



St Patrick's Catholic Primary School Science Curriculum Intent



	Advent	Lent	Pentecost
Nursery	<u>Understanding the word – the natural word</u> • explore through their senses the world around them and use a growing vocabulary to describe what they experience. • talk about the differences between materials they work with and changes they notice.	<u>Understanding the word – the natural word</u> • understand that the weather changes and in different places you find different weather. • know there are hot and cold places in the world (including countries). • be able to identify suitable clothing for different weather. • talk about the differences between materials used in their clothes and changes they notice. • explore and talk about collections of materials with similar and/or different properties. • explore how different weather types affect the natural environment and materials. • talk about what they see, using a wide vocabulary. • plant seeds and care for growing plants. • understand the key features of the life cycle of a plant. • know the difference between plants and animals. • talk about the pets they have. • understand the key features of the life cycle of an animal.	<u>Understanding the word – the natural word</u> • talk about what they see, feel, smell, hear, taste using a wide topic related vocabulary. • Explore and talk about different forces they can feel. • talk about how forces can change the direction of moving things e.g. sail boats on water, windmills, kites. • know the wind is a force that you can feel but not see. • talk about how you can see the impact of wind as a force in action. • talk about the differences between materials and changes they notice when they push, pull, squeeze e.g. sand, soil, clay, playdough, corn flour. • talk about the forces needed to make things work e.g. push, pull toys. • begin to explain in how things work.



		- begin to understand the need to respect and care for the natural environment and all living things. - talk about what they see, feel, smell, hear, taste using a wide vocabulary	
Reception	<u>Understanding the word – the natural world</u> recognise some environments that are different to the one in which they live.	<u>Understanding the word – the natural word</u> - Know the names of the four seasons. - Know the 'typical' type of weather for each season. - understand the effect of changing seasons on the natural world around them. E.g. seasonal changes to trees/plants; very cold weather can cause water to freeze; warmer weather will cause ice to melt. - Explore the natural world around them. - Describe what they see, hear and feel whilst outside. - Use a wide topic vocabulary to describe what they experience with their senses. - Explore the natural world around them and talk about the different plant/animal life that exists. - Describe what they see, hear and feel whilst outside. - Recognise some environments that are different to the one in which they live. - Understand the effect of changing seasons on the natural world around the world e.g. very hot/cold countries	<u>Understanding the word – the natural word</u> - know some similarities and differences between the natural world around me and contrasting environments, drawing on experiences and what has been read in the - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. - Understand processes such as floating and sinking. E.g. in the sea - Understand processes such as freezing and melting. E.g. how ice lollies are made and what happens to them in the sun. - Understand processes such as heating and cooling e.g. in cooking, sunbathing. - Know how to be safe at the seaside e.g. sun protection, importance of hydration, importance of shade, water safety.



		and how the plant and animal life differs.		
Y1 – Advent term	<u>The Human Body – Biology (5 weeks)</u> <u>Substantive knowledge</u> • The human body has different parts with names (e.g. head, arms, legs, eyes, ears, nose, mouth, hands, feet). • Humans use eyes to see, ears to hear, nose to smell, tongue to taste, and skin to feel. • We need light to see; it is harder to see in the dark. • Sounds can be loud or quiet, which affects how easily we hear them. • The tongue helps us taste different flavours (sweet, salty, sour, bitter, savoury). • The nose helps us smell, and some smells are stronger than others.	<u>Seasonal Changes – Biology (1 week)</u> <u>Substantive Knowledge:</u> • There are four seasons: spring, summer, autumn and winter. • In autumn, days get shorter and nights get longer. • Trees may lose their leaves in autumn. • The weather often changes in autumn.	<u>Materials – Chemistry (5 weeks)</u> <u>Substantive knowledge:</u> • Objects are made from different materials. • Materials have different properties, such as texture. • Rocks are natural materials and can be different in shape, size and texture. • Some materials are used for building things like walls and buildings. • Materials are chosen based on what they are used for. • Water can change state: it freezes to become ice and	<u>Seasonal Changes – Biology (1 week)</u> <u>Substantive Knowledge:</u> • There are four seasons: spring, summer, autumn and winter. • In winter, there are fewer hours of daylight and longer nights. • Day length changes across the seasons. <u>Disciplinary Knowledge:</u> • Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change. • Asking simple questions and recognising that they can be answered in different ways



	• Skin covers the body and helps us sense touch. <u>Disciplinary knowledge</u> • Pupils might work scientifically by: using their observations to compare animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to compare different textures, sounds and smells • Asking simple questions and recognising that they can be answered in different ways. • Using their observations and ideas to suggest answers to questions • Performing simple tests	<u>Disciplinary Knowledge:</u> • Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change. • Asking simple questions and recognising that they can be answered in different ways	melts to become water. • Some materials float on water and some sink. <u>Disciplinary Knowledge:</u> • Pupils might work scientifically by: performing simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?' • Identifying and classifying. • Observing closely, using simple equipment. • Perform simple tests. • Using their observations and	
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		Gathering and recording data to help in answering questions	ideas to suggest answers to questions.		
Y1 –Lent term	<u>Planting A – Biology (1 week)</u> <u>Substantive Knowledge:</u> - A plant is a living thing that usually grows in soil. - Some plants have roots, a stem, leaves and flowers. - A seed can be planted to grow into a new plant. - Some seeds can be planted in winter but must be kept warm to grow. <u>Disciplinary Knowledge:</u>	<u>Animals- Biology (6 weeks)</u> <u>Substantive knowledge:</u> - There are different groups of animals. - Mammals have hair or fur and some are pets or wild. - Birds have feathers, wings and beaks; some can fly or swim. - Fish live in water and have fins, gills and often scales. - Amphibians live on land and in water. - Reptiles have dry, scaly skin.	<u>Caring for the planet – Sustainability (1 week)</u> <u>Substantive Knowledge:</u> - Everyone can help look after the planet. - Some actions help the Earth and some harm it. - Recycling reduces waste. - Turning off lights and taps saves energy and water. - Putting rubbish in bins keeps places clean. - Caring for the planet helps people, animals and plants. - We all have a responsibility to protect the environment.	<u>Seasonal Changes – Biology (1 week)</u> <u>Substantive knowledge</u> - There are four seasons in one year. - The season names are spring, summer, autumn and winter. - In spring, plants start to grow. - In spring, some trees regrow their leaves.	<u>Planting B – Biology (1 weeks)</u> <u>Substantive Knowledge:</u> - Plants are living things that usually grow in soil. - Plants can have roots, stems, leaves and flowers. - Seeds can grow into new plants. - Plants grow longer stems, roots and new leaves. - Plants grow well in spring when it is warmer. <u>Disciplinary Knowledge:</u> - Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants



	Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example the leaves falling off	- Animals have different features that help them survive. - Carnivores eat other animals and often have sharp teeth and claws. - Herbivores eat plants and often have flat teeth. - Omnivores eat both plants and animals. <u>Disciplinary Knowledge:</u> - Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat; and using their senses to	<u>Disciplinary Knowledge:</u> - Explore the world around them and raise their own questions (non-statutory) - Using their observations and ideas to suggest answers to questions	- season – a part of the year - In spring, there are more hours of daylight, and the nights start to become shorter. - In spring, plants start to grow. - In spring, some trees regrow their leaves. - There are more daylight hours and the nights are shorter in spring. - The weather often changes quickly in spring. <u>Disciplinary Knowledge:</u> - Pupils might work scientifically by: making	including trees. Pupils might keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants. - Observing closely, using simple equipment. - Gathering and recording data to help in answering questions
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	trees and buds opening; and compare what they have found out about different plants. Asking simple questions and recognising that they can be answered in different ways	compare different textures, sounds and smells. - Asking simple questions and recognising that they can be answered in different ways. - Gathering and recording data to help in answering questions Identifying and classifying		tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change. Asking simple questions and recognising that they can be answered in different ways	
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				Gathering and recording data to help in answering questions	
Y1 – Pentecost term	<u>Plants – Biology (5 weeks)</u> <u>Substantive knowledge</u> - Plants have different parts, and each part has a name. - Flowering plants have flowers, stems, roots and leaves. - Trees are a type of plant with roots, trunks, branches and leaves. - Trees can vary in shape and size and some produce fruit. - Wildflowers grow naturally and are not usually planted by humans. - Garden plants are chosen and planted by humans. - There are many different plants in the local environment.	<u>Planting C – Biology (1 week)</u> <u>Substantive knowledge:</u> - The stem will grow in length as the plant grows. - The plant will grow new leaves. - The roots will become longer A plant is a living thing that usually grows in soil. - Some plants have roots, a stem, leaves and flowers. - A seed can be planted to grow into a new plant. - In summer, the weather is warmer so seeds and plants can grow outside. <u>Disciplinary Knowledge:</u> - Pupils should use the local environment throughout the year to explore and answer	<u>Growing and Cooking – Sustainability (3 weeks).</u> <u>Substantive knowledge:</u> - Some fruit and vegetables can be grown for food. - Farmers are people who grow crops to be used as food. - Fruit is the part of a flowering plant that contains seeds. - Vegetables are parts of plants that you can eat. Usually the stems, leaves and roots. - Many plants have parts that humans can eat. - Crops are plants that farmers grow to be eaten. - Much of the food we eat comes from crops <u>Disciplinary Knowledge:</u>	<u>Seasonal changes – Biology (3 weeks)</u> <u>Substantive knowledge:</u> - There are four seasons in a year: spring, summer, autumn and winter. - Summer is usually the warmest season with the longest daylight and shortest nights. - Many plants grow and animals are more active in summer. - Spring is when many plants begin to flower. - Autumn is when some trees start to lose their leaves. - Winter is usually the coldest season, and some trees lose all their leaves. <u>Disciplinary Knowledge:</u> - Asking simple questions and recognising that they can be answered in different ways	



