

Brookside Science Curriculum Sequencing

National Curriculum Objectives	KS1	KS2	
	Year 1/Year 2	Year 3/Year 4	Year 5/Year 6
	<p><b><u>Seasonal Changes</u></b></p> <ul style="list-style-type: none"> <li>observe changes across the 4 seasons</li> <li>observe and describe weather associated with the seasons and how day length varies</li> </ul> <p><b><u>Living things and their habitats</u></b></p> <ul style="list-style-type: none"> <li>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</li> <li>explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>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</li> </ul>	<p><b><u>Living Things and their Habitats</u></b></p> <ul style="list-style-type: none"> <li>recognise that living things can be grouped in a variety of ways</li> <li>explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul>	<p><b><u>Living Things and their habitats</u></b></p> <ul style="list-style-type: none"> <li>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>describe the life process of reproduction in some plants and animals.</li> </ul> <p><b><u>Living Things and their habitats</u></b></p> <ul style="list-style-type: none"> <li>give reasons for classifying plants and animals based on specific characteristics.</li> <li>describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</li> </ul>
	<p><b><u>Everyday materials</u></b></p> <ul style="list-style-type: none"> <li>distinguish between an object and the material from which it is made</li> <li>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>describe the simple physical properties of a variety of everyday materials</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul> <p><b><u>Everyday materials</u></b></p> <ul style="list-style-type: none"> <li>Pupils should be taught to:</li> </ul>	<p><b><u>States of Matter</u></b></p> <ul style="list-style-type: none"> <li>compare and group materials together, according to whether they are solids, liquids or gases</li> <li>observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</li> </ul> <p>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p><b><u>Properties &amp; Changes of Materials</u></b></p> <ul style="list-style-type: none"> <li>compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</li> <li>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> </ul>

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	<ul style="list-style-type: none"> <li>• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul>		<ul style="list-style-type: none"> <li>• demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>• explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</li> </ul>
	<p><b><u>Animals and Humans</u></b></p> <ul style="list-style-type: none"> <li>• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>• identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>• describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</li> <li>• identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</li> </ul> <p><b><u>Animals and Humans</u></b></p> <ul style="list-style-type: none"> <li>• notice that animals, including humans, have offspring which grow into adults</li> <li>• find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>• describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul>	<p><b><u>Animals including Humans</u></b></p> <ul style="list-style-type: none"> <li>• identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</li> <li>• identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul> <p><b><u>Animals including Humans</u></b></p> <ul style="list-style-type: none"> <li>• describe the simple functions of the basic parts of the digestive system in humans</li> <li>• identify the different types of teeth in humans and their simple functions</li> <li>• construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul>	<p><b><u>Animals including Humans</u></b></p> <ul style="list-style-type: none"> <li>• describe the changes as humans develop to old age.</li> </ul> <p><b><u>Animals Including Humans</u></b></p> <ul style="list-style-type: none"> <li>• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>• recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>
	<p><b><u>Plants</u></b></p> <ul style="list-style-type: none"> <li>• observe and describe how seeds and bulbs grow into mature plants</li> <li>• find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> </ul> <p><b><u>Plants</u></b></p> <ul style="list-style-type: none"> <li>• Pupils should be taught to:</li> </ul>	<p><b><u>Plants</u></b></p> <ul style="list-style-type: none"> <li>• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>• explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</li> </ul>	<p>Connections through living things and their habitats</p>

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	<ul style="list-style-type: none"> <li>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>• identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul>	<ul style="list-style-type: none"> <li>• investigate the way in which water is transported within plants</li> <li>• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>	
	<p>Connections with every day materials and seasons</p>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>• recognise that they need light in order to see things and that dark is the absence of light</li> <li>• notice that light is reflected from surfaces</li> <li>• recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>• recognise that shadows are formed when the light from a light source is blocked by a solid objects</li> <li>• find patterns in the way that the size of shadows change.</li> </ul>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>• recognise that light appears to travel in straight lines</li> <li>• use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</li> <li>• explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</li> <li>• use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul>
	<p>Connections with every day materials</p>	<p><b>Forces and Magnets</b></p> <p>how things move on different surfaces</p> <p>not all forces need contact between 2 objects, but some forces can act at a distance</p> <p>how magnets attract or repel each other and attract some materials and not others</p> <p>sort and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and some magnetic materials</p> <p>describe magnets as having 2 poles</p> <p>predict whether 2 magnets will attract or repel each other, depending on which poles are facing.</p>	<p><b>Forces</b></p> <ul style="list-style-type: none"> <li>• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>• identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>• recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</li> </ul>
		<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>• identify how sounds are made, associating some of them with something vibrating</li> </ul>	<p>Connections with SLG, states of matter</p>

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		<ul style="list-style-type: none"> <li>recognise that vibrations from sounds travel through a medium to the ear</li> <li>find patterns between the pitch of a sound and features of the object that produced it</li> <li>find patterns between the volume of a sound and the strength of the vibrations that produced it.</li> <li>recognise that sounds get fainter as the distance from the sound source increases</li> </ul>	
	•	<p style="text-align: center;"><b>Electricity</b></p> <ul style="list-style-type: none"> <li>identify common appliances that run on electricity</li> <li>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</li> <li>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram.</li> </ul>
	Connections with everyday materials	<p><b>Rocks</b></p> <ul style="list-style-type: none"> <li>compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>recognise that soils are made from rocks and organic matter.</li> </ul>	<p><b>Evolution and inheritance</b></p> <ul style="list-style-type: none"> <li>recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>
	Connections with seasons		<p><b>Earth &amp; Space</b></p> <ul style="list-style-type: none"> <li>describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>describe the movement of the Moon relative to the Earth</li> </ul>

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			<ul style="list-style-type: none"><li>• describe the Sun, Earth and Moon as approximately spherical bodies</li><li>• use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky.</li></ul>
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Objectives broken down

