge of light to describe the suitability of materials/objects for a given purpose, referring to their properties e.g. transparency.
- ✓ To use knowledge of conductivity to describe whether a material/ object conducts heat.
- ✓ To use knowledge of a material/object's properties to justify their suitability for a given job e.g., electrical conductivity/thermal conductivity.
- ✓ To know what a reversible change is.
- ✓ To know what an irreversible change is.
- ✓ To use knowledge of states of matter to identify examples of reversible changes.
- ✓ To identify examples of irreversible changes.
- ✓ To explain the difference between a chemical reaction (irreversible) and a physical reaction (reversible).
- ✓ To know that an irreversible change results in the formation of new materials e.g., burning.
- ✓ To know what dissolving is.
- ✓ To know when a substance dissolves, a solution is made.
- ✓ To know how to recover a substance from a solution.
- ✓ To identify some materials that will dissolve.
- ✓ To know the most suitable order to separate a mixture referring to the properties within the mixture.
- ✓ To use knowledge of materials and their properties to justify the appropriate method to separate them from a mixture e.g., filtering, sieving, evaporating etc.

WS

- ✓ To select and plan the most appropriate type of scientific enquiry to answer a scientific question, with support. (WS)
- ✓ To plan and select, with support, the most appropriate equipment needed to take accurate measurements to gather relevant data. (WS)
- ✓ To plan what observations to make and how long to make them for, in order to obtain relevant data, with support. (WS)
- ✓ To use and develop keys, with support, to identify, classify and describe living things and materials. (WS)
- ✓ To record data and results of increasing complexity accurately using scientific diagrams and label, tables, scatter graphs, bar and line graphs, with support (WS)
- ✓ To explain how measurements and observations will be taken accurately, with support. (WS)
- ✓ To identify, with support, when further tests and observations are needed from the analysis of the results gathered, including amendments to tests. To use a range of equipment appropriately and accurately, with support, to take readings and observations in scientific enquiries. (WS)
- ✓ To report and present findings from scientific enquiries in a variety of ways(presentations, displays etc.),

<p>and justify scientific ideas, with support. (WS)</p>	<p>forms, with increasing confidence. (WS)</p> <ul style="list-style-type: none">✓ To identify secondary sources which support ideas and findings, separating fact from opinion, with support. (WS)	<ul style="list-style-type: none">✓ To know the Moon orbits the Earth approximately once every 28 days. To know that the Moon does not change shape, but its apparent change in shape is due to the position of the Sun, Earth and Moon.✓ To know the apparent changes in shape of the Moon are known as the phases of the Moon. To know what a lunar and solar eclipse is and to describe them in simple terms.✓ To know why it is important to develop scientific knowledge of unknown areas e.g., Space. <p><u>WS</u></p>		<p>including both oral and written forms, with increasing confidence. (WS)</p>
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		<ul style="list-style-type: none"> ✓ To explain, with support, how scientific ideas have developed over time. (WS) ✓ To identify secondary sources which support ideas and findings, separating fact from opinion, with support. (WS) ✓ To take measurements with increasing accuracy and precision, using a range of equipment, including scaled measurements (WS) ✓ To explore ideas and identify different kinds of questions, with support, to be answered in scientific enquiry. (WS) To select and plan the most appropriate type of scientific enquiry to answer a scientific question, with support. (WS) To identify, with support, the different variables in a fair or comparative test e.g., control, dependent, independent. (WS) ✓ To explain, with support, which variables need to be controlled and why, when conducting a fair or comparative test. (WS) ✓ To explain how measurements and observations will be taken accurately, with support. (WS) ✓ To know when and how to take repeat readings, using this knowledge to explain why, with support. (WS) ✓ To identify evidence that refutes or supports a scientific idea, with support. (WS) ✓ To report and present findings from scientific enquiries in a variety of ways (presentations, displays etc.) including both oral and written forms, with increasing confidence. (WS) ✓ To use a range of equipment, appropriately 	<ul style="list-style-type: none"> ✓ To use knowledge of water resistance to explain how the surface area affects the resistance ✓ e.g., the greater the surface area to greater the resistance. <p>WS</p> <ul style="list-style-type: none"> ✓ To identify, with support, the different variables in a fair or comparative test e.g., control, dependent, independent. (WS) ✓ To explain, with support, which variables need to be controlled and why, when conducting a fair or comparative test. (WS) ✓ To identify different causal relationships and trends in data, with support. (WS) ✓ To identify evidence that refutes or support a scientific idea, with support. (WS) ✓ To use a range of equipment, appropriately and accurately, with support, to take readings and observations in scientific enquiries. (WS) ✓ To know when and how to take repeat readings, using this knowledge to explain why, with support. (WS) ✓ To know and explain whether results are reliable, justifying why, with support. (WS) ✓ To analyse results and form conclusions which answer scientific enquiry questions, with support. (WS) ✓ To identify evidence that refutes or support a scientific idea, with support. (WS) ✓ To record data and results of increasing complexity and accuracy using scientific diagrams and labels, tables, scatter graphs, bar and line graphs, with support. (WS) ✓ To use relevant and accurate scientific language to discuss, 	<ul style="list-style-type: none"> ✓ To explain, with support, which variables need to be controlled and why, when conducting a fair or comparative test. (WS) ✓ To identify, with support, the different variables in a fair or comparative test e.g., control, dependent, independent. (WS)
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		<p>and accurately, with support, to take readings and observations in scientific enquiries. (WS)</p> <ul style="list-style-type: none"> ✓ To identify different causal relationships and trends in data, with support. (WS) ✓ To use relevant and accurate scientific language to discuss, communicate and justify scientific ideas, with support. (WS) ✓ To predict wider results and trends based on the analysis of data gathered, with support. (WS) ✓ To analyse results and forms conclusions which answer scientific enquiry questions, with support. (WS) 	<p>communicate and justify scientific ideas, with support. (WS)</p> <ul style="list-style-type: none"> ✓ To predict wider results and trends based on the analysis of data gathered, with support. (WS) 	
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YEAR 5/6 Cycle B