	- Deciduous trees lose their leaves in autumn (e.g. oak, sycamore, horse chestnut). Evergreen trees keep their leaves all year round (e.g. holly, pine). <u>Disciplinary Knowledge:</u> - Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have	questions about plants growing in their habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted. They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem). - Observing closely, using simple equipment. - Gathering and recording data to help in answering questions	- Asking simple questions and recognising that they can be answered in different ways. - Using their observations and ideas to suggest answers to questions.	- Gathering and recording data to help in answering questions. - Using their observations and ideas to suggest answers to questions.
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	found out about different plants. - Identifying and classifying. - Observing closely, using simple equipment. - Gathering and recording data to help in answering questions - Using their observations and ideas to suggest answers to questions			
Y2 – Advent term	<u>Animals' need for survival – Biology (4 weeks)</u> <u>Substantive knowledge:</u> - Mammals have fur or hair and include humans. - Mammals can be carnivores, herbivores or omnivores. - Birds have feathers, wings and a beak; some can fly and some cannot. - Fish live in water and use gills to breathe. - Amphibians live on land and in water and do not have scales.	<u>The Human body – Biology (2 weeks)</u> <u>Substantive knowledge:</u> - Exercise improves physical and mental health. - Regular exercise makes the heart stronger. - A healthy diet includes fruit, vegetables and balanced food groups. - An unhealthy diet is high in fat, sugar or salt. - It is important to eat the correct amounts of different types of food.	<u>Materials – Chemistry (5 weeks)</u> <u>Substantive knowledge:</u> - Objects are made from different materials. - Materials can be natural (e.g. wood, rock, wool) or human-made (e.g. plastic, cardboard, glass, metal). - Some materials are recyclable and can be used again. - Wood, paper and cardboard come from trees and can be recycled.	<u>Plastic – Sustainability (1 week)</u> <u>Substantive knowledge:</u> - Plastic can be useful and beneficial in everyday life. - Plastic can also be harmful to humans and other animals. - Some plastics can be recycled. - Some plastics cannot be recycled. - There are ways to reduce plastic waste. <u>Disciplinary Knowledge:</u> - Explore the world around them and raise their own questions (non-statutory).



	• Reptiles have dry scales and need external heat to survive. • All animals need air, water, food and shelter to survive. <u>Disciplinary Knowledge:</u> • Asking simple questions and recognising that they can be answered in different ways. • Gathering and recording data to help in answering questions • Identifying and classifying. • Using their observations and ideas to suggest answers to questions.	• Germs can make people unwell and spread easily through unwashed hands. • Hygiene helps prevent illness (washing hands, using tissues, bathing regularly). • Teeth should be brushed twice a day using toothpaste and a toothbrush. • Plaque can build up on teeth and damage teeth and gums. <u>Disciplinary Knowledge:</u> • Gathering and recording data to help in answering questions	• Rock is a natural material and bricks are human made; both can be used in construction. • Glass is hard and brittle and is recyclable. • Plastic can be flexible or hard, and some types can be recycled. • Metal comes in different forms and can be shaped in different ways. • Fabrics can be natural or human-made and have different uses. • Materials are chosen based on their properties and suitability for a purpose. • Some materials are suitable for certain objects, while others are not. • Some materials can change shape by bending, twisting, squashing or stretching.	• Using their observations and ideas to suggest answers to questions
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			<u>Disciplinary Knowledge:</u> • Identifying and classifying • Performing simple tests. • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (non-statutory). • Asking simple questions and recognising that they can be answered in different ways • Use simple features to compare objects, materials and living things and, with help, decide how to sort and group them (non-statutory). • Observing closely, using simple equipment. • Performing simple tests. • Asking simple questions and recognising that they can be answered in different ways.	
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			Using their observations and ideas to suggest answers to questions.	
Y2 – Lent term	<u>Plants Light and dark- Biology (3 weeks)</u> Substantive Knowledge: - A plant is a living thing. - There are many different types of plants. - Many plants have flowers or fruit. - Parts of some plants can be eaten. - Trees have roots, a trunk, branches, and leaves. - Many trees produce blossom or fruit. - Flowering plants have roots, a stem, leaves, and petals. - Plants need water to grow and stay healthy. - Plants need light to grow and stay healthy.	<u>Living things and their habitats- Biology (7 weeks)</u> Substantive Knowledge: - A habitat is where a plant or animal lives and gets what it needs to survive. - All living things have a habitat, and habitats vary in the local area. - Polar habitats are very cold; animals there may be carnivores or herbivores. - Desert habitats are very hot and dry; some animals and plants are adapted to survive there. - Ocean habitats contain fish, mammals, and reptiles; organisms use plants for food or shelter. - Woodland habitats support many plants and animals that depend on each other.	<u>Plants Light and dark- Biology (1 week)</u> Substantive Knowledge: - Plants need water to grow and stay healthy. - Plants need light to grow and stay healthy. - If plants do not have water and light, they may become weak and will not grow properly Disciplinary knowledge: Gathering and recording data to help in answering questions.	