National Curriculum Objectives	KS1	KS2	
	Year 1/Year 2	Year 3/Year 4	Year 5/Year 6
	<p><b>Seasonal Changes</b></p> <ul style="list-style-type: none"> <li>observe changes across the 4 seasons</li> <li>observe and describe weather associated with the seasons and how day length varies</li> </ul> <p><i>To observe changes across the four seasons. (in future perhaps have this across the year?)</i></p> <p><i>To observe and describe weather associated with the seasons (as above)</i></p> <p><i>To observe and describe weather associated with the seasons and how day length varies.</i></p> <p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>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</li> <li>explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>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</li> </ul>	<p><b>Living Things and their Habitats (2021/22 – COVID catch up).</b></p> <ul style="list-style-type: none"> <li>recognise that living things can be grouped in a variety of ways</li> <li>explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul> <p><i>To explore, compare and order things that are living, dead or have never been alive.</i></p> <p><i>To recognise the characteristics of living things.</i></p> <p><i>To observe features of living things and sort them into different groups.</i></p> <p><i>To create and use a classification key to name a variety of living things in the wider environment (2 lessons).</i></p> <p><i>To describe how animals obtain their food from plants and other animals.</i></p> <p><i>To understand why organisms live in different habitats.</i></p> <p><i>To know environments change which pose a threat to the organisms living there.</i></p> <p><b>(taught in a different term)</b> <i>To recognise environments change which can pose a threat to life in those habitats.</i></p> <p><i>To understand the effect of global warming on a general world level.</i></p> <p><i>To understand the effect of deforestation on the global environment and the local environment.</i></p>	<p><b>Living Things and their habitats</b></p> <ul style="list-style-type: none"> <li>describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li>describe the life process of reproduction in some plants and animals.</li> </ul> <p><i>To understand Sexual Reproduction in plants.</i></p> <p><i>To understand asexual reproduction in plants.</i></p> <p><i>To understand the lifecycles of mammals.</i></p> <p><i>To examine the work of Jane Goodall (in relation to mammals).</i></p> <p><i>To compare the life cycles of insects and amphibians.</i></p> <p><i>To compare the life cycles of different animals with birds.</i></p> <p><b>Living Things and their habitats</b></p> <ul style="list-style-type: none"> <li>give reasons for classifying plants and animals based on specific characteristics.</li> <li>describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</li> </ul> <p><i>To give reasons for sorting and classifying (PLI)</i></p> <p><i>To give reasons for classifying plants and animals based on specific characteristics</i></p> <p><i>To understand how the scientific world classifies animals/plants.</i></p> <p><i>To investigate why we classify organisms further than just their kingdom.</i></p> <p><i>To describe and investigate helpful and harmful microorganisms</i></p> <p><i>I can give reasons for classifying plants and animals based on specific characteristics.</i></p>

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	<p><i>To compare the different between things that are living, dead or never been alive.</i></p> <p><i>To identify and name a variety of plants and animals in a microhabitat.</i></p> <p><i>To design a suitable microhabitat where living things can survive.</i></p> <p><i>To find out what animals eat to survive in their habitats.</i></p> <p><i>To understand food chains.</i></p> <p><i>To understand the journey food makes from the farm to the supermarket.</i></p>		<p><i>To classify a range of living things in the local area.</i></p>
	<p><b>Everyday materials</b></p> <ul style="list-style-type: none"> <li>distinguish between an object and the material from which it is made</li> <li>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>describe the simple physical properties of a variety of everyday materials</li> <li>compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul> <p><b>Everyday materials</b></p> <ul style="list-style-type: none"> <li>Pupils should be taught to:</li> <li>identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul> <p><i>Taught concurrently</i></p> <p><i>To identify and name different materials</i></p>	<p><b>States of Matter</b></p> <ul style="list-style-type: none"> <li>compare and group materials together, according to whether they are solids, liquids or gases</li> <li>observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)</li> <li>identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul> <p><i>To identify a solid, liquid and gas.</i></p> <p><i>To compare and group materials according to whether they are solids, liquids or gases.</i></p> <p><i>To investigate gases and explain their properties</i></p> <p><i>To observe that materials change states of matter when they are heated/cooled.</i></p> <p><i>To measure in degrees Celsius.</i></p> <p><i>To understand the processes of evaporation and condensation.</i></p> <p><i>To understand the water cycle.</i></p>	<p><b>Properties &amp; Changes of Materials</b></p> <ul style="list-style-type: none"> <li>compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</li> <li>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</li> </ul> <p><i>To use knowledge of solids, liquids and gasses.</i></p> <p><i>To give explanations using scientific knowledge.</i></p> <p><i>To compare and group together everyday materials based on different criteria.</i></p>

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	<p><i>To identify the uses of different, everyday materials</i>  <i>To tell the difference between an object and the materials it is made from.</i>  <i>To describe the properties of everyday materials</i>  <i>To identify which objects have certain properties</i>  <i>To compare the suitability of different everyday materials</i></p> <p><i>I can carry out an experiment to show how things move differently on different surfaces.</i>  <i>I can explain how the shapes of objects made from some materials can be changed</i>  <i>I can explain the importance of recycling particular materials</i>  <i>I can tell you about the inventor John McAdam</i></p>		<p><i>To knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</i>  <i>To investigate the different conditions which affect the dissolving of a solid.</i>  <i>To identify whether a change in state is a reversible or irreversible process, and justify opinion.</i></p>
	<p><b>Animals and Humans</b></p> <ul style="list-style-type: none"> <li>• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>• identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>• describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</li> <li>• identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</li> </ul> <p><i>To name and describe a variety of animals.</i>  <i>To explain how an animal has adapted to suit its environment.</i>  <i>I can understand that we can group animals according to their features. (2 lessons)</i></p>	<p><b>Animals including Humans</b></p> <ul style="list-style-type: none"> <li>• identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</li> <li>• identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul> <p><i>To identify different forms of nutrition.</i>  <i>To know and compare the amounts of nutrition living things need.</i>  <i>To design a well balanced and nutritious meal.</i>  <i>To identify that humans and other animals have skeletons (covid catch up).</i>  <i>To know that humans (and some animals) have skeletons for support, protection and movement.</i>  <i>To investigate how muscles work to allow support.</i></p> <p><b>Animals including Humans</b></p> <ul style="list-style-type: none"> <li>• describe the simple functions of the basic parts of the digestive system in humans</li> <li>• identify the different types of teeth in humans and their simple functions</li> </ul>	<p><b>Animals including Humans</b></p> <ul style="list-style-type: none"> <li>• describe the changes as humans develop to old age.</li> </ul> <p><i>To identify the stages of a mammals life cycle.</i>  <i>To explore the gestation periods of mammals.</i>  <i>To learn about foetal development.</i>  <i>To investigate the hand span of differently aged children.</i>  <i>To learn about changes experienced in puberty (PHSE link).</i>  <i>To describe the changes humans may experience into old age.</i></p> <p><b>Animals Including Humans</b></p> <ul style="list-style-type: none"> <li>• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>• recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• describe the ways in which nutrients and water are transported within animals, including humans.</li> </ul>



