Science Long Term Plan

AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
			YEAR 1		
	Everyday Materials ✓ To identify that objects of all kinds are made of very different materials - plastic, glass, rubber, wood, stone or rock, paper, and metal. ✓ To explain that the materials from which objects are made have different properties ✓ To explain that objects are made from different materials because of their properties and that they are suited to doing a specific job ✓ To understand that water can change to form ice and may be used differently when it is like this ✓ To work out whether materials are hard or soft, bendy, or stiff, rough, or smooth, shiny, or dull, see-through or non see-through, waterproof or absorbent ✓ To explain why some objects have been made from certain materials ✓ To begin to sort materials into different groups depending on their properties **WS** ✓ To use simple equipment to carry out a test with support (stopwatches). ✓ To carry out simple tests that have been set up with help. ✓ To use structured templates and frames to record investigation data and observations in a logical format. ✓ To explain, with help, why data needs to be captured accurately ✓ To look at observations and begin to think about what answers they may suggest.	**Seasonal Changes** ✓ To name the 4 seasons and understand which months fall into the different seasons ✓ To explain how the weather changes over the 4 seasons ✓ To describe that the day changes in length depending on which season we are in **WS** ✓ To ask questions about the world around them ✓ To use simple equipment (rain gauge, thermometer, anemometer), to carry out a test with support. ✓ To use simple measurements suggested by the teacher to record data ✓ To understand that some investigations happen over a longer period of time but the data needs to be captured in the same way ✓ To look at observations and, with support, begin to think about what answers they may suggest. ✓ To review data and observations with support and begin to see that it may help to answer a question **Plants** ✓ To name some common wild and garden flowers and plants e.g., roses, daffodils, daisies, buttercups, bluebells, ivy, cherry blossom ✓ To name some deciduous trees e.g., oak, ash, birch, weeping willow, and evergreen trees e.g., fir, laurel, holly ✓ To understand the difference between wild and garden flowering plants ✓ To name the basic parts of a flower - stem, root, flower and leaf, petal ✓ To name the basic parts of a tree - root, trunk, branch, twig, leaf, and bark ✓ To observe how some plants change over a long period of time - some trees lose all their leaves, leaves change colour in Autumn and flowers die in the winter, In Spring some plants emerge from the ground	**Animals Including Humans** ✓ To identify and name common animals that are fish, amphibians, reptiles, birds, and mammals e.g., dogs cats, goldfish, dolphins, crocodiles, snakes, frogs, toads, blackbirds, parrots ✓ To see that there are similarities between them all but that there are many differences ✓ To know what a carnivore is and name some examples ✓ To know what a herbivore is and can name some examples ✓ To know what an omnivore is, and to name some of them **WS** ✓ To ask questions about the world around them ✓ To look at scientific observations and begin to think about what answers they may suggest To identify features of living things with support.	**Seasonal Changes** ✓ To name the 4 seasons and understand which months fall into the different seasons ✓ To explain how the weather changes over the 4 seasons ✓ To describe how our behaviour changes depending on which season we are in. ✓ To ask questions about the world around them **WS** ✓ To use simple equipment (thermometer) to carry out a test with support. ✓ To use simple measurements suggested by the teacher to record data ✓ To understand that some investigations happen over a longer period of time but the data needs to be captured in the same way ✓ To look at observations and, with support, begin to think about what answers they may suggest.	**Everyday Materials** ✓ To identify that objects of all kinds are made of very different materials - plastic, glass, rubber, wood, stone or rock, paper, and metal. ✓ To explain that the materials from which objects are made have different properties ✓ To explain that objects are made from different materials because of their properties and that they are suited to doing a specific job ✓ To work out whether materials are hard or soft, bendy, or stiff, see-through or non see-through, waterproof or absorbent ✓ To explain why some objects have been made from certain materials ✓ To begin to select materials depending on their properties ✓ To ask questions with help about things to want to find out. ✓ To ask questions about the world around them. ✓ To identify features of an object and material, with support. ✓ To group materials based on whether they are waterproof of whether they melt. ✓ To use some scientific words in an explanation of what has been found out and how it has been found out.