	- Without water and light, plants may become weak and not grow properly. <u>Disciplinary knowledge:</u> - Observing closely, using simple equipment - Asking simple questions and recognising that they can be answered in different ways - Performing simple tests	- Microhabitats are very small habitats where insects, snails, worms, and spiders live. - Animals can be carnivores, herbivores, or omnivores. - Food chains show how living things depend on each other for energy and usually start with plants. - Living things include animals, plants, and humans and need water, food, air, and shelter. - Living things can die; dead things were once alive, while some things (like rocks and water) were never alive. <u>Disciplinary knowledge:</u> - Pupils might work scientifically by sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring	
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		questions for example: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions. They could construct a simple food chain that includes humans (e.g. grass, cow, human). They could describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there. • Gathering and recording data to help in answering questions. • Using their observations and ideas to suggest answers to questions • Identifying and classifying. • Observing closely, using simple equipment. microhabitats.	
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Y2- Pentecost term:	<u>Plants Bulbs and Seeds- Biology (2 weeks)</u> <u>Substantive Knowledge:</u> • Many plants grow from bulbs or seeds. • Bulbs and seeds come in different shapes and sizes. • Seeds can be found inside the fruit or on the outside of the fruit. • Bulbs store food for plants to use when they grow again • Plants need water, light and a suitable temperature to grow. • Plants will not be healthy if the conditions are not right <u>Disciplinary knowledge:</u> • Observing closely, using simple equipment. • Record and communicate their findings in a range of ways and begin to use simple scientific language (non-statutory). • Asking simple questions and recognising that they	<u>Growing up- Biology (4 weeks)</u> <u>Substantive Knowledge:</u> • Mammals usually give birth to live young and feed them milk. • Reptiles, amphibians, birds, and most insects lay eggs. • Offspring often have different names from adults. • Humans are mammals that give birth to live young. • Human life stages are baby, child, teenager, and adult. • Bodies grow and change throughout the life cycle. • Mammal life cycles vary, but most mature faster than humans. • Frogs are amphibians that live on land and in water. • Frog life cycle: eggs (frogspawn) → tadpole → froglet → adult frog. • Butterflies lay eggs that hatch into caterpillars.	<u>Plants Bulbs and Seeds- Biology (1 week)</u> <u>Substantive Knowledge:</u> • Plants need water, light and a suitable temperature to grow and stay healthy. • Some plants grow from bulbs. • Some plants grow from seeds <u>Disciplinary knowledge:</u> • Note: Seeds and bulbs need water to grow but most do not need light; seeds and bulbs have a store of food inside them. • Observing closely, using simple equipment	<u>Growing up- Biology (1 week)</u> <u>Substantive Knowledge:</u> • Butterflies lay eggs (usually on a leaf), which hatch into caterpillars. • Once a caterpillar has grown, it will form a hard case to protect it. At this stage, it is a pupa. The pupa changes into a butterfly inside its hard case. • Once the adult butterfly has hatched, it is ready to fly and start the life cycle again.	<u>Wildlife- Sustainability (1 week).</u> <u>Substantive Knowledge:</u> • Wildlife is the animals and plants that live in nature and are not looked after by humans. • Some plants can be eaten as food. • There are many ways to care for local wildlife. • It is important to care for plants and animals <u>Disciplinary knowledge:</u> • Asking simple questions and recognising that they can be answered in different ways
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	can be answered in different ways. Performing simple tests	• Caterpillars form a pupa, then develop into butterflies. • Adult butterflies reproduce to continue the life cycle. • Animal life cycles are similar in that all involve growth and reproduction. • Some animals give birth to live young, while others lay eggs. <u>Disciplinary knowledge:</u> • Pupils might work Identifying and classifying • Asking simple questions and recognising that they can be answered in different ways. • Record and communicate their findings in a range of ways and begin to use simple scientific language (non-statutory). • Observing closely, using simple equipment		<u>Disciplinary knowledge:</u> Observing closely, using simple equipment	• Using their observations and ideas to suggest answers to questions
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Year 3- Advent term	<u>Skeltons- Biology (3 weeks)</u> <u>Substantive Knowledge:</u> • The human skeleton is made of many bones (about 206 in adults). • Key bones include the skull, spine, ribcage, pelvis, and femur. • Bones have specific functions: the skull protects the brain, the ribcage protects the heart and lungs, the spine supports and allows movement, the pelvis supports the spine, and the femur helps movement and standing. • Many animals, including mammals, birds, fish, reptiles, and amphibians, have skeletons. • Some animals have a spine (vertebrates), while others do not (invertebrates).	<u>Movement- Biology (1 week)</u> <u>Substantive Knowledge:</u> • A joint is where two or more bones connect. • There are different joints in the human body. • The knees and elbows are hinge joints. • The shoulders and hips are ball-and-socket joints • Muscles are attached to bones. • Muscles can only pull on bones and cannot push. • Muscles work in pairs by contracting and relaxing. • Bones, muscles and joints work together to allow movement. <u>Disciplinary knowledge:</u> • Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations (non-statutory).	<u>Nutrition and Diet- Biology (3 weeks).</u> <u>Substantive Knowledge:</u> • Humans get nutrition from food. • Food is grouped into five categories: fruit and vegetables, carbohydrates, proteins, dairy (and alternatives), and fats and sugars. • Each food group has a role: vitamins (fruit and vegetables), energy (carbohydrates), growth and repair (proteins), calcium for bones and teeth (dairy), and fats provide energy (some healthy, some unhealthy). • A balanced diet includes all food	<u>Food Waste- Sustainability (1 week)</u> <u>Substantive Knowledge:</u> • Food waste is food that is safe to eat but is thrown away instead. • A lot of food waste and food remains end up in landfill sites, where they rot and have negative impacts on the planet. • Food waste is food that is thrown away, even when it is safe to eat. • There are different ways that food waste can be reduced. <u>Disciplinary knowledge:</u> • Asking relevant questions and	<u>Rocks- Chemistry (3 weeks)</u> <u>Substantive Knowledge</u> • Rocks are natural materials found on Earth. • Examples of rocks include granite, pumice, sandstone, chalk, marble, and gneiss. • Rocks have different properties such as texture, weight, hardness, and reaction to acid. • Rocks can be grouped based on features like grains, crystals, or layers.
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	- Some invertebrates have an exoskeleton, which provides support and protection. - Skeletons support the body, protect organs, and allow movement. - Different animals have different types of skeletons. <u>Disciplinary knowledge:</u> - Asking relevant questions and using different types of scientific enquiries to answer them. - Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - Talk about criteria for grouping, sorting and classifying (non-statutory)	Communicate their findings in ways that are appropriate for different audiences (non-statutory).	groups in the right amounts, guided by the Eatwell Guide. - Humans may follow different diets, including vegan, vegetarian, pescatarian, or omnivorous diets. - Vegans get protein from non-animal sources. - Animals cannot make their own food and must get nutrition from what they eat. - Carnivores eat other animals, herbivores eat plants, and omnivores eat both. <u>Disciplinary knowledge:</u> - Talk about criteria for grouping, sorting and classifying (non-statutory). - Using straightforward scientific evidence to	using different types of scientific enquiries to answer them. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	- Some rocks are light, some are heavy, some are hard, and some are brittle. - Some rocks float while others sink. - Rocks are used as building materials and have different appearances. <u>Disciplinary knowledge:</u> - Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of
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	- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions		answer questions or to support their findings. - Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. - Identifying differences, similarities or changes related to simple scientific ideas and processes. - Using straightforward scientific evidence to answer questions or to support their findings.		equipment, including thermometers and data loggers - Talk about criteria for grouping, sorting and classifying (non-statutory). - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.
Year 3- Lent term	<u>Fossils- Chemistry (2 weeks)</u> Substantive Knowledge: - A fossil is the remains or trace of a living thing that lived a long time ago. - Both animals and plants can become fossils. - Older fossils are found deeper underground. - Fossils are usually formed from the shells or bones of living things.		<u>Soil- Chemistry (3 weeks)</u> Substantive Knowledge: - Organic matter is the remains of dead plants and animals. - Soils are made from rocks, organic matter and water.		<u>Light- Physics (6 weeks)</u> Substantive Knowledge: - Humans and animals need light to see. - Light sources can be natural (like the Sun) or artificial (made by humans).



	• Animal footprints and tracks can also form fossils. • Fossilisation is the process that explains how a fossil is formed. • Fossilisation is a rare process that only occurs under certain conditions. • When an animal dies, the soft parts of its body break down, leaving behind the hard parts such as the skeleton. • The process of fossilisation takes thousands of years <u>Disciplinary knowledge:</u> • Asking relevant questions and using different types of scientific enquiries to answer them. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	• There are different types of soil including sandy, chalk, clay and peat soil. • These soils have different properties • Many living things need soil to survive. • Soils can act as a habitat for many small animals. • Soils provide nutrients for plants. • Soils can also prevent flooding, as they absorb water. <u>Disciplinary knowledge:</u> • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Using straightforward scientific evidence to answer questions or to support their findings • Setting up simple practical enquiries, comparative and fair tests.	• The Sun is a natural light source and is essential for life on Earth, but its light can also be dangerous. • Light travels from a source to an object and is reflected into our eyes, allowing us to see. • Reflection is when light bounces off a surface. • Darkness is the absence of light. • Shadows are formed when light is blocked by an object. • Opaque materials block light, translucent materials let some light through, and transparent materials let most light through. • Opaque objects form clear shadows, while translucent materials form less defined ones. <u>Disciplinary knowledge:</u> • Identifying differences, similarities or changes related to simple scientific ideas and processes • Use straight-forward scientific evidence to answer questions or to support their findings
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			• 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 results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	• Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	
Year 3- Pentecost term	<u>Plants- Biology (6 weeks)</u> <u>Substantive Knowledge:</u> • Plants have different parts with specific functions. • Roots absorb water and anchor the plant in soil.	<u>Forces- Physics (2 weeks)</u> <u>Substantive Knowledge:</u> • Forces are pushes or pulls. • A contact force is a push or a pull that affects objects which are touching.	<u>Magnets- Physics (2 weeks)</u> <u>Substantive Knowledge:</u> • A magnetic force is a non-contact force. • Magnets have two poles: a north pole and a south pole.	<u>Plants- Biology (1 week)</u> <u>Substantive Knowledge:</u> • Plants need the right conditions to grow healthily.	<u>Biodiversity- Sustainability (1 week)</u> <u>Substantive Knowledge:</u> • Biodiversity describes the variety of living things within