✓ **Animals Including Humans**

- ✓ To identify and name the main parts of the human circulatory system - heart, blood vessels, blood.
- ✓ To know that the heart is a muscle.
- ✓ To know that the basic function of the heart is to pump blood around the body.
- ✓ To identify and name the main parts of the heart.
- ✓ To know that the basic function of the blood vessels is to transport blood, nutrients, oxygen, and water around the body.
- ✓ To know that arteries, veins, and capillaries are the different types of blood vessels.
- ✓ To know that most arteries carry blood away from the heart and most veins carry blood back to the heart.
- ✓ To name the components of the blood: red blood cells, white blood cells, platelets, plasma.
- ✓ To know the basic functions of each component of the blood e.g., red blood cells transport oxygen.
- ✓ To use knowledge of the digestive system to describe how nutrients are transported around the body.
- ✓ To know and describe how capillaries are used to transfer nutrients around the body.
- ✓ To know and describe how lifestyle choices about nutrition affect the body.
- ✓ To describe the factors that affect how much of each food group a person needs to eat.
- ✓ To know and describe how choices about exercise affect the body.
- ✓ To know and describe how drugs affect the body.

WS

- ✓ To know and describe how choices about exercise affect the body.
- ✓ To explore ideas and identify different kinds of questions to be answered in scientific enquiry. (WS)
- ✓ To select and plan the most appropriate type of scientific enquiry to answer a scientific question. (WS)
- ✓ To plan what observations to make and how long to make them for, in order to obtain relevant data. (WS)
- ✓ To explain which variables need to be controlled and why, when conducting a fair or comparative test. (WS)
- ✓ To identify the different variables in a fair or comparative test e.g., control, dependent, independent. (WS)
- ✓ To use a range of equipment, appropriately and accurately to take readings and observations in scientific enquires. (WS)
- ✓ To confidently take measurements with accuracy and precision, using a range of equipment. (WS)
- ✓ To know when and how to take repeat readings, using this knowledge to explain why. (WS)
- ✓ To record data and results of increasing complexity accurately using scientific diagrams and label, tables, scatter graphs, bar and line graphs. (WS)
- ✓ To predict wider results and trends based on the analysis of data gathered. (WS)
- ✓ To know and explain whether results are reliable, justifying why. (WS)
- ✓ To analyse results and form conclusions which answer scientific enquiry questions, with support. (WS)
- ✓ To identify different causal relationships and trends in data. (WS)

Electricity

- ✓ To know and identify electrical components by their recognized symbols.
- ✓ To use knowledge of electrical components and series circuits to construct a series circuit.
- ✓ To know that a circuit needs to be closed to allow electrical current to pass along it.
- ✓ To identify and give examples of appliances that use certain electrical components.
- ✓ To know and explain the function of a switch.
- ✓ To describe how the position of a switch affects the functionality of a circuit.
- ✓ To explain how the function of a component e.g., brightness of a lamp, is affected by the number and voltage of cells in a circuit. To use knowledge of component and their functions to compare and give reasons for variations e.g., loudness of a buzzer.

WS

- ✓ To explore ideas and identify different kinds of questions to be answered in scientific enquiry. (WS)
- ✓ To plan and select the most appropriate equipment needed to take accurate measurements to gather relevant data. (WS) To use a range of equipment, appropriately and accurately to take readings and observations in scientific enquires. (WS) To record data and results of increasing complexity accurately using scientific diagrams and label, tables, scatter graphs, bar and line graphs. (WS)
- ✓ To identify when further test and observations are needed from the analysis

Light

- ✓ To know that light travels in straight lines.
- ✓ To explain how light changes direction when it travels through different shaped lenses, concave, convex.
- ✓ To know and explain that objects are seen because they emit or reflect light.
- ✓ To know that we see because light travels from light sources or is reflected from objects into the eye.
- ✓ To know that a ray diagram shows the directions the light travels in.
- ✓ To use knowledge of how light travels to explain why shadows have the same shape as the objects that cast them.