WS
- To ask questions about the world around them
- To use simple equipment (magnifying glass), to make observations with support.
- To identify features of a living thing.
- To group and sort living things with help.
- To look at scientific observations and begin to think about what answers they may suggest

YEAR 2

Uses of Everyday Materials	Animals Including Humans		Plants	Living Things and Their Habitats
- To explain that some materials can change shape when we do something to them - To describe some materials that can be stretched e.g., rubber - To name some materials that can bend e.g., paper, some plastic, leather - To name some materials that can be squashed e.g., rubber, foam, sponge - To name some materials that can be twisted, wool, cotton - To explain materials' properties that make them suitable for certain jobs - To describe which of the following materials: wood, metal, plastic, glass, brick, rock, paper, and cardboard, we would use to make different objects **WS** - To ask questions when exploring the world around them. - To use a variety of simple equipment to carry out a structured test - To carry out tests with increasing confidence and accuracy - To understand that observations might provide evidence or information to help answer a question. - To review data captured in an investigation and with some support can use it to answer simple related questions - To use scientific terminology. - To group and sort materials referring to some of their simple features	- To explain that some animals, including humans, have offspring that grow into adults - To explain that some animals lay eggs rather than give birth to live babies - To understand that these eggs hatch and the offspring may go through stages before they look like their parents e.g., tadpole to frog - To describe that all animals need water, food, and air to survive - To understand that if animals do not get enough of these 3 things, they will eventually die - To name foods that are good for us and foods that are not good for us - To explain that exercise is important for us to keep healthy - To explain that exercise helps our muscles keep strong and that it makes our heart strong too **WS** - To use a variety of simple equipment to carry out a structured tests with greater independence and accuracy - To understand that observations might provide evidence or information to help answer a question. - To review data captured in an investigation and with some support can use it to answer simple related questions		- To understand that plants grow from either seeds or bulbs - To explain what conditions a seed needs to grow or germinate - water and nutrients - To understand that seeds and bulbs like different conditions and may grow at different rates - To describe what happens when a seed germinates from my own experience - To understand that when a seed germinates it grows into an adult plant - To describe that an adult plant will grow bigger and stronger and then produce seeds itself from which other plants will grow - To describe what a plant needs to grow - water, sunlight, nutrients, and a suitable temperature - To explain that plants need slightly different amounts of warmth or space **WS** - To ask questions about things to find out and realise there may be different ways to answer the question - To carry out tests with increasing confidence and accuracy - To use thermometers with support. - To use everyday units of measurement to record data, with support. - To understand that some investigations happen over a longer period of time, but the data needs to be captured in the same way - To understand, with support, that scientific observations might provide evidence or information to help answer a question	- To understand that everything in our world is either alive, dead or has never been alive. - To explain the difference between things that are dead and things that have never been alive. - To group and sort things according to whether they are alive, dead or have never been alive. - To explain that living things, plants and animals, live in habitats which suits them and provides them with what they need to live. - To describe that all plants and animals need shelter, food and water and the habitat where they live will provide this. - To name some habitats and some of the animals and plants that live within them e.g., woodland, garden, rainforests, deserts, and polar regions. - To describe what a micro-habitat is and give an example of one in a larger habitat. - To explain that all habitats and microhabitats provide the conditions that animals and plants like to live. - To explain that animals in any habitat get food from other plants and animals living in the same habitat and explain that this is called a food chain. - To give an example of a food chain. To understand that if something happens to one element of a food chain, then it will impact the others. **WS** - To structure simple practical enquiries with support that address

				a scientific question.
				✓ To analyse living things and independently identify some features.
				✓ To group and sort living things referring to some of their simple features.
				✓ To understand, with support, that observations might provide evidence or information to help answer a question.