	• The stem transports water through tubes to leaves and flowers. • Leaves use sunlight to make food. • Flowers help plants reproduce and produce seeds. • Germination is when a seed absorbs water, swells, and begins to grow roots and shoots. • Seeds need water and the right temperature to germinate. • Flowers have male (stamen) and female (pistil) parts. • The stamen produces pollen; the pistil receives pollen for fertilisation. • Pollination is the transfer of pollen for reproduction, forming seeds when pollen and egg join. • Seed dispersal spreads seeds away from the parent	• Friction is a contact force that is caused by one object being pushed across the surface of another. • Friction can stop or slow down a moving object. • Smooth surfaces, such as ice, wood, and plastic, have lower levels of friction. • Rough surfaces, such as concrete, sand and carpet, have higher levels of friction. <u>Disciplinary knowledge:</u> • Identifying differences, similarities or changes related to simple scientific ideas and processes. • Using straightforward scientific evidence to answer questions or to support their findings. • Setting up simple practical enquiries, comparative and fair tests.	• Magnets can have different shapes, such as bar magnets and horseshoe magnets. • Magnets attract some metals, but not all materials are magnetic. • Plastic, wood, and paper are not magnetic materials. • Some metals are magnetic (e.g. iron and steel), while others are not (e.g. aluminium). • Opposite magnetic poles attract, while the same poles repel. <u>Disciplinary knowledge:</u> • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	• Plants need air, light, water, nutrients from soil and room to grow. • Plant growth may be affected by the number of seeds within a certain area. <u>Disciplinary knowledge:</u> • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	a habitat. • Human actions can reduce biodiversity. • Plants and animals may become endangered or extinct if their habitats are continually destroyed. • Biodiversity describes the variety of living things within a habitat. • Rewilding increases biodiversity by reintroducing plants to a habitat. • Tree planting, seed scattering and no-mow zones are all ways to increase biodiversity in an area. <u>Disciplinary knowledge:</u>
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	plant by wind, water, animals, or explosion. <u>Disciplinary knowledge:</u> • Using straightforward scientific evidence to answer questions or to support their findings. • Talk about criteria for grouping, sorting and classifying (non-statutory). • Asking relevant questions and using different types of scientific enquiries to answer them. • Setting up simple practical enquiries, comparative and fair tests. • Identifying differences, similarities or changes related to simple scientific ideas and processes	• 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 • Setting up simple practical enquiries, comparative and fair tests. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.		• Asking relevant questions and using different types of scientific enquiries to answer them. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
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	- Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. - Use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences (non-statutory). - Identifying differences, similarities or changes related to simple scientific ideas and processes. - Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions				
Year 4- Advent term	<u>Grouping and Classifying living things- Biology (3 weeks)</u>		<u>Data Collection A- Biology (1 week)</u>		<u>States of Matter- Chemistry (7 weeks)</u>



Substantive Knowledge:

- Vertebrates are animals with a spine, including mammals, birds, fish, amphibians, and reptiles.
- Invertebrates are animals without a spine, such as insects, spiders, slugs, and snails.
- Vertebrate groups have different physical features.
- Classification keys use closed questions to sort and identify animals and plants.
- Flowering plants produce flowers and fruit, while non-flowering plants include mosses and ferns.
- Deciduous trees lose their leaves in autumn, while evergreen trees keep their leaves all year round.

Disciplinary knowledge:

- Talk about criteria for grouping, sorting and classifying (non-statutory).
- Asking relevant questions and using different types of scientific enquiries to answer them.
- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.

Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Substantive Knowledge:

- Deciduous trees lose their leaves every year.
- Evergreen trees keep their leaves all year round.
- In autumn, some animals gather food for colder months.
- Some animals eat more in autumn to increase their body fat for colder months
- Bar charts and pictograms are used to present data.
- Presenting data in bar charts and pictograms helps to spot patterns and trends easily.
- Data can be used to make conclusions and predictions for further investigations.

Disciplinary knowledge:

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.

Substantive Knowledge:

- Solids have a fixed shape and volume. A solid material will keep its shape if it is transferred from one container to another.
- Liquids have no fixed shape and will take on the shape of the container they are transferred into. The volume will remain the same.
- Gases have no fixed shape and no fixed volume. They will spread out and fill any available space
- Some solids, such as sand, salt, flour and rice, can be poured but they are still classified as solid materials.
- Liquids maintain the same volume when transferred to different containers.
- Some liquids, like water, flow easily while other liquids, such as treacle, do not flow as easily
- Some materials can change state between a solid, a liquid and a gas.
- Water can be a solid (ice), a liquid (water) or a gas (water vapour).
- When heat is applied to ice, the ice melts and turns to water. When water is heated it turns into a gas.



		Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables	- To change water vapour (gas) back to water (liquid) it needs to be cooled down as it returns to its liquid state. - To change water to ice, it needs to be frozen. - A thermometer is used to measure temperature. - A stopwatch is used to measure intervals of time - Nearly three-quarters of planet Earth is covered in water. - Water is in constant movement through a process called the water cycle. As the water moves it is in different states of matter. - Evaporation is one stage of the water cycle. Evaporation is when a liquid changes state to a gas. - Condensation is when a gas changes state to a liquid. <u>Disciplinary knowledge:</u> - Talk about criteria for grouping, sorting and classifying (non-statutory). - Identifying differences, similarities or changes related to simple scientific ideas.
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				• Asking relevant questions and using different types of scientific enquiries to answer them. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Setting up simple practical enquiries, comparative and fair tests • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
Year 4- Lent term	<u>Sound- Physics (5 weeks)</u> <u>Substantive Knowledge (Science ideas children learn):</u> • A vibration is a quick back-and-forth movement. • Sounds are made when objects vibrate.	<u>Data Collection B- Biology (1 week).</u> <u>Substantive Knowledge:</u> • In spring, plants start to grow due to the increase in temperature and the amount of	<u>Electricity- Physics (4 weeks)</u> <u>Substantive Knowledge:</u> • Electricity powers appliances through plugs or batteries. • Electricity can heat or cool appliances.	<u>Energy- Sustainability (1 week)</u> <u>Substantive Knowledge:</u> • Electricity is energy that flows in wires and powers homes and schools. • It is made in different ways, including burning fuels that harm the Earth.



	• The vibrations travel from the object to our ears. • Sounds can be heard when these vibrations reach our ears. • Sound vibrations travel through the air. • The outer ear funnels the vibrations into the ear canal. • The vibrations move down the ear canal. • The vibrations are passed to the ear drum. • The vibrations from the ear drum are passed along the ear bones and into the cochlea. • Signals are then sent to the brain, where they are processed and interpreted as sounds, we understand. • Sound volume is measured in decibels (dB). • A decibel is a measure of the loudness of sounds. • A decibel meter can be used to measure the loudness of sounds.	sunlight received throughout the day. • In spring, animals that have hibernated come out of hibernation. • There are increased numbers of active insects and other invertebrates in the spring. • Bar charts and pictograms are used to present data. • Presenting data in bar charts or pictograms helps to spot patterns or trends easily. • Data can be used to make conclusions, comparisons and predictions for further investigations <u>Disciplinary knowledge:</u> • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	• Electricity can be dangerous, so keep liquids and wet hands away. • A circuit needs a complete loop and a power source to work. • Circuits can include bulbs, wires, switches, buzzers and cells. • Bulbs will not light if the circuit is incomplete or a switch is open. • Conductors allow electricity to flow; metals are good conductors. • Insulators stop electricity from flowing; rubber, plastic and wood are insulators. • Some materials can complete a circuit, while others cannot. <u>Disciplinary knowledge:</u> • Talk about criteria for grouping, sorting and	• We can reduce energy use by turning things off, unplugging devices, and using natural light. • <u>Disciplinary knowledge:</u> • Asking relevant questions and them using different types of scientific enquiries to answer. • Asking relevant questions and them using different types of scientific enquiries to answer
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	• If humans are exposed to loud sounds too often, their hearing can be damaged. • A vibration is a quick back-and-forth movement. • Sounds are made when objects vibrate. • The louder the sound, the bigger the vibration. • The quieter the sound, the smaller the vibration. Pitch means how high or low a sound is. • High-pitched sounds produce faster or more frequent vibrations. • Low-pitched sounds produce slower or less frequent vibrations. • There are different ways to change the pitch of an instrument. <u>Disciplinary knowledge:</u> • finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from		classifying (non-statutory). • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Asking relevant questions and using different types of scientific enquiries to answer them.	
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	a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume. • Asking relevant questions and using different types of scientific enquires to answer them. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.			
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	• Setting up simple practical enquiries, comparative and fair tests. • Identifying differences, similarities or changes related to simple scientific ideas and processes • Setting up simple practical enquiries, comparative and fair tests • 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 results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.				
Year 4- Pentecost Term	<u>Data Collection C- Biology (2 weeks)</u> Substantive Knowledge:	<u>Habitats- Biology (2 weeks)</u> <u>Substantive Knowledge:</u>	<u>Deforestation- Sustainability (1 week)</u> Substantive Knowledge:	<u>The digestive system- Biology (5 weeks)</u>	<u>Food Chains- Biology (2 weeks)</u>