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	<p><i>I can understand that we can group animals according to their features (2 lessons)</i>  <i>I can group animals according to what they eat.</i>  <i>I can describe an animal using scientific words</i></p> <p><b><u>Animals and Humans (taken from the Developing Experts Scheme as no planning on GD)</u></b></p> <ul style="list-style-type: none"> <li>notice that animals, including humans, have offspring which grow into adults</li> <li>find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul> <p>To describe the needs of animals for survival.</p> <p>To describe the needs of humans for survival.</p> <p>To explore the importance of eating the right food.</p> <p>To describe what a healthy balanced diet looks like.</p> <p>To investigate the impact of exercise on the body.</p> <p>To investigate the importance of hygiene.</p>	<ul style="list-style-type: none"> <li>construct and interpret a variety of food chains, identifying producers, predators and prey.</li> </ul> <p><i>To create a food chain sequence.</i>  <i>To identify the predator and prey in a food chain.(building on from previous term)</i>  <i>To practically identify the basic parts of the digestive system in humans.</i>  <i>To identify parts of the digestive system and describe their purpose.</i>  <i>To identify the different types of teeth in humans.</i>  <i>To determine what each tooth does in humans.</i>  <i>To know how to take care of my teeth (and why it is important).</i></p>	<p><b>Extra PHSE links:</b>  <b>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</b></p> <p><i>To identify the components of blood, describe their functions, and note the different blood groups</i>  <i>To note and name the three types of blood vessel</i>  <i>To explore the structure and function of the human heart</i>  <i>To know that nutrients and water are transported around the body in the blood</i>  <i>To know that diffusion and osmosis are processes that move nutrient &amp; water in the body</i>  <i>To investigate diffusion and osmosis</i>  <i>To demonstrate how blood transports nutrients, water, gases and waste around the body</i>  <i>To explore and demonstrate how the circulatory system works including the role of the heart</i>  <i>To identify those aspects of a diet that are healthy and unhealthy and the impact diet can have on the body, using scientific evidence</i></p> <p><i>To examine the amount and types of exercise that keep a child and adult body healthy</i></p> <p><i>To note how lifestyle can impact on the body and identify healthy habits</i></p>
	<p><b><u>Plants</u></b></p> <ul style="list-style-type: none"> <li>observe and describe how seeds and bulbs grow into mature plants</li> <li>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> </ul>	<p><b><u>Plants</u></b></p> <ul style="list-style-type: none"> <li>identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant</li> </ul>	

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	<p><b>Plants</b></p> <ul style="list-style-type: none"> <li>• Pupils should be taught to:</li> <li>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>• identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul> <p><i>Taught concurrently</i></p> <p><i>To make observations and comparisons about seeds, plants and bulbs.</i></p> <p><i>To name the parts of a plant.</i></p> <p><i>To find each part on a plant.</i></p> <p><i>To say what is similar and different when comparing parts of plants</i></p> <p><i>To name some garden plants.</i></p> <p><i>To name some wild plants.</i></p> <p><i>To use a key to find out the names of plants.</i></p> <p><i>To name and identify some evergreen trees.</i></p> <p><i>To name and identify some deciduous trees.</i></p> <p><i>To use leaves to identify and name trees.</i></p> <p><i>To name some fruit plants.</i></p> <p><i>To name some vegetable plants.</i></p> <p><i>To say how the plants are similar and how they are different.</i></p> <p><i>To sort plants to criteria (PLI)</i></p> <p><i>To identify when a plant is healthy.</i></p> <p><i>To give my ideas about what plants need to stay healthy.</i></p> <p><i>To suggest ways to find out what plants need to stay healthy.</i></p> <p><i>To identify the parts of a seed that will grow into a plant.</i></p> <p><i>To explain what a seed needs to begin to grow.</i></p> <p><i>To explain what 'germination' means.</i></p>	<ul style="list-style-type: none"> <li>• investigate the way in which water is transported within plants</li> <li>• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul> <p><i>To name the different parts of flowering plants and explain their jobs.</i></p> <p><i>To set up an investigation to find out what plants need to grow well.</i></p> <p><i>To know the conditions plants require: air, light, water, nutrients and room to grow.</i></p> <p><i>To record my observations</i></p> <p><i>To present the results of my investigation as a time graph.</i></p> <p><i>To investigate how water is transported in plants.</i></p> <p><i>To predict once scientific knowledge is learnt.</i></p> <p><i>To name the different parts of a flower and explain their role in pollination and fertilisation.</i></p> <p><i>To understand and order the stages of the life cycle of a flowering plant.</i></p>	
	•	<b>Light</b>	<b>Light</b>

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		<ul style="list-style-type: none"> <li>recognise that they need light in order to see things and that dark is the absence of light</li> <li>notice that light is reflected from surfaces</li> <li>recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>recognise that shadows are formed when the light from a light source is blocked by a solid object</li> <li>find patterns in the way that the size of shadows change.</li> </ul> <p><i>To recognise that I need light to see things, and that dark is the absence of light.</i>  <i>To understand what reflection is.</i>  <i>To investigate which surfaces reflect light.</i>  <i>To know that light from the sun can be dangerous and that there are ways we can protect our eyes.</i>  <i>To investigate and conclude from investigation the best sunglasses to protect our eyes.</i>  <i>To investigate which materials block light to form shadows.</i>  <i>To find patterns when investigating how shadows change size.</i></p>	<ul style="list-style-type: none"> <li>recognise that light appears to travel in straight lines</li> <li>use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</li> <li>explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</li> <li>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul> <p><i>To recognise light travels in straight lines.</i>  <i>To know that light travels in straight lines and objects are seen because they reflect light into the eye.</i>  <i>To investigate the difference between reflection and refraction.</i>  <i>To explain how we see objects.</i>  <i>To know how we see colour.</i>  <i>To know why shadows have a similar shape to the object which makes them.</i></p>
<ul style="list-style-type: none"> <li></li> </ul>		<p><b>Forces and Magnets</b></p> <ul style="list-style-type: none"> <li>compare how things move on different surfaces</li> <li>notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</li> <li>observe how magnets attract or repel each other and attract some materials and not others</li> <li>compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</li> <li>describe magnets as having 2 poles</li> <li>predict whether 2 magnets will attract or repel each other, depending on which poles are facing.</li> </ul>	<p><b>Forces</b></p> <ul style="list-style-type: none"> <li>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</li> </ul> <p><i>To recognise what a force is.</i>  <i>To identify forces acting on objects.</i>  <i>To explain why objects, fall towards the Earth because of gravity.</i>  <i>To identify the effects of air resistance.</i>  <i>To investigate the effects of water resistance.</i>  <i>To investigate the effects of friction on moving surfaces (covered in year 4 also in less detail).</i></p>