YEAR 3

Rocks	Animals Including Humans	Light	Plants	Forces and Magnets
✓ To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. ✓ To describe in simple terms how fossils are formed when things that have lived are trapped within rock. ✓ To recognise that soils are made from rocks and organic matter. **WS** ✓ To structure questions to be answered in an investigation with help. ✓ To spot any patterns in data recorded, including similarities and differences. ✓ To report investigation findings as an oral presentation ✓ To analyse the findings from an investigation and use this to draw simple conclusions with help. ✓ To gather relevant data during my investigations using labelled diagrams and keys ✓ To make systematic and careful observations ✓ To collect data from an investigation as labelled diagrams, and tables ✓ To use simple scientific language and terminology in explanations ✓ To structure simple practical investigations that address a scientific question.	✓ To know that most animals including humans have skeletons. ✓ To know that skeletons are made of bones ✓ To understand that bones are made of calcium, and it is this that makes them strong ✓ To understand that skeletons support the animal's body, protects important organs and along with muscles allows the animals to move ✓ To know that skeletons allow movement through different types of joint ✓ To explain the importance of exercise for muscles **WS** ✓ To understand why science starts with a question ✓ To explain why there needs to be consistency in the way a comparative test is carried out if it is to be fair ✓ To record findings using a table and bar char with structured templates and frames. ✓ To decide which units to use to take measurements. ✓ To analyse the findings from an investigation and use this to draw simple conclusions and answers to questions	✓ To know that darkness is the absence of light ✓ To explain that we need light in order to see things ✓ To know we need to protect our eyes and our skin from the sun's harmful rays ✓ To know that there are different sources of light ✓ To describe how light is reflected from the surface of objects into our eyes and that is how we see them ✓ To explain that a shadow is formed when an object blocks light ✓ To describe, with help, why a shadow has the same shape as the object casting it ✓ To understand that there are patterns in the way the size of the shadow can be changed ✓ To explain why not all shadows are the same ✓ To explain what opaque, translucent and transparent materials, are and explain why they cast the best shadows **WS** ✓ To structure questions, with support, to be answered in an investigation ✓ To decide, with help, which units to would use to take measurements ✓ To explain why there needs to be consistency in the way a comparative test is carried out if it is to be fair ✓ To use Lux meters with support. ✓ To plan, with help, what equipment may be needed to deliver relevant data ✓ To present data using graphs ✓ To report investigation findings in written form ✓ To use simple scientific language and terminology in explanations	✓ To name the parts of a plant - root, stem/trunk, leaf, flower ✓ To know that roots absorb water and nutrients from the soil and anchor the plant in place ✓ To know that the stem transports water and nutrients around the plant and holds the leaves and flowers up ✓ To know that some plants have flowers, and this enables the plant to reproduce ✓ To know that pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination). This forms seeds, sometimes contained in berries or fruits which are then dispersed in different ways. ✓ To know that leaves use sunlight and water to produce the plant's food. This is called photosynthesis. ✓ To explain how water moves through a plant ✓ To describe the process of pollination ✓ To describe the process of fertilisation ✓ To describe what germination is ✓ To explain some of the types of seed dispersal ✓ To explain what factors affect the lifecycle of a plant and can describe why some plants need different things **WS** ✓ To understand why science starts with a question ✓ To explain why there needs to be consistency in the way a comparative test is carried out if it is to be fair ✓ To use measuring cylinders, tape measures and scales	✓ To describe different types of forces and how they act on objects - ✓ To describe the effect forces can have on an object. ✓ To use arrows to show the direction of different forces. ✓ To describe how friction can help or hinder and to give examples of this in everyday life ✓ To say that some forces need contact, but magnetic forces can act at a distance ✓ To describe how magnets can attract or repel each other ✓ To describe how magnets can attract some materials but not others and can classify materials on the basis of this ✓ To explain that magnets have 2 poles ✓ To successfully predict whether the magnets will attract each other depending on which poles are facing each other **WS** ✓ To understand why science starts with a question. ✓ To structure, with support, simple practical enquiries and investigations that address a scientific question. ✓ To use scientific equipment with support (stopwatches). ✓ To collect data from an investigation with support. ✓ To use table templates to record data. ✓ To report investigation findings in a written form, with support. ✓ To understand what a secondary source is and use one about William Gilbert as part of a broader investigation. ✓ To make a link between scientific results and other scientific evidence. ✓ To analyse the findings from an investigation and use this to create an explanation of findings

		✓ To analyse the findings from an investigation and use this to create an explanation of scientific findings ✓ To identify simple patterns in results	✓ To decide, with help, which units I would use to take my measurements ✓ To understand why collecting data is so important during an investigation. ✓ To present data in a table with a structured frame ✓ To use the simple scientific language and terminology in explanations ✓ To identify simple patterns in results ✓ To report investigation findings as an oral presentation. ✓ To understand that data and evidence may be collected in a variety of ways and then represented in a number of different ways	