	• In summer, plants are pollinated, fruits develop, and there is increased activity of plants, animals, and invertebrates. • The numbers of living things change across the year due to seasonal variation. • Data can be presented in bar charts and pictograms to identify patterns, trends, and changes over time, and to support conclusions and further questions. <u>Disciplinary knowledge:</u> • Gathering, recording, classifying and presenting data in a variety of ways, to help in answering questions. • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	• Habitats provide the needs of plants and animals and vary (e.g. woodland, urban, aquatic, fields). • Animals and plants can be classified using classification keys with closed questions. • Living things are adapted to specific habitats for survival. • Humans can positively and negatively affect the environment. • Rewilding and nature reserves support biodiversity and protect habitats. • Natural resources are limited and must be used responsibly. <u>Disciplinary knowledge:</u> • Asking relevant questions and using different types of scientific enquiries to answer them. • Gathering, recording, classifying and presenting	• Humans clear large areas of forest for natural resources or space for farming and construction. • Deforestation impacts animals and plants by destroying their habitats and reducing the biodiversity of an area. • Humans are responsible for the destruction of habitats through deforestation. • When habitats are destroyed, the plants and animals that live there become at risk of becoming endangered or extinct. • Palm oil is used in lots of products, such as food and cosmetics. • Palm oil can come from sustainable sources which reduces the impact of deforestation <u>Disciplinary knowledge:</u> • Asking relevant questions answer them. and using	<u>Substantive Knowledge:</u> • Carnivores have sharp teeth for tearing meat, herbivores have flat teeth for grinding plants, and omnivores have both. • Humans have four types of teeth: incisors, canines, premolars, and molars, each with a different function. • Teeth have protective enamel that can be damaged by acids made by germs feeding on sugar. • Digestion breaks food down so the body can absorb	<u>Substantive Knowledge:</u> • A food chain shows an order of living things, to show how energy is transferred when one living thing eats another. • Food chains begin with a producer. • The arrows in a food chain show the energy transfer from one food source to another. • A food chain consists of producers, consumers, predators and prey. • Food chains show an order of living things, to show how energy is transferred when one living thing eats another.
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	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	data in a variety of ways, to help in answering questions Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	different types of scientific enquiries to answer them. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	nutrients and use them for energy. - The digestive system is made of organs that work together to break down food and absorb nutrients. - Brushing teeth, reducing sugar, and visiting the dentist help keep teeth healthy. <u>Disciplinary knowledge:</u> - Identifying differences, similarities or changes related to simple scientific ideas and processes - Asking relevant questions and	- Food chains can either be shorter or longer depending on the number of animals that live within a habitat. Food chains can be different depending on the living things within a habitat. - Producers are living with things such as plants that make their own food. - Consumers eat plants and/or animals. If food chains are affected by human activity, it can cause many issues for living things within a habitat. - Humans may have a negative impact on food chains and habitats. This could
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				using different types of scientific enquiries to answer them. • Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations (non-statutory). • Setting up simple practical enquiries, comparative and fair tests. • Recording findings using	even lead to the extinction of some living things. • Humans can affect food chains through farming, destroying habitats, hunting and overfishing. <u>Disciplinary knowledge:</u> • Using straightforward scientific evidence to answer questions or to support their findings. • Recording findings using simple scientific language, drawings, labelled diagrams, keys,
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				simple scientific language, drawings, labelled diagrams, keys, bar charts and tables • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Using results to draw simple conclusions, make predictions for new values, suggest improvements	bar charts, and tables. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
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				and raise further questions.	
Year 5- Advent term	<u>Forces- Physics (5 weeks)</u> <u>Substantive Knowledge:</u> • Friction is a force that opposes movement. • Friction can slow down or stop objects. • Movement happens when a force is greater than friction. • Friction produces heat and causes wear. • Friction is useful for grip and braking. • Air resistance is a type of friction. • It acts against moving objects in the air. • Larger surface areas create more air resistance. • Air resistance increases with speed.	<u>Space- Physics (5 weeks)</u> <u>Substantive Knowledge:</u> • The Sun, Earth, Moon and planets are spherical bodies in the Solar System. • The Sun is a star at the centre of the Solar System and provides heat and light. • The Solar System contains the Sun, eight planets and their moons. • The Sun’s gravity keeps planets in orbit around it. • Inner planets (Mercury, Venus, Earth, Mars) have solid surfaces; outer planets (Jupiter, Saturn, Uranus, Neptune) are gas giants. • Pluto is classified as a dwarf planet. • Planets orbit the Sun in different times depending on their distance. • Earth takes 365 days to orbit the Sun and 24 hours to rotate on its axis. • Earth’s axis is tilted, causing seasons. • Day and night are caused by Earth’s rotation. • The Moon orbits Earth in about 27 days and reflects light from the Sun. • The Moon stays in orbit due to Earth’s gravity.		<u>Global Warming- Sustainability (1 week)</u> <u>Substantive Knowledge:</u> • The greenhouse effect is caused by greenhouse gases trapping heat from the Sun. This leads to global warming. • Global warming can lead to glaciers and ice caps melting. This can cause sea levels to rise, leading to flooding. • Global warming can change weather patterns and can lead to drought or flooding. Drought and flooding make it hard to grow crops • Global warming affects humans, animals and plants. • Global warming and climate change can cause icy habitats to melt due to increasing temperatures. • Humans, animals and plants are affected by flooding and drought caused by global warming. <u>Disciplinary knowledge:</u>	



	• Parachutes use air resistance to slow descent. • Gravity is a non-contact force. • Gravity pulls objects towards each other. • Earth's gravity pulls objects to the ground. • Objects fall at the same rate regardless of mass. • Mechanisms help make work easier. • Levers help move heavy objects. • Pulleys make lifting easier. • Gears transfer force and motion. • Levers, pulleys and gears increase the effect of a force. <u>Disciplinary knowledge (Skills and Method):</u> • Use relevant scientific language and illustrations to discuss, communicate	• The Solar System is understood through scientific models, which represent ideas and processes. • Scientific understanding of the Solar System has changed over time (heliocentric model replaced geocentric model). • Earth is the only known planet to support life. <u>Disciplinary knowledge:</u> • Identifying scientific evidence that has been used to support or refute ideas or arguments • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • 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.	• Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact (non-statutory). • Identifying scientific evidence that has been used to support or refute ideas or arguments
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	and justify their scientific ideas (non-statutory). • Explore ideas and raise different kinds of questions (non-statutory) • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results. • Identifying scientific evidence that has been used to support or refute ideas or arguments.		
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Year 5 Lent term	<u>Properties of Materials- Physics (4 weeks)</u> <u>Substantive Knowledge:</u> •Materials can be transparent, translucent or opaque. •Harder materials can scratch softer materials. •Most metals are non-magnetic; iron and steel are magnetic. •Conductors allow electricity to flow through them. •Insulators do not allow electricity to flow through them. •Metals are good electrical and thermal conductors. • Plastic, wood and paper are electrical insulators. •Materials are chosen for specific uses based on their properties.	<u>Animals including Humans- Biology (5 weeks)</u> <u>Substantive Knowledge (Science ideas children learn):</u> • The human life cycle has six main stages: foetus, baby, child, adolescent, adult and elderly adult. • Humans progress through life stages in the same order, starting as a foetus in the womb. • After puberty, humans become capable of reproduction. • Babies depend on adults for basic needs such as food, warmth and care. • Early development includes key milestones such as crawling and walking. • Childhood involves rapid growth and development. • Puberty is the stage that prepares the body for reproduction. • Hormones cause physical and emotional changes during puberty. • In females, puberty includes menstruation, breast development, body hair growth, spots and mood changes. • In males, puberty includes voice deepening, growth of genitalia, body hair, spots and mood changes. • Adulthood begins at around age 18, when growth slows and the body is fully developed.	<u>Lifecycles- Biology (3 weeks)</u> <u>Substantive Knowledge:</u> • Mammals have four life stages: foetus, young, adolescent, adult. • Most mammals give birth to live young and produce milk using mammary glands. • Adult mammals are able to reproduce. • Amphibians need water or moist environments to survive. • Frog life cycle stages: frogspawn, tadpole, froglet, adult frog. • Tadpoles have gills, tails and mouths for underwater life. • Tadpoles take around 14 weeks to become frogs. • Adult frogs live on land and in water and have no tail. • Insects have three body parts, six legs and antennae, and usually lay eggs. • Insect life cycle stages: egg, larva, pupa, adult.