WS

- ✓ To record data and results of increasing complexity accurately using scientific diagrams and label, tables, scatter graphs, bar and line graphs. (WS)
- ✓ To report and present findings from scientific enquiries in a variety of ways (presentations, displays etc.), including both oral and written forms, confidently. (WS)
- ✓ To identify secondary sources which support ideas and findings, separating fact from opinion. (WS)
- ✓ To identify evidence that refutes or supports a scientific idea. (WS)
- ✓ To use relevant and accurate scientific language to discuss, communicate and justify scientific ideas. (WS)
- ✓ To explain how scientific ideas have developed over time. (WS)
- ✓ To explain which variables need to be controlled and why, when conducting a fair or comparative test. (WS)
- ✓ To identify the different variables in a fair or comparative test e.g., control, dependent, independent. (WS)
- ✓ To plan what observations to make and how long to make them for, in order to obtain relevant data. (WS)

Evolution and Inheritance

- ✓ To know that the surface of the Earth has changed over time, leading living things to adapt in order to survive.
- ✓ To know that living things have changed over time. To know and explain what adaptation is.
- ✓ To know that living things adapt to their environment to survive. To know and give examples of some animals that have become extinct e.g., dinosaurs.
- ✓ To explain how some living things that do not adapt become extinct. To know that some living things become extinct due to the actions of humans e.g., forced changes to their environment, poaching etc. To use knowledge of adaptation to explain some examples of how animals have adapted to suit their environment.
- ✓ To know and explain what evolution is.
- ✓ To know that adaptation over many years may lead to evolution. To use knowledge of adaptation to explain some examples of how plants have adapted to suit their environment.
- ✓ To know and explain that fossils provide information about living things that inhabited the Earth millions of years ago. To know and explain what inheritance is.
- ✓ To know that living things produce offspring of the same kind. To know that offspring are not identical to their parents.

Living Things and Their Habitats

- ✓ To know what vertebrates and invertebrates are.
- ✓ To identify similarities and differences between living things.
- ✓ To classify living things according to their common observable characteristics.
- ✓ To explain what classification is.
- ✓ To use knowledge of observable characteristic to justify the groups living things have been classified in.

WS

- ✓ To use and develop keys to identify, classify and describe living things and materials. (WS)
- ✓ To explain how scientific ideas have developed over time. (WS)
- ✓ To identify evidence that refutes or supports a scientific idea. (WS)
- ✓ To identify secondary sources which support ideas and findings, separating fact from opinion. (WS)
- ✓ To select and plan the most appropriate type of scientific enquiry to answer a scientific question. (WS)
- ✓ To record data and results of increasing complexity accurately using scientific diagrams and label, tables, scatter graphs, bar and line graphs. (WS)
- ✓ To predict wider results and trends based on the analysis of data gathered. (WS)

<ul style="list-style-type: none"> ✓ To use relevant and accurate scientific language to discuss, communicate and justify scientific ideas. (WS) ✓ To report and present findings from scientific enquiries in a variety of ways (presentations, displays etc.), including both oral and written forms, confidently. (WS) 	<p>of the results gathered, including amendments to tests. (WS)</p> <ul style="list-style-type: none"> ✓ To report and present findings from scientific enquiries in a variety of ways (presentations, displays etc.), including both oral and written forms, confidently. (WS) <p>To use relevant and accurate scientific language to discuss, communicate and justify scientific ideas. (WS)</p>	<ul style="list-style-type: none"> ✓ To explain how measurements and observations will be taken accurately. (WS) ✓ To analyse results and form conclusions which answer scientific enquiry questions, with support. (WS) <p>To select and plan the most appropriate type of scientific enquiry to answer a scientific question. (WS)</p> <ul style="list-style-type: none"> ✓ To confidently take measurements with accuracy and precision, using a range of equipment. (WS) 	<ul style="list-style-type: none"> ✓ To know that living things inherit characteristics and features from their parents. ✓ To know that variation in offspring can lead to features which make animals more or less able to survive in particular environments. <p>WS</p> <ul style="list-style-type: none"> ✓ To explain how scientific ideas have developed over time. (WS) ✓ To identify secondary sources which support ideas and findings, separating fact from opinion. (WS) ✓ To explore ideas and identify different kinds of questions to be answered in scientific enquiry. (WS) ✓ To identify different causal relationships and trends in data. (WS) ✓ To record data and results of increasing complexity accurately using scientific diagrams and label, tables, scatter graphs, bar and line graphs. (WS) ✓ To analyse results and form conclusions which answer scientific enquiry questions, with support. (WS) 	
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