YEAR 4

Animals Including Humans	States of Matter	Electricity	Sound	Living Things and Their Habitats
✓ To name and locate the key parts of the human digestive system - Mouth, oesophagus, stomach, small intestine, and large intestine ✓ To describe the function of each of the different parts of the human digestive system. ✓ To recognise and name the different types of teeth - Incisors, canines, premolars, molars. ✓ To describe the function of each type of tooth and explain how the shape of the tooth allows it to carry out its job ✓ To describe the structure of a typical tooth ✓ To explain why brushing our teeth twice a day is important ✓ To describe what a food chain is ✓ To explain how food chains link together to make food webs ✓ To understand how energy is transferred through a food chain and that all energy in a food chain is provided by the Sun ✓ To understand that even minor changes to environments or populations can have important implications for food chains and webs ✓ To describe what producers, predators and prey are and explain how they are related to each other ✓ To describe the key characteristics of producers, predators, and prey **WS** ✓ To understand why science starts with a question ✓ To gather relevant data during my investigations ✓ To report investigation findings in a presentation with increasing confidence. ✓ To confidently structure questions to be answered in an investigation ✓ To explain what a comparative test is. ✓ To analyse information gathered from an investigation and use this to create an explanation of findings. ✓ To use relevant scientific language in all my science work. **WS**	✓ To understand that everything is made of tiny particles ✓ To classify substances as solids, liquids, and gases ✓ To describe the properties of solids, liquids and gases ✓ To understand that some substances are difficult to classify ✓ To observe and explain that some materials change state when they are heated and cooled (melted or cooled) ✓ To research and investigate the temperature at which materials change state - water boils at 100 degrees Celsius and freezes at 0 degrees Celsius ✓ To explain the changes of state using the properties of solids, liquids and gases and that solids can become liquid which in turn can boil and evaporate to a gas. ✓ To explain that everything is made of tiny particles and that substances change state when they are cooled or heated. ✓ To name the stages of the water cycle - Evaporation, Condensation, Precipitation ✓ **WS** To explain in a simple format what dependent, independent and control variables are and that it is these variables that make sure any	✓ To name appliances that work on electricity using a plug and socket or batteries ✓ To construct a simple series electrical circuit ✓ To correctly name the basic parts of a series electrical circuit - the cell, the wire, the bulb, the switch, the bulb and the buzzer. ✓ To explain what a closed circuit is and that a circuit needs to be closed for electricity to flow along the wires. ✓ To explain that a switch breaks a closed circuit when left open and closes an open circuit. I know when a switch has closed a circuit, electricity can move along the wires. ✓ To understand that some materials allow electricity to pass along them, and these are called conductors ✓ To know that some materials like metals are good conductors of electricity ✓ To know that some materials are poor conductors and do not allow electricity to travel along them. These materials are called insulators and are non-metallic materials ✓ To name some good insulators ✓ To understand that materials may be used for the simple reason they are either good conductors (copper	✓ To explain that pitch is how high or low a sound is. ✓ To explain that a sound pitch is dependent on how vigorously the particles vibrate - the greater the vibration the higher the pitch. ✓ To also explain that a sound's pitch is dependent on the mass (weight) of the object that makes it. The greater the mass the more slowly it vibrates and the lower the pitch. ✓ To explain that the volume of a sound is how loud or how quiet it is. ✓ To explain that the stronger the vibration, the louder the sound. ✓ To explain that volume can be changed by changing the strength of the vibration. ✓ To explain that sound is an energy passed on through the vibration of particles which collide with other particles. ✓ To know that as the sound energy travels further away from the sound source the strength of the vibration starts to slow. ✓ To understand that due to the slowing down of the vibration the further the vibration has to travel, the fainter it gets and so the quieter the sound gets. **WS** ✓ To confidently structure questions to be answered in an investigation.	✓ To know that living things can be grouped according to some of their features. ✓ To study the characteristics of living things and use these to help decide which of these groups to put them in. ✓ To use a classification key to decide which living thing belongs to which group. ✓ To explain what a micro-organism is and know it is different to other living things. ✓ To explain the differences in the lifecycle of animals, amphibians, insects, and birds. ✓ To make comparisons and understand that different lifecycles help us to classify animals. ✓ To explain how an animal and a plant's habitat can affect its lifecycle. ✓ To compare different types of habitats across the world including deserts, rainforests and oceans and know which plants live there. ✓ To explain that certain changes in an environment will have an effect on the whole habitat and this can be the consequence of a natural occurrence like a flood or fire or earthquake. ✓ To describe our local habitat and know which plants live there. **WS** ✓ To understand that data and