	<u>Disciplinary knowledge:</u> • Use and develop keys and other information records to identify, classify and describe living things and materials (non-statutory). • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy	• Elderly adulthood begins around age 65, with age-related changes such as reduced bone strength, wrinkles and loss of height. • The human body changes gradually with age. • Humans are mammals: they are warm-blooded, give birth to live young and feed milk to offspring. • Gestation is the time a foetus develops in the womb (about nine months in humans). • Mammals have different gestation periods, and generally longer gestation is linked to longer lifespan. • Humans have a relatively short gestation period compared with their overall <u>Disciplinary knowledge:</u> • Explore ideas and raise different kinds of questions (non-statutory). • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Explore ideas and raise different kinds of questions (non-statutory) • Identifying scientific evidence that has been used to support or refute ideas or arguments. • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	• Larvae are young insects; pupae are a transitional stage before adulthood. • Birds are vertebrates with wings, feathers and a beak. • Bird life cycle stages: egg, hatchling, nestling, fledgling, adult. • Birds lay eggs and incubate them until they hatch. • Adult birds are fully feathered and able to reproduce. <u>Disciplinary knowledge:</u> • Identifying scientific evidence that has been used to support or refute ideas or arguments. • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • 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.
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	and precision, taking repeat readings when appropriate. • Using test results to make predictions to set up further comparative and fair tests • Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory).	• 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.		
Year 5- Pentecost	<u>Reproduction A- Biology (3 weeks)</u> <u>Substantive Knowledge:</u> • Sexual reproduction involves two parents producing offspring. • Offspring from sexual reproduction are not identical to their parents. • Fertilisation is when a sperm cell joins with an egg cell to form a new organism.	<u>Reversible and irreversible changes- Chemistry (4 weeks)</u> <u>Substantive Knowledge:</u> • A soluble substance dissolves in a liquid (e.g. salt, sugar). • An insoluble substance does not dissolve in a liquid (e.g. sand, flour). • A solution is formed when a substance dissolves in a liquid.	<u>Plastic Pollution- Sustainability (1 week)</u> <u>Substantive Knowledge:</u> • Plastics are man-made materials that are strong, lightweight and used for items like bottles, bags and containers. • Plastics take a long time to break down and can persist in the environment. Plastic waste can end up in landfill and oceans,	<u>Reproduction B- Biology (1 week)</u> <u>Substantive Knowledge:</u> • Asexual reproduction involves one parent only. • Offspring produced are identical to the parent (clones). • Parent plants can produce new plants through cuttings. • Cuttings are parts of a plant that can grow into a new plant. • Some plants can reproduce both sexually and asexually.



	• In flowering plants, the female part is the pistil (stigma, style, ovary). • The male part is the stamen (anther and filament). • Female sex cells (ovules) are in the ovary; male sex cells (pollen grains) are in the anther. • Pollination is the transfer of pollen from anther to stigma. • After pollination, pollen travels to the ovary via the style. • Fertilisation happens when pollen joins with an ovule inside the ovary. • Asexual reproduction involves only one parent. • Offspring from asexual reproduction are identical to the parent. • Some plants reproduce asexually using runners, bulbs or tubers.	• Heating and stirring increase the rate of dissolving. • Sieving separates mixtures of different-sized solids. • Filtering separates an insoluble solid from a liquid; soluble substances pass through. • Evaporation separates a soluble solid from a liquid by turning the liquid into gas. • The three states of matter are solids, liquids and gases. • Some changes are reversible (e.g. dissolving, mixing, changes of state). • Changes of state include freezing, melting, evaporation and condensation. • Irreversible changes cannot be undone and form new substances.	harming plants and animals. • Plastic pollution includes the formation of microplastics (tiny plastic pieces). • Microplastics can be ingested by animals and enter food chains. <u>Disciplinary Knowledge:</u> N/A	• Data can be used to draw conclusions and make predictions in investigations <u>Disciplinary knowledge:</u> • Using test results to make predictions to set up further comparative and fair tests
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	- Some animals, such as starfish, can also reproduce asexually. <u>Disciplinary knowledge:</u> - Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory). - Recording data and results of increasing complexity, using scientific diagrams and labels, classification keys, tables, scatter graphs, bar charts and line graphs - Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and	- Chemical reactions produce new substances (e.g. burning, reactions with acids). - Gas production (fizzing) can indicate a chemical reaction. <u>Disciplinary knowledge:</u> - Using test results to make predictions to set up further comparative and fair tests. - Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. - Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, and taking repeat		
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	written forms such as displays and other presentations. - Identifying scientific evidence that has been used to support or refute ideas or arguments - Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. - Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	readings when appropriate. - Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory) - Identifying scientific evidence that has been used to support or refute ideas or arguments		
Year 6- Advent term	<u>Living things and their habitats- Biology (6 weeks)</u>	<u>Electricity- Physics (5 weeks)</u>		<u>Renewable energy- Sustainability (1 week)</u>



	<u>Substantive Knowledge:</u> • Living organisms move, grow, reproduce and excrete. • Plant stems grow towards light, while roots grow away from light. • Plants reproduce sexually or asexually. • Vertebrates are classified as mammals, birds, fish, amphibians or reptiles. • Plants are classified as flowering or non-flowering. • Scientists classify organisms by their features to show how they are related. • Classification keys use yes/no questions to identify organisms. • Trees can be classified as deciduous, evergreen or coniferous.	<u>Substantive Knowledge:</u> • A series circuit is a circuit where all components are connected in one continuous loop. • A series circuit contains a cell, wires and components such as bulbs, buzzers and switches. • Components in circuit diagrams are shown using circuit symbols. • Current is the flow of electricity through a circuit. • Voltage provides the energy that makes current flow. • A complete circuit needs all components connected by wires and a closed switch. • An incomplete circuit may have a broken wire, an open switch or a cell inserted incorrectly. • Current cannot flow in an incomplete circuit. • Adding more components to a series circuit makes bulbs dimmer and buzzers quieter. • The more components in a series circuit, the harder it is for current to flow. <u>Disciplinary Knowledge:</u> • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.	<u>Substantive Knowledge:</u> • Solar power uses energy from the Sun to generate electricity. • Wind power uses wind to generate electricity. • Solar and wind power are renewable energy sources, so they will not run out. • Fossil fuels are non-renewable energy sources and will eventually run out. • In the UK, burning fossil fuels for electricity is a major source of greenhouse gas emissions. • Greenhouse gas emissions contribute to the greenhouse effect and global warming. • Using renewable energy sources such as solar and wind power can help reduce the impact of global warming. <u>Disciplinary Knowledge:</u> • Identifying scientific evidence that has been used to support or refute ideas or arguments. • Reporting and presenting findings from enquiries in oral and written
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	• Bacteria are microscopic organisms; some cause disease while others help digestion. • Viruses are microscopic organisms that need a host and can cause diseases such as flu and colds. • Fungi are microorganisms; some cause infections and others are used in bread making. • Microorganisms are classified by features such as shape. • Bacteria, viruses and fungi have different shapes. • Carl Linnaeus developed the first hierarchical classification system for plants and animals. • Linnaeus divided animals into six groups:	• Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • Using test results to make predictions to set up further comparative and fair tests.	forms such as displays and other presentations.
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mammals, birds,
amphibians, fish, insects
and worms.