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		<p><i>To identify forces acting on objects.</i></p> <p><i>To investigate how forces work.</i></p> <p><i>To compare how objects move on different surfaces.</i></p> <p><i>To sort materials (PLI).</i></p> <p><i>To sort materials into magnetic and non-magnetic materials.</i></p> <p><i>To explore magnetic poles.</i></p> <p><i>To investigate whether magnets will attract or repel each other.</i></p> <p><i>To investigate the strength of magnets.</i></p>	<p><i>To recognise gears/levers and pulleys allow a smaller force to have a greater effect.</i></p> <p><i>To practically build models with gears and levers.</i></p>
	<ul style="list-style-type: none"> <li>•</li> </ul>	<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>• identify how sounds are made, associating some of them with something vibrating</li> <li>• recognise that vibrations from sounds travel through a medium to the ear</li> <li>• find patterns between the pitch of a sound and features of the object that produced it</li> <li>• find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>• recognise that sounds get fainter as the distance from the sound source increases</li> </ul> <p><i>I can explore and identify different sounds.</i></p> <p><i>I can recognise how sounds are made as a result of vibrations.</i></p> <p><i>I understand that vibrations travel through a medium to reach the ear.</i></p> <p><i>I can investigate how sound change the further away they are from the ear.</i></p> <p><i>I can demonstrate how to change the pitch and loudness of sounds produced by vibrating objects.</i></p> <p><i>I can investigate changing the pitch of an instrument.</i></p>	
	<ul style="list-style-type: none"> <li>•</li> </ul>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>• identify common appliances that run on electricity</li> </ul>	<p><b>Electricity</b></p>

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		<ul style="list-style-type: none"> <li>• construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>• identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</li> <li>• recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>• recognise some common conductors and insulators, and associate metals with being good conductors.</li> </ul> <p><i>I can identify appliances that require electricity. I can build an electrical circuit (naming parts of the circuit in situ). To construct/investigate a basic circuit to include a bulb, buzzer and switch. To decide whether a circuit will conduct electricity. To identify the materials of common conductors and insulators.</i></p>	<ul style="list-style-type: none"> <li>• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>• compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches</li> <li>• use recognised symbols when representing a simple circuit in a diagram.</li> </ul> <p><i>(recap) Identify common appliances that run on electricity To construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers To 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 To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</i></p> <p><b>Year 6</b></p> <p><i>To explain why altering components affects the output To recognise that altering the power source and output components affects the performance of electrical circuits To explain why circuits do not work and suggest corrections To draw accurate circuit diagrams and recognise when circuits will/won't work To explain how the number/voltage of cells used in a circuit affect output components To compare variations in how components function and give reasons for this To devise and investigate questions about changing components</i></p>
<ul style="list-style-type: none"> <li>•</li> </ul>		<p><b>Rocks</b></p> <ul style="list-style-type: none"> <li>• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>• describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> </ul>	<p><b>Evolution and inheritance</b></p> <ul style="list-style-type: none"> <li>• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>• recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> </ul>

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		<ul style="list-style-type: none"> <li>recognise that soils are made from rocks and organic matter.</li> </ul> <p><i>To Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties (pupil led).</i>  <i>To understand how igneous rocks are formed and compare their properties.</i>  <i>To understand how sedimentary and metamorphic rocks are formed and compare and group them.</i>  <i>To understand how fossils are formed.</i>  <i>To understand what soil is made up of.</i></p>	<ul style="list-style-type: none"> <li>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul> <p><b>(needed) To understand how fossils can provide information about living things in the past.</b>  <i>To understand which offspring's characteristics are inherited and which are environmental?</i>  <i>To understand the term adaptation?</i></p> <p><i>To investigate how are animals and plants adapted to their environments.</i>  <i>To determine how adaptation leads to evolution.</i></p>
	<ul style="list-style-type: none"> <li></li> </ul>		<p><b>Earth &amp; Space</b></p> <ul style="list-style-type: none"> <li>describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>describe the movement of the Moon relative to the Earth</li> <li>describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky.</li> </ul> <p><i>To understand that the Earth, Sun and Moon are approximately spherical.</i></p> <p><i>To describe the relative sizes of the Sun, Earth and Moon</i>  <i>To explain the orbit of the Earth and moon around the sky.</i>  <i>To understand and demonstrate the Earth's rotation.</i>  <i>To explain day and night and the apparent movement of the sun across the sky.</i>  <i>To describe the movement of the Earth and other planets relative to the sun in the solar system</i></p>

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During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

Skills Progression	KS1	KS2	
	Year 1/Year 2	Year 3/Year 4	Year 5/Year 6
	<p><b><u>Working Scientifically</u></b></p> <ul style="list-style-type: none"> <li>asking simple questions and recognising that they can be answered in different ways</li> <li>observing closely, using simple equipment</li> <li>identifying and classifying</li> <li>using their observations and ideas to suggest answers to questions</li> <li>gathering and recording data to help in answering questions</li> </ul> <p><b>Maths objectives:</b></p> <p>interpret and construct simple pictograms, tally charts, block diagrams and simple tables</p>	<p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them</li> <li>setting up simple practical enquiries, comparative and fair tests</li> <li>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>identifying differences, similarities or changes related to simple scientific ideas and processes</li> <li>using straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p><b>Maths objectives:</b></p> <p>interpret and present data using bar charts, pictograms and tables</p>	<p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>planning different types of scientific <b>enquiries to answer questions</b>, including recognising and controlling variables where necessary</li> <li>using test results to make predictions to set up further comparative and fair tests</li> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li> <li>identifying scientific evidence that has been used to support or refute ideas or arguments</li> </ul> <p><b>Maths Objectives:</b></p> <p>solve comparison, sum and difference problems using information presented in a line graph</p> <p>solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate</p> <p>use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to</p>