	investigation is fair ✓ To explain why collecting data is so important during an investigation ✓ To present data using bar charts and labelled diagrams ✓ To find patterns in results, with support, and use this to draw simple conclusions and answers to questions ✓ To say that conclusions from one investigation might lead me to suggest ideas for a follow up investigation. ✓ To use relevant scientific language in all my science work. ✓ To orally report investigation findings.	wires in cables) or good insulators (the plastic that covers the wires) **WS** ✓ To explain in a simple format what dependent, independent and control variables are and that it is these variables that make sure any investigation is fair. ✓ To gather relevant data during investigations. ✓ To orally report investigation findings. ✓ To use data from an investigation to support scientific analysis and understanding ✓ To use relevant scientific language in all my science work.	✓ To structure simple practical enquiries and investigations that address a scientific question with confidence and independence. ✓ To understand that data and evidence may be collected in a variety of ways (e.g., devised scales of sound). ✓ To understand that evidence can be represented in a number of different ways (drawings, diagrams). ✓ To systematically collect data from an investigation that allows the investigation question to be answered. ✓ To use sound meters with increasing confidence. ✓ To confidently decide what units of length to use to take measurements. ✓ To report investigation findings as an oral presentation. ✓ To analyse information gathered from an investigation and use this to create an explanation of findings ✓ To use related scientific language and terminology in explanations. ✓ To identify simple patterns, which include changes in a scientific process and have referenced them in my evaluations if relevant. ✓ To confidently suggest as part of analysis improvements to the investigation in terms of variables, equipment and measurement units. ✓ To make a link between scientific results and other scientific evidence discovered by Alexander Graham Bell. ✓ To say that conclusions from one investigation might lead me to suggest ideas for a follow up investigation. ✓ To use relevant scientific language in all science work.	evidence can be collected and represented as a classification key. ✓ To reference secondary sources when obtaining results from practical investigations is difficult

YEAR 5				
Living Things and Their Habitats	**Animals Including Humans**	**Earth and Space**	**Forces**	**Properties and Changes of Materials**
✓ To explain the differences in the lifecycles of mammals, amphibians, insects, and birds ✓ To know most mammals give birth to live offspring and that they look like their adult parent ✓ To know that birds, some reptiles, and all amphibians lay eggs, which will hatch and grow into adults	✓ To explain how human offspring are born ✓ To explain that babies are the product of sexual reproduction between a man and a woman ✓ To explain how humans change as they grow older To explain that as humans develop into teenage years, they go through a phase called puberty and this is	✓ To name the 8 planets in the solar system ✓ To recognise that the planets, Sun, and moon are spherical bodies ✓ To describe that the planets orbit the Sun in an ellipse shape ✓ To explain that the Earth rotates at an angle	✓ To explain that forces always act in pairs e.g., push and pull ✓ To explain that gravity is a pulling force that pulls objects towards the centre of the Earth ✓ To explain that air resistance is a pushing force that pushes against objects falling to the Earth through gravity	✓ To explain that some materials conduct heat and are used in items that need a transference of heat, e.g., metal in a saucepan ✓ To explain others do not conduct heat and can be used to protect people from heat and burning e.g., wooden, or plastic handles on a saucepan ✓ To understand that electrical energy travels along conductors and can explain how materials are used to allow this to happen ✓ To describe whether a material is magnetic and give examples of how this property can be used in different products ✓ To also describe how hard or soft certain materials are and explain why these features may be useful

- To know that some insects like a caterpillar experiences a metamorphosis when it turns into a butterfly
- To explain that some plants reproduce sexually when pollen from the male part of the plant fertilises the female part of a plant
- To describe how the pollen from one plant fertilises another through wind or by an insect
- To know that some plants reproduce asexually e.g., bulbs and tubers

- To plan investigations constructed specifically to answer a question with guidance
- To confidently explain what independent, dependent and control variables are
- To understand why it is important to be precise when taking measurements in scientific investigations
- To know that sometimes scientists need to take repeat readings to check
- To select the most appropriate method to illustrate my findings
- To record data using a scatter graph
- To review the data gathered during an investigation and draw a conclusion as to the implication of scientific findings
- To understand what a causal relationship is and can explain a causal relationship in an investigation.
    To use scientific language and terminology when presenting an analysis and explanation.