Disciplinary Knowledge:

- Identifying scientific evidence that has been used to support or refute ideas or arguments
- Use and develop keys and other information records to identify, classify and describe living things (non-statutory)
- Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment (non-statutory).



	- 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 - Use relevant scientific language and illustrations to discuss, communicate and justify their ideas and should talk about how scientific ideas have developed over time (non-statutory)			
Year 6- Lent term	<u>Light- Physics (5 weeks)</u>	<u>Light Pollution- Sustainability (1 week)</u>	<u>The Circulatory System- Biology (3 weeks)</u>	<u>Diet, Drugs and Lifestyle- Biology (3 weeks)</u>



	<u>substantive Knowledge:</u> • Luminous objects produce their own light; non-luminous objects do not. • We see objects when light reflects from them into our eyes. • Light enters the eye through the pupil and reaches the retina. • Light travels in straight lines. • Light travels from a source to an object and then reflects into the eye. • Reflection occurs when light bounces off a surface. • Opaque objects block light and create shadows. • Shadows form because light cannot pass through opaque objects. • The shape of a shadow depends on the shape of the object blocking the light.	<u>Substantive Knowledge:</u> • Light pollution includes glare, light trespass and skyglow. • Glare is caused by bright lights, such as vehicle headlights. • Light trespass occurs when light shines into areas where it is not wanted. • Skyglow is the brightening of the night sky caused by artificial lights. • Light pollution can be reduced by using less artificial light. • Turning off unnecessary lights, devices and appliances helps reduce light pollution. • Unplugging electronic equipment when not in use can reduce light emissions. • Using natural daylight whenever possible helps reduce light pollution.	<u>Substantive Knowledge:</u> • The circulatory system transports blood around the body. • It is made up of the heart, blood vessels and blood. • Arteries carry blood away from the heart. • Veins carry blood towards the heart and contain valves to prevent backflow. • Capillaries are tiny blood vessels that connect arteries and veins. • Blood carries oxygen and nutrients to cells and removes waste products such as carbon dioxide. • Plasma transports nutrients needed for growth and repair. • The heart is a muscle that pumps blood around the body.	<u>Substantive Knowledge:</u> • A balanced diet contains the correct amounts of carbohydrates, fats, proteins, vitamins, minerals, fibre and water. • Fats are classified as unsaturated, saturated or trans fats. • Unsaturated fats provide energy and help the body absorb certain vitamins. • Saturated and trans fats can increase the risk of weight gain and heart disease. • A drug is a chemical that changes how the body or brain functions. • Painkillers reduce the feeling of pain. • Stimulants increase alertness and wakefulness. • Depressants slow body activity and can make a person feel calm or drowsy. • Some drugs are legal, while others are illegal. • Cigarettes contain tar, nicotine, carbon monoxide and other harmful substances. • Tar is a sticky substance that can cause cancer.
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	• Shadows are dark because light has been blocked from that area. • White light is made up of many different colours. • Isaac Newton and Ibn al-Haytham helped show that white light contains different colours. • A rainbow is a spectrum of colours formed when sunlight is refracted by raindrops. • Refraction is the change in direction of light as it passes from one medium to another. • Refraction happens because light travels at different speeds in different substances. • A pencil appears bent in water because light is refracted as it moves between water and air <u>Disciplinary Knowledge:</u>	<u>Disciplinary Knowledge:</u> • 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	• The heart has four chambers: two atria and two ventricles. • Blood enters the heart through the atria and leaves through the ventricles. • Blood flows from the right atrium to the right ventricle and then to the lungs. • Blood returns from the lungs to the left atrium and leaves through the left ventricle to the rest of the body. • Red blood cells carry oxygen from the lungs to body cells. • White blood cells help fight bacteria and viruses. • Oxygenated blood contains a high level of oxygen. • Deoxygenated blood contains a low level of oxygen.	• Nicotine is highly addictive. • Carbon monoxide is a poisonous gas that reduces the amount of oxygen carried by the blood. • Smoking damages the body and can cause breathing problems. • Smoking increases the risk of heart disease and lung disease. <u>Disciplinary Knowledge:</u> • Identifying scientific evidence that has been used to support or refute ideas or arguments. • Recognise which secondary sources will be most useful to research their ideas and begin the separate opinion from fact (non-statutory) • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • Using test results to make predictions to set up further comparative and fair tests
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	• Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory). • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking		• Oxygenated blood mostly travels through arteries. • Deoxygenated blood mostly travels through veins back to the heart. • The left ventricle has a thicker muscular wall than the right ventricle. • The left ventricle must pump blood around the entire body, so it needs to generate more force. <u>Disciplinary Knowledge:</u> • Explore ideas and raise different kinds of questions (non-statutory). • Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory). • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a	
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	repeat readings when appropriate. - Identifying scientific evidence that has been used to support or refute ideas or arguments. - Talk about how scientific ideas have changed over time (non-statutory).		degree of trust in results, in oral and written forms such as displays and other presentations	
Year 6- Pentecost term	<u>Variation- Biology (2 weeks)</u> <u>Substantive Knowledge:</u> - An organism is a living thing such as an animal, plant, bacterium or fungus. - A species is a group of similar organisms that can reproduce to produce fertile offspring. - Variation is the differences that exist between organisms of the same species. - All species show variation in their characteristics.	<u>Adaptations- Biology (4 weeks)</u> <u>Substantive Knowledge:</u> - Adaptations are characteristics that improve an organism's chances of survival in its habitat. - Animals in cold environments may have adaptations such as thick fur or blubber to keep warm. - Animals in hot desert environments may have	<u>Fossils- Biology (2 weeks)</u> <u>Substantive Knowledge:</u> - Fossils form when plants or animals die and their hard parts are preserved in rock. - Soft parts decay, leaving behind skeletons or impressions. - Sediment buries the remains and gradually compacts into rock. - Minerals in water replace the skeleton, forming a fossil.	<u>Themed Projects- Year 7 ready (3 weeks)</u>



	• Characteristics are features used to identify organisms or groups of organisms. • Inheritance is the passing of characteristics from parents to offspring. • Traits such as hair and eye colour can be inherited. • Humans can selectively breed animals, such as dogs, to produce desirable characteristics. <u>Disciplinary Knowledge:</u> • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	adaptations such as thin fur and long eyelashes. • Plants in deserts may have long roots and large stems to store and absorb more water. • Evolution is the gradual change in characteristics of organisms over long periods of time. • Evolution helps organisms become better adapted to their environment for survival. • Evolution explains how living things have developed from simpler life forms over millions of years. • Charles Darwin proposed the theory of evolution. • Darwin suggested that species evolve from a common ancestor. • Organisms with advantageous characteristics are more	• Fossils can leave imprints of once-living organisms in rocks. • Older fossils tend to be simpler and smaller than more recent fossils. • Newer fossils are often more complex and larger. • This pattern supports the idea of evolution from simpler to more complex organisms. • Charles Darwin's theory of evolution is supported by fossil evidence. • Mary Anning was a pioneering palaeontologist in the 1800s. • Mary Anning discovered important fossils, including plesiosaurs, ichthyosaurs and pterosaurs. • Her contributions were significant, but were often not fully credited due to gender bias at the time.	
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		likely to survive and reproduce. • These beneficial characteristics are passed on to offspring through natural selection. • Natural selection explains how populations change over time. • Darwin observed that finches on different islands had variations in beak shape and size. • Finches adapted their beaks to different food sources such as seeds, insects, flowers and fruits. • Long, pointed beaks are suited for catching insects, while short, strong beaks are suited for cracking seeds and nuts. <u>Disciplinary Knowledge:</u> • Recognise which secondary sources will	<u>Disciplinary Knowledge:</u> • Identifying scientific evidence that has been used to support or refute ideas or arguments • Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time (non-statutory). • 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.	
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		be most useful to research their ideas and begin to separate opinion from fact (non-statutory). • Identifying scientific evidence that has been used to support or refute ideas or arguments. • N.S Explore ideas and raise different kinds of questions (non-statutory) • Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas and should talk about how scientific ideas have developed over time (non-statutory). • Recognise which secondary sources will be most useful to		
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		research their ideas and begin to separate opinion from fact (non-statutory) • 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		
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Biology	Physics	Chemistry	Sustainability
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Working Scientifically Skills Progression (Disciplinary knowledge)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Ask Questions	Ask simple questions.	Ask simple questions and recognise that they can be answered in different ways.	Ask questions and understand there are different enquiry types they could use to answer them	Ask relevant questions and use different types of scientific enquiry to answer them.	Ask scientific questions and begin to understand which questions would be best suited to each enquiry type	Ask relevant scientific questions and choose which enquiry type would be best suited to answer them
Plan	Planning is not explicitly mentioned in the KS1 curriculum however, if appropriate, children can verbally state what they will investigate, what they will change and what they will keep the same.		• Make relevant predictions. • Identify what they will change, observe and keep the same. • With support, set up simple practical enquiries.	• Make predictions based on simple scientific knowledge. • Identify what they will change, observe or measure and keep the same. • Set up simple practical enquiries, comparative and fair tests.	• Make predictions based on scientific knowledge. • With support, plan different types of scientific enquiry. Where appropriate, identify the dependent, independent and controlled variables.	• Make predictions based on scientific knowledge. • Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
Make Observations	Observe closely.	Observe closely, using simple equipment.	Make careful observations using scientific equipment.	Make systematic and careful observations using	Use a range of scientific equipment to make systematic	Use a range of scientific equipment to make systematic and careful