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		<p>solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables. Notes and guidance (non-statutory) Pupils understand and use simple scales (for example, 2, 5, 10 units per cm)</p> <p>interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs</p>	<p>a larger unit, and vice versa, using decimal notation to up to three decimal places</p> <p>convert between miles and kilometres</p> <p>interpret and construct pie charts and line graphs and use these to solve problems</p> <p>calculate and interpret the mean as an average</p>
<p><b>Asking questions</b></p>	<ul style="list-style-type: none"> <li>asking simple questions and recognising that they can be answered in different ways</li> </ul> <p>Children can: a) explore the world around them, leading them to ask some simple scientific questions about how and why things happen; b) ask people questions</p>	<ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them</li> </ul> <p>Children can: a) start to raise their own relevant questions about the world around them in response to a range of scientific experiences (including different types of science enquiries); b) start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions</p>	<ul style="list-style-type: none"> <li>planning different types of scientific <b>enquiries to answer questions</b>, including recognising and controlling variables where necessary</li> <li>using test results to make predictions to set up further comparative and fair tests</li> </ul> <p>Children can: a) with growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences; b) explore and talk about their ideas, raising different kinds of scientific questions; c) make links between concepts d) ask their own questions about scientific phenomena; e) select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; f) use test results to ask further questions</p>



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<p><b>Carrying out science enquiry</b></p>	<ul style="list-style-type: none"> <li>performing simple tests</li> </ul> <p>Children can: a) experience different types of science enquiries b) begin to recognise ways in which they might answer scientific questions; c) ask people questions and use simple secondary sources to find answers; d) carry out simple practical tests, using simple equipment to gather data (e.g. hand lenses, egg timers); e) talk about the aim of scientific tests they are working on; f) with support, start to recognise a fair test.</p>	<ul style="list-style-type: none"> <li>setting up simple practical enquiries, comparative and fair tests</li> </ul> <p>Children can: a) start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; b) recognise when a fair test is necessary and help to decide how to set it up, e.g. making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used; c) set up and carry out simple comparative and fair tests with some help, recognising and explaining what makes them fair d) talk about criteria for grouping, sorting and classifying; and use simple keys e) recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations</p>	<ul style="list-style-type: none"> <li>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>using test results to make predictions to set up further comparative and fair tests</li> </ul> <p>Children can, with increasing independence,: a) with increasing independence, make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; b) select and use methods that are correct for the task; c) select suitable equipment; d) select and use methods to obtain data systematically. Making decisions about what observations to make, what measurements to use, how long to make them for and whether to repeat them; e) recognise and control variables where necessary f) recognise hazard symbols and make, and act on, simple suggestions to control risks to themselves and others;</p>
<p><b>Observing and measuring changes</b></p>	<ul style="list-style-type: none"> <li>Observing closely, using simple equipment.</li> </ul> <p>Children can: a) observe the natural world around them; b) observe changes over time. c) with guidance, begin to notice patterns and relationships; d) use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying) e) observe closely using simple equipment f) with support, take simple measurements</p>	<ul style="list-style-type: none"> <li>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</li> </ul> <p>children can: a) begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them b) help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used; c) learn</p>	<ul style="list-style-type: none"> <li>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> </ul> <p>Children can: a) observe the natural world around them; b) observe changes over time. c) with guidance, begin to notice patterns and relationships; d) use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (identifying and classifying) e) observe closely using simple equipment f) with support, take simple</p>

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		<p>how to use a wider range of equipment, including thermometers and data loggers; d) make systematic and careful observations; e) take accurate measurements using standard units begin to identify how they can record their observations; g) ask their own questions about what they observe;</p>	<p>measurements Children can: a) begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them b) help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used; c) learn how to use a wider range of equipment, including thermometers and data loggers; d) make systematic and careful observations; e) take accurate measurements using standard units Children can: a) choose the most appropriate equipment to make measurements and explain their choices; b) explain how to use the equipment accurately; c) take measurements using a range of scientific equipment with increasing accuracy and precision; d) independently record observations; e) take repeat readings when appropriate; f) understand why we take an average in repeat readings.</p>
<p><b>Identifying, classifying, recording and presenting data</b></p>	<ul style="list-style-type: none"> <li>Identifying and classifying.</li> <li>Gathering and recording data to help in answering questions.</li> </ul> <p>Children can: a) use simple features to compare objects, materials and living things; b) decide how to sort and classify objects into simple groups with some help; c) with support, record and communicate findings; d) with support, sort, group, gather and record data in a variety of ways to help in answering questions, such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables.</p>	<ul style="list-style-type: none"> <li>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</li> <li>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> </ul> <p>Children can: a) talk about criteria for grouping, sorting and classifying; b) group and classify things; c) collect data from their own observations and measurements; d) present data in a variety of ways to help in answering</p>	<ul style="list-style-type: none"> <li>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> </ul> <p>Children can: a) independently group, classify and describe living things and materials; b) use and develop keys and other information records to identify, classify and describe living things and materials; c) decide how to record data from a choice of familiar approaches; d) record data and results of increasing complexity using scientific diagrams and</p>

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		<p>questions; e) use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge; f) record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p>	<p>labels, classification keys, tables, scatter graphs, bar graphs and line graphs. e) explain the choices that they have made when recording and presenting data</p>
<p><b>Noticing patterns and presenting findings</b></p>	<ul style="list-style-type: none"> <li>Using their observations and ideas to suggest answers to questions.</li> </ul> <p>Children can, with support: a) identify and discuss differences between their results; b) begin to notice patterns and relationships, including cause and effect; c) begin to draw simple conclusions; d) say whether what happened was what they expected; e) read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at Key Stage 1; f) talk about their findings to a variety of audiences in a variety of ways.</p>	<ul style="list-style-type: none"> <li>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</li> <li>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> </ul> <p>Children can: a) begin to make choices about how to analyse data; b) first talk about, and then go on to write about, what they have found out; c) with support, look for changes, patterns, similarities and differences in their data; d) draw simple conclusions from their results, using and spelling scientific and language appropriate to their age; e) suggest improvements to investigations; f) raise further questions which could be investigated; g) report and present their results and conclusions to others in written and oral forms with increasing confidence; h) with support, start to link scientific knowledge and understanding with their</p>	<ul style="list-style-type: none"> <li>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</li> </ul> <p>Children can: a) choose how to analyse the data; b) notice patterns; c) look for different causal relationships in their data; d) draw conclusions based on their data and observations; e) use their scientific knowledge and understanding to explain their findings, including if they refute them; f) discuss the degree of trust they can have in a set of results; g) discuss how they could increase their trust in a set of results h) independently report and present their conclusions to others in oral and written forms. i) read, spell and pronounce scientific and mathematical vocabulary correctly and use it accurately in their work;</p>