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when their sexual development occurs

- To begin to construct predictions using information gathered in an investigation
- To use test results to help decide what other comparative or fair tests should be carried out
- To spot trends in results.
    To use scientific language and terminology when presenting an analysis and explanation

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- To describe why this causes different countries to experience night and day at different times
- To describe the relationship between the Earth's rotation and time
- To understand that the Sun never moves and that it is the movement of the Earth that makes us think it does
- To explain that the moon orbits the earth every 28 days
- To explain why the phases of the moon occur
- To talk about the importance of space travel

To explain why the moon is important in our history

- To plan investigations constructed specifically to answer a question with guidance
- To use scientific language and terminology when presenting an analysis and explanation
- To confidently explain what independent, dependent and control variables are.
- To understand why it is important to be precise when taking measurements in scientific investigations.
- To select the most appropriate method to illustrate findings
- To understand what a causal relationship is and explain a causal relationship in an investigation.
- To spot trends in results.
- To use a variety of scientific equipment

- To explain that the mass of an object does not affect the time taken for an object to fall to the floor
- To use force arrows to show the size and direction of a force
- To describe air resistance as a force that is caused by air particles colliding with any object that moves through it
- To explain why objects with a larger surface area, those that are heavier or moving faster cause more air resistance
- To explain that friction is a force that is caused by two surfaces rubbing together
- To understand that friction is a force that slows moving objects
- To describe how different surfaces affect friction and where friction might be useful and where it is not useful
- To explain how to increase and reduce friction
- To explain that water resistance is a force that uses friction to slow things down as they move through water
- To describe the effects of water resistance

- To apply, with guidance, understanding of dependent, independent and controlled variables in different contexts and to different types of scientific enquiries.
- To use a variety of scientific equipment (Newton meters).
- To know that sometimes scientists need to take repeat readings to check.
- To spot trends, patterns and anomalies in results.
- To select the most appropriate method to illustrate findings
- To review the data gathered during an investigation and draw a conclusion as to the implication of the findings.
- To understand what a causal relationship is and explain a causal relationship in an investigation.
- To understand and identify, with support, what and how scientific evidence from Sir Isaac Newton and Archimedes has been used to

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- To explain what solubility means and give examples of materials that are soluble
- To explain what dissolving is and that it is a change of state
- To explain that dissolving is a reversible change
- To describe appropriate methods to separate solutions
- To explain what evaporation, filtering and sieving are and how they may be used to separate mixtures
- To explain the difference between a chemical reaction (irreversible) and a physical reaction (reversible).
- To carry out an investigation to show that dissolving, mixing and changes of state are reversible changes and not irreversible changes
- To describe the difference between a reversible change and an irreversible change
- To explain that burning is an example of an irreversible change
- To describe what happens when an acid reacts with bicarbonate of soda
- To explain how the properties of materials have changed when they have undergone an irreversible change.

- To plan investigations constructed specifically to answer a question
- To use a variety of scientific equipment to separate materials
- To understand why it is important to be precise when taking measurements in scientific investigations
- To construct predictions using information gathered in an investigation
- To record data as a line graph/ bar graph
- To review the data gathered during an investigation and draw a conclusion as to the implication of the findings
- To present results and conclusions both in writing and orally
- To understand and identify what and how scientific evidence has been used to support or refute ideas and arguments.
- To use scientific language and terminology when presenting an analysis and explanation

			support or refute ideas and arguments.	
			✓ To use scientific language and terminology when presenting an analysis and explanation.	
			✓ To analyse other people's scientific conclusions and explanations and identify whether further investigations need to be carried out to refine or support their findings	

YEAR 6

Animals Including Humans	Electricity	Light	Evolution and Inheritance	Living Things and Their Habitats
✓ To name the main parts of the circulatory system - heart, blood vessels, blood, veins, and arteries	✓ To construct a simple series electrical circuit and correctly name all the parts	✓ To explain that we need light in order to see things	✓ To explain that the Earth has changed over millions of years.	✓ To explain what classification is
✓ To explain that the heart works alongside the lungs to take oxygen into the body and carbon dioxide and other waste products out of the body	✓ To explain how a switch works in a circuit	✓ To know that the Sun is our natural light source	✓ To recognise that the Earth's surface was changed because of the heat rising from its core.	✓ To explain that living things can be classified in different ways
✓ To know that most veins carry blood towards the heart that is now full of carbon dioxide and other waste products to be exhaled through the lungs	✓ To explain how the brightness of a lamp or the loudness of a buzzer depends on the number and voltage of the cells used and the number of components in a circuit	✓ To understand that light travels in straight lines	✓ To describe what a fossil is and how it helps ad understand life on Earth millions of years ago.	✓ To know what a vertebrate and invertebrate are
✓ To know that arteries carry blood filled with oxygen, nutrients, and water from the heart to be distributed around the body	✓ To draw the correct circuit diagram for a circuit using the correct symbols	✓ To explain that light is reflected from the surface of objects into our eyes and that is how we see them	✓ To understand how some species like dinosaurs become extinct.	✓ To classify animals according to whether they are a vertebrate (fish, amphibians, reptiles, birds, and mammals) or invertebrate (insects, spiders, snails, and worms)
✓ To recognise and name the 7 food groups - protein, carbohydrate, fats, vitamins, minerals, fibre, and water and explain what role each group performs within our bodies	✓ To draw and name the electrical circuit symbols for cell, conductor wire, bulb, buzzer and switch	✓ To draw simple diagrams to show the direction light travels and that these are called ray diagrams	✓ To explain that living things produce offspring of the same kind.	✓ To learn about famous scientists known for their work in the classification of living things like Carl Linnaeus
✓ To describe the factors that affect how much of each food group a person needs to eat	✓ To describe what an open electric circuit is	✓ To explain how light changes direction when it travels through different shaped lenses, concave and convex	✓ To understand that offspring are not identical to their parents.	
✓ To describe how water and nutrients are carried the body to where they are needed	✓ To describe what a closed electric circuit is and why it is important	✓ To describe that the direction light travels can be changed but it always travels in a straight line	✓ To know that living things inherit characteristics from their parents.	**WS**
✓ To recognise that drugs, exercise and lifestyle affects the way their bodies function.	✓ To explain how to increase the brightness of a lamp and the loudness of a buzzer	✓ To know that the properties of different materials affect how reflective they are and that smooth surfaces reflect light better	✓ To understand that our DNA is made up of genes from both parents and these determine our characteristics.	✓ To record data using observational drawings and photographs.
WS	✓ To use knowledge to plan a circuit in a diagram and build it	✓ To explain what a shadow is and that it is an area where light has not entered	✓ To describe what adaptation is.	✓ To use results gathered in investigations to make predictions.
✓ To independently select and plan the most appropriate type of enquiry to answer a question	**WS**	✓ To explain why a shadow has the same shape as the object that is casting the shadow	✓ To explain why adaptation leads to evolution.	✓ To understand what a causal relationship is and explain the relevant context of such a causal relationship in any conclusion or explanation.
✓ To confidently select dependent, independent and controlled variables for different types of scientific enquiries that will ensure a fair test	✓ To independently select and plan the most appropriate type of enquiry to answer a question.	✓ To understand that there are patterns in the way the size of the shadow can be changed according to where the light source is positioned.	✓ To understand that adaptation is essential for the survival of the species.	✓ To explore other people's scientific conclusions and understand how their own data has been used to support or contradict thinking.
✓ To record data as a line graph	✓ To confidently review the data gathered during an investigation and construct conclusions and explanations of findings.	**WS**	✓ To recognise that if a species does not adapt it may become extinct.	
✓ To confidently use scientific language and terminology when presenting an analysis and explanation	✓ To confidently use scientific language and terminology when presenting an explanation.	✓ To confidently select dependent, independent and controlled variables for different types of scientific enquiries that will ensure a fair test	✓ To describe what evolution is.	
✓ To take measurements confidently and accurately using a range of scientific equipment.	✓ To analyse other people's scientific conclusions and explanations and identify whether further investigations need to be carried out to refine or support their findings.	✓ To select the most appropriate method of displaying results.	✓ To learn about the work of important scientists.	
✓ To identify when readings from scientific equipment looks incorrect and take repeat readings to deliver more precise and accurate data.		✓ To select appropriately from a variety of scientific equipment	✓ To learn about the work of palaeontologists.	
✓ To record data as a scatter graph.				
✓ To select the most appropriate method of recording and displaying data and results.				
✓ To adeptly present results, conclusions and explanations in multiple formats, knowing that these are based on sound scientific practice.				
✓ To use results gathered in investigations to make predictions and be confident that the data gathered is accurate.				
✓ To review data and spot, patterns and anomalies independently.				

		✓ To explore other people's scientific conclusions and understand how their own data has been used to support or contradict thinking		