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		<p>results i) with support, identify new questions arising from the data, making predictions for new values within or beyond the data that they have collected;</p>	
<p>Using scientific evidence and secondary sources of information n</p>	<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>• Identifying differences, similarities or changes related to simple scientific ideas and processes.</li> <li>• Using straightforward scientific evidence to answer questions or to support their findings.</li> </ul> <p>Children can, with support : a) make links between their own science results and other scientific evidence; b) use straightforward scientific evidence to answer questions or support their findings; c) identify similarities, differences, patterns and changes relating to simple scientific ideas and processes; d) recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.</p>	<ul style="list-style-type: none"> <li>• Identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul> <p>Children can: a) use primary and secondary sources ' evidence to justify ideas; b) identify evidence that refutes or supports their ideas; c) recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact; d) use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas; e) talk about how scientific ideas have developed over time.</p>

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Where skills & objectives are taught.	KS1	KS2	
	Year 1/Year 2	Year 3/Year 4	Year 5/Year 6
<b>Cycle A T1</b>	<p><b>Seasonal changes</b></p> <ul style="list-style-type: none"> <li>observing closely, using simple equipment – observing rain fall using a rain gauge. Measuring the temperature using thermometers</li> <li>performing simple tests – temperature/rain fall</li> <li>asking simple questions and recognising that they can be answered in different ways – discussions about how they can measure rain.</li> <li>gathering and recording data to help in answering questions – gathering recordings of rain fall. Measuring temperature,</li> <li>using their observations and ideas to suggest answers to questions – using their findings from shadow experiments to ask and answer questions about other places in the world.</li> </ul> <p><b>Working scientifically experiments</b></p> <ul style="list-style-type: none"> <li>asking simple questions and recognising that they can be answered in different ways – make predictions about what will happen to the bread</li> <li>observing closely, using simple equipment performing simple tests – observe what is happening to the bread</li> <li>using their observations and ideas to suggest answers to questions – when observations are taking place, children discuss why the breakdown of the bread is happening</li> <li>gathering and recording data to help in answering questions – gather and record the observations of the bread to come to a conclusion</li> </ul>	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them – how to identify and classify vertebrates and invertebrates</li> <li>using straightforward scientific evidence to answer questions or to support their findings – making muscles and explaining how they work using scientific evidence</li> </ul> <p><b>Forces and magnets</b></p> <ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them – asking questions about different forces. What is a force? Friction</li> <li>setting up simple practical enquiries, comparative and fair tests – experiment to test the friction in different materials. children set up the experiment</li> <li>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, - use rulers to measure the height needed to start a car moving down a ramp. Observe the behavior of different materials with magnets.</li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</li> <li>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables – recording magnetic and non magnetic materials in results charts. Recording the strength of magnets in results tables</li> </ul>	<p><b>Earth and space</b></p> <ul style="list-style-type: none"> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate using scaling down and up in relation to the solar system and planets.</li> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations oral findings from enquiries about the Earth and sun.</li> </ul> <p><b>Forces</b></p> <ul style="list-style-type: none"> <li>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary planning air resistance experiment – controlling variables.</li> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate taking measurements and discussing how many times to complete each experiment to ensure no other variables are skewing data.</li> <li>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs labelled diagrams of the forces exerted on objects in the classroom.</li> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and</li> </ul>

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	<ul style="list-style-type: none"> <li>observing closely, using simple equipment performing simple tests – soap washing experiment</li> <li>using their observations and ideas to suggest answers to questions – answer questions they came up with before completing the soap experiment</li> </ul>	<ul style="list-style-type: none"> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions – Reporting findings from strength of magnet experiment</li> <li>using results to draw simple conclusions, make predictions for new values using results of 'playing' with magnets to predict polarity and magnetism</li> </ul>	<p>written forms such as displays and other presentations discussing anomalies in air resistance experiment. Concluding what they have found in water resistance experiment – how they could change or adapt experiment. Report findings as labelled diagrams. Report findings from tank experiment and suggest other resistances that might affect findings.</p> <ul style="list-style-type: none"> <li>identifying scientific evidence that has been used to support or refute ideas or arguments using knowledge of resistance to annotate ideas about water resistance</li> </ul>
<p><b>Cycle A T2</b></p>	<p><b>Every day materials Year 1</b></p> <ul style="list-style-type: none"> <li>asking simple questions and recognising that they can be answered in different ways</li> <li>observing closely, using simple equipment observing different materials and what they are called</li> <li>identifying and classifying sorting materials due to different properties</li> <li>using their observations and ideas to suggest answers to questions discussing suitability of different materials</li> </ul> <p><b>Every day materials Year 2</b></p> <ul style="list-style-type: none"> <li>asking simple questions and recognising that they can be answered in different ways children are asked why cars behave in a certain way when moving down a ramp</li> <li>observing closely, using simple equipment observe what the materials are like and why they cause the car to behave in a certain way. Observe which material is best for Ted.</li> <li>performing simple tests car on ramps. Ted in the rain</li> </ul>	<p><b>Light</b></p> <ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them -discussing what darkness is in relation to 'feely' bags.</li> <li>setting up simple practical enquiries, comparative and fair tests – designing and setting up an experiment to test the reflectiveness of materials. Designing an experiment to keep the light out of a baby's bedroom</li> <li>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers observations about darkness. Using data loggers when testing sun glasses.</li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions – recording the results of the reflective materials experiment. Discussing and deciding how to record the results of the light exposure experiment.</li> <li>recording findings using simple scientific language, drawings, labelled diagrams,</li> </ul>	<p><b>Properties and changes of materials</b></p> <ul style="list-style-type: none"> <li>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary children to take a property of a material and plan an experiment to identify which material displays this property. Card sorting fair/not fair tests. Plan their own experiment (choosing materials and methods) to separate materials from each other. As above but with dissolving sugar – controlling the variables.</li> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate decide on, and use a range of equipment to identify the properties. Decide how to, and take measurements to show separation. Taking measurements when dissolving sugar.</li> <li>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs decide how to record and record data from separation experiment.</li> <li>using test results to make predictions to set up further comparative and fair tests</li> </ul>

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	<ul style="list-style-type: none"> <li>identifying and classifying <a href="#">identifying how materials change</a></li> <li>using their observations and ideas to suggest answers to questions <a href="#">why does the car go slow or fast on certain materials?</a></li> <li>gathering and recording data to help in answering questions <a href="#">record observations of changing materials on their tables</a></li> </ul>	<p>keys, bar charts, and tables - recording the data from data loggers in bar charts</p> <ul style="list-style-type: none"> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions – <a href="#">discussing and concluding the results of the different sizes of shadow experiment,</a></li> <li>using straightforward scientific evidence to answer questions or to support their findings. – <a href="#">use their knowledge of shadows to answer what the experiment has shown</a></li> </ul> <p><b>Plants</b></p> <ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them <a href="#">choosing research question when investigating what plants need to grow</a></li> <li>setting up simple practical enquiries, comparative and fair tests <a href="#">children plan and set up their experiment either looking at light, soil or water. Setting up the water transportation experiment,</a></li> <li>making systematic and careful observations <a href="#">observing and labelling the parts of a flowering plant. Observing the water moving up the celery stick, observations of the parts of the flowers.</a> where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers <a href="#">taking measurements using a ruler of the growth of a plant over time</a></li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions <a href="#">record the dissection of a paper flower</a></li> <li>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables <a href="#">recording the parts of the plants as a diagram</a></li> </ul>	<p>use their results from the experiment to discuss and design the optimum sugar dissolving experiment</p> <p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs <a href="#">record the dissection of a plant to identify its sexual organs</a></li> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations <a href="#">report findings from planting plants who reproduce asexually.</a></li> <li>identifying scientific evidence that has been used to support or refute ideas or arguments <a href="#">investigating the work of Jane Goodall in relation to mammal protection and conservation. Reading evidence of reproductive cycles of animals.</a></li> </ul>
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		<ul style="list-style-type: none"> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions <a href="#">concluding the results from the plant growth experiment</a></li> <li>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions <a href="#">concluding the results from the plant growth experiment</a></li> <li>identifying differences, similarities or changes related to simple scientific ideas and processes <a href="#">verbally identifying differences and similarities between life cycles of plants and animals. Looking at the differences between what plants and animals need to live.</a></li> <li>using straightforward scientific evidence to answer questions or to support their findings <a href="#">use the knowledge they have learnt about water transportation to predict what will happen with the celery stick</a></li> </ul>	
<p><b>Cycle A T3</b></p>	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>asking simple questions and recognising that they can be answered in different ways <a href="#">asking questions about different animals. Researching how to answer them</a></li> <li>observing closely, using simple equipment <a href="#">observe wildlife in the local environment.</a></li> <li>performing simple tests</li> <li>identifying and classifying <a href="#">identify and classify objects they see on a walk. Sort into living, dead or never been alive.</a></li> <li>using their observations and ideas to suggest answers to questions <a href="#">use observations of animals to answer questions asked.</a></li> </ul>	<p><b>Rocks</b></p> <ul style="list-style-type: none"> <li>making systematic and careful observations <a href="#">observe the properties and characteristics of rock</a> and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers <a href="#">observing different types of soil, using standard units when measuring water</a></li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions <a href="#">record findings when comparing and grouping rocks. Gather data as qualitative data when observing soil</a></li> </ul>	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate <a href="#">investigating the hand spans of different ages of children.</a></li> <li>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs <a href="#">recording the life cycle of a mammal as diagrams –</a></li> </ul>



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- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables **record findings when comparing and grouping rocks**
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions **writing an explanation about how igneous rocks are formed and presenting it to peers**
- identifying differences, similarities or changes related to simple scientific ideas and processes **changes in living to dead to fossilized**
- using straightforward scientific evidence to answer questions or to support their findings. **Discussing how fossils are made and making their own.**

**Working scientifically** please ensure the objectives in red at the bottom are covered alongside any others.

**Objectives to cover:**

- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
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labelling. Plotting the length or mass of fetus as they grow in the room.

- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations **presenting findings from enquiries of the gestation periods of mammals. Describe the changes into adulthood and as humans get older. Venn diagrams to highlight the changes in puberty for a girl and a boy.**

**Working scientifically** – please ensure the objectives in red at the bottom are covered alongside any others.

**Need to cover:**

- using test results to make predictions to set up further comparative and fair tests
- identifying scientific evidence that has been used to support or refute ideas or arguments
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments
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<p><b>Cycle B T1</b></p>	<p><b>Animals including humans year 1</b></p> <ul style="list-style-type: none"> <li>identifying and classifying – classifying animals in groups according to animal class. Grouping according to what they eat.</li> <li>asking simple questions and recognising that they can be answered in different ways - asking questions about different animals and researching how to answer them.</li> </ul> <p><b>Animals including humans year 2</b></p> <ul style="list-style-type: none"> <li>observing closely, using simple equipment</li> <li>performing simple tests perform simple exercise tests to investigate the effects of exercise. Investigate the effects of hygiene – pepper test.</li> <li>identifying and classifying identify, classify and sort different food.</li> <li>using their observations and ideas to suggest answers to questions observe different pictures of animals and suggest how they can survive in different environments. Observing the needs and wants of humans to survive. Observe and use their ideas of healthy foods to create a food plate.</li> <li>gathering and recording data to help in answering questions gather results to answer the questions about effect of exercise on the body.</li> </ul>	<p><b>Sound</b></p> <ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to answer them – what is sound, how can we measure sound?</li> <li>setting up simple practical enquiries, comparative and fair tests – setting up and conducting an experiment to test insulators and conductors</li> <li>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers – use listening to measure sound as well as data loggers. Data loggers to measure how sound travels</li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions – presenting results as qualitative words. Record results from data loggers.</li> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions show results through pictures of how the item made the sound</li> <li>identifying differences, similarities or changes related to simple scientific ideas and processes changes in sound or how different items produce sound. Changes in volume and pitch</li> <li>using straightforward scientific evidence to answer questions or to support their findings. Explain what is happening to rice on a drum using their knowledge of how sound is produced. Explore changes in volume to explain changes in pitch</li> </ul> <p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>asking relevant questions and using different types of scientific enquiries to</li> </ul>	<p><b>Evolution and inheritance</b></p> <ul style="list-style-type: none"> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations reporting findings from the adaption experiment (birds on the island)</li> <li>identifying scientific evidence that has been used to support or refute ideas or arguments evolution and classification theories</li> </ul> <p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate using keys to identify trees</li> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations using findings from the classification challenge to adapt to the real world of classifying. Reporting findings using a classification key</li> <li>identifying scientific evidence that has been used to support or refute ideas or arguments</li> </ul>
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		<p>answer them using enquiries to answer questions about electrical circuits.</p> <ul style="list-style-type: none"> <li>• setting up simple practical enquiries, comparative and fair tests</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers observe either circuits will work with elements missing or added</li> <li>• gathering, recording, classifying and presenting data in a variety of ways to help in answering questions – present electrical circuits in scientific ways to show where they need to be fixed to allow an electrical current.</li> <li>• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables – recording insulators and conductors from experimentations</li> <li>• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions written and oral explanation of which materials are conductors and insulators</li> <li>• using straightforward scientific evidence to answer questions or to support their findings. – use prior knowledge to discuss what electricity is.</li> </ul>	
<p><b>Cycle B T2</b></p>	<p><b>Working scientifically</b></p> <ul style="list-style-type: none"> <li>• observing closely, using simple equipment – observe changes to an egg. Observe changes to a penny</li> <li>• performing simple tests – Planning and carrying out teeth experiment. Planning and carrying out a penny experiment</li> <li>• identifying and classifying - different foods</li> <li>• using their observations and ideas to suggest answers to questions – observing what happens to teeth</li> </ul>	<p><b>Living things and their habitats</b></p> <ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them – children sorting out objects to answer living/dead</li> <li>• using straightforward scientific evidence to answer questions or to support their findings. use their knowledge of</li> </ul>	<p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary jelly worm experiment to illustrate the movement of nutrients</li> <li>• using test results to make predictions to set up further comparative and fair tests Based on their Skittles experiment, what</li> </ul>

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	<ul style="list-style-type: none"> <li>gathering and recording data to help in answering questions – gathering data on sugar in soft drinks. Creating a bar chart to document this.</li> </ul>	<p>classification of animals to sort and justify their sorting</p> <p><b>Animals including humans</b></p> <ul style="list-style-type: none"> <li>making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers observations of what happens in the digestive system. Observing the eggs in the teeth experiment</li> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording how many teeth to answer how many teeth do you have?</li> <li>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables create a tally chart to document a tooth tally</li> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Coming to conclusions about how to keep our teeth health</li> </ul>	<p>do they think will happen to ink if drops are added to the gelatine</p> <ul style="list-style-type: none"> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations using heart beats from different animals to conclude differences between their bodies and hearts. Discuss why heart beat may change/be different.</li> <li>identifying scientific evidence that has been used to support or refute ideas or arguments blood nutrient experiment what happened in each experiment and how this relates to the movement of nutrients and water within our bodies to help transport it to all our body parts. Looking at guidance from the NHS on keeping healthy.</li> </ul> <p><b>Light</b></p> <ul style="list-style-type: none"> <li>planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary children to plan an experiment to prove light travels in straight lines. Reflective material: create a test which will prove their ideas. In order to prove their ideas, their test will need to provide results which can be measured.</li> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate record findings to show light travels in straight lines. Record their angle of incidence measurements using the table provided.</li> <li>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter</li> </ul>
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			<p>graphs, bar and line graphs record results in their own way, reflective materials.</p> <ul style="list-style-type: none"> <li>• using test results to make predictions to set up further comparative and fair tests Ask the children to predict what will happen when they look at objects through the blue or green filters after looking through the red one.</li> <li>• reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations once the eye parts have been learnt, children create a report to show how the eye works. Shadows: Discuss if the line graph is the best way for the children to record their observations. Ask the children to select the method of recording which they feel best communicates their findings.</li> <li>• identifying scientific evidence that has been used to support or refute ideas or arguments use scientific knowledge to prove why light travels in straight lines.</li> </ul>
<p><b>Cycle B T3</b></p>	<p><b>Plants year 1</b></p> <ul style="list-style-type: none"> <li>• identifying and classifying -identifying parts of the plant. Identifying common plants and trees.</li> </ul> <p><b>Plants year 2</b></p> <ul style="list-style-type: none"> <li>• observing closely, using simple – observing the changes in a growing sun flower</li> <li>• using their observations and ideas to suggest answers to questions – observing what plants need to grow</li> <li>• gathering and recording data to help in answering questions – recording findings to answer what plants need to grow</li> <li>•</li> </ul>	<p><b>States of matter</b></p> <ul style="list-style-type: none"> <li>• asking relevant questions and using different types of scientific enquiries to answer them – what is a slug, can you use what you can see to give definitions. Discussing anomalies.</li> <li>• setting up simple practical enquiries, comparative and fair tests fizzy drink experiment measuring the weight of gas in a bottle</li> <li>• making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers using weighing scales to</li> </ul>	<p><b>Electricity</b></p> <ul style="list-style-type: none"> <li>• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary planning conductors and insulators experiment. Planning a test to look at the amount of components in circuits.</li> <li>• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>• using test results to make predictions to set up further comparative and fair tests using drawings of circuits to make</li> </ul>

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		<p>measure the change in mass. Using thermometers to measure the temperature of melting ice</p> <ul style="list-style-type: none"> <li>gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording mass in tables.</li> <li>reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions explaining what is happening to the ice and why the temperature is increasing</li> <li>using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions suggesting improvements verbally to the experiments. Using prompts to conclude and discuss evaporation experiment</li> <li>identifying differences, similarities or changes related to simple scientific ideas and processes similarities and differences between solids, liquids and gases and their processes</li> <li>using straightforward scientific evidence to answer questions or to support their findings. Using what they know about slg to explain jelly, shaving foam etc</li> </ul> <p><b>Working scientifically - please ensure the objectives in red at the bottom are covered alongside any others.</b></p> <p><b>To be covered</b></p> <ul style="list-style-type: none"> <li>recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions</li> </ul>	<p>predictions and use to plan further experiments or changes.</p> <ul style="list-style-type: none"> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations reporting the findings of the conductors and insulators investigation.</li> </ul> <p><b>Working Scientifically – please ensure the objectives in red at the bottom are covered alongside any others.</b></p> <p><b>To be covered:</b></p> <ul style="list-style-type: none"> <li>recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</li> <li>taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations</li> </ul>
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|  |  | <ul style="list-style-type: none"><li>• identifying differences, similarities or changes related to simple scientific ideas and processes</li></ul> |  |
|--|--|---|--|