				scientific equipment.	and careful observations	observations with increased complexity.
Take Measurements	Carry out simple tests using non-standard measurements when appropriate.	Perform simple tests using standard units when appropriate.	Perform tests and simple experiments and take measurements using standard units.	Take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	Take accurate measurements using a range of scientific equipment. Start to take repeat readings when appropriate	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. To save repetition of vocabulary, the words are documented where they are first introduced
Gather, Record and Classify data	• Gather and record simple data. • Sort objects and living things into groups based on simple properties	• Gather and record data to help in answering questions. • Identifying and classifying.	Recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables.	• Gather, record and classify data in a variety of ways to help in answering questions. • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	Record data using scientific diagrams and labels, classification keys, tables, bar and line graphs.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
Present Findings	Explain what they found out to an adult or a partner.	Talk about what they have found out and	Report on findings from enquiries, including oral	Report on findings from enquiries, including oral and	Report and present findings from enquiries, including	Report and present findings from enquiries, including conclusions,



		how they found it out. (non-statutory)	and written explanations.	written explanations, displays or presentations of results and conclusions.	conclusions and begin to identify causal relationships in oral and written forms such as displays and other presentations.	causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.
Answer Questions and Make conclusions	Answer simple questions.	Use their observations and ideas to suggest answers to questions.	• Make simple conclusions. • Use results, findings or observations to answer questions.	• Use straight-forward scientific evidence to answer questions or to support their findings. • Use results to draw simple conclusions. • Begin to identify differences, similarities or changes related to simple ideas or processes.	• Make conclusions based on scientific evidence and from their own testing and findings. • Identify scientific evidence and use it to answer questions.	• Make conclusions based on scientific evidence and from their own testing and findings. • Identify scientific evidence that has been used to support or refute ideas or arguments.
Evaluate	Evaluating is not explicitly mentioned in the KS1 curriculum.		Suggest questions for further investigation.	Use results to draw simple conclusions, make predictions for new values, suggest	Continue to use results to draw simple conclusions, suggest improvements and raise further	• Use test results to make predictions to set up further comparative and fair tests.



			improvements and raise further questions.	questions for possible testing	• Provide some simple examples of how to extend the investigation
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Vocabulary Progression:

	Nursery			Reception		
	Senses, material, natural, change, plants, seeds, water, light, life cycle, young, old, push, pull, stretch, melt, heat, freeze join, combine, materials, shapes, lines, detail, feelings, colour mixing, colour, light, dark			similar, different, country, world, Earth, senses, touch, taste, sight, hearing, smell, nature, habitat, space, planets, sun, stars, seaside, tides, ocean, seas, shadow, light, freeze, melt		
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including humans	hair, eyes, face, nose, ears, teeth, mouth, head, neck, arm, elbow, hand, leg, knee, foot light, dark, blind, hear, loud, quiet, noisy, sweet, salty, sour, bitter, savoury, skin, rough, smooth, hard, soft, smell, scent, sniff, stench animal, mammal, fur, wild mammal, pet, bird, wings, beak, feathers, webbed	shelter, heart, exercise, physical health, mental health, healthy diet, unhealthy diet, meat, sugar, germs, hygiene, doctor, disease, plaque, gums, filling offspring, egg, parent, baby, child, teenager, life cycle, adolescent, frogspawn, tadpole, froglet, caterpillar,	skeleton, skull, ribcage, pelvis, femur, spine, antennae, exoskeleton, joint, hinge joint, ball-and socket joint, muscle, biceps, triceps, contract, relax carbohydrates, proteins, dairy products, fats, fruit and vegetables, balanced diet,	incisors, canines, premolars, molars, enamel, root, decay, digestive system, mouth, oesophagus, stomach, small intestine, large intestine, rectum, saliva producer, consumer, prey, predator, farming, overfishing, hunting.	foetus, elderly adult, milestone, womb, period, reproduce, hormone, puberty, life expectancy, gestation period, gestation	circulatory system, blood vessels, arteries, veins, capillaries, red blood cells, white blood cells, lungs, plasma, oxygen, atria, ventricles, right atrium, left atrium, right ventricle, left ventricle, oxygenated blood, deoxygenated blood calories, saturated fats, unsaturated fats,



	feet, flippers, tail, fins, scales, gills, amphibian, frog, toad, newt, reptile, lizard, crocodile, turtle, carnivore, sharp teeth, herbivore, plants, vegetable, fruit, omnivore	pupa, butterfly, insect, adult	balanced meal, nutrition, Eatwell Guide, vegan diet, vegetarian diet, omnivorous diet, pescatarian diet			trans fats, drug, painkiller, depressant, stimulant, cigarette, tar, nicotine, vape, carbon monoxide, addiction, heart rate
Living things and their habitats		Arctic plants, hibernate, habitat, cactus, desert, rainfall, ocean, seagrass, woodland, fern, moss, microhabitat, spider, snail, diet, food chain, living, dead, never alive		vertebrate, invertebrate, soft bodied invertebrate, flowering plant, non-flowering plant, seasonal changes, natural resources, rewilding, nature reserve	monotreme, mammary gland, metamorphosis, larva, chrysalis, hatchling, nestling, fledgling, fertilisation, embryo, sperm cells, egg cells, sexual reproduction, anther, stigma, style, filament, ovary, ovule, clone, runner, tuber, asexual reproduction, cutting, parent plant	organism, excretion, reproduction, mollusc, arachnid, classification, coniferous tree, microorganism, bacteria, virus, fungi, characteristics
Plants	plant, flower, leaf, petals, stem, roots, branch, trunk, roots, wildflower, daisy, garden plant, sunflower, nettle, buttercup, dandelion, deciduous tree, horse	sunlight, compost, herb, blossom, bulb, shoot	water transportation, seedling, seed coating, germination, stamen, pistil, pollen, reproductive			



	chestnut, oak, sycamore, evergreen tree, pine, holly, needles, seed, soil, growth		organs, pollination, pollinators, wind dispersal, animal dispersal, water dispersal, explosion dispersal, seed dispersal			
Materials	material, shiny, dull, rock, heavy, light, object, wood, metal, plastic, glass, wool, solid, liquid, melt, freeze, ice, float, sink, absorb, transparent, opaque	natural material, human-made material, recycle, flexible, rigid, stone, pebble, brick, brittle, flexible, translucent, tough, lightweight, strong, breakable, waterproof			electrical conductor, electrical insulator, thermal insulator, properties, lifespan, dissolve, soluble, insoluble, solution, mixture, reversible changes, reverse, chemical reaction, irreversible change, burning, heating, vinegar, bicarbonate of soda	
Rocks			granite, pumice, sandstone, chalk, marble, gneiss, crystals, grains, layers, texture, hardness, weathering, fossil,			



			shell, fossilisation, sediment, sandy soil, clay soil, peat soil, chalky soil, organic matter, nutrients, deforestation, habitat loss			
States of Matter				solid, liquid, gas, states of matter, pouring solid, ooblek, flow, freezing, melting, boiling, condensation, evaporation, melting point, water cycle, precipitation, atmosphere, petri dish		
Electricity				appliances, plug, socket, cell, electrocuted, circuit, switch, battery, buzzer, conductor, insulator	series circuit, voltage, current, complete circuit, incomplete circuit	
Earth and Space					Solar System, orbit, Sun, planets, Pluto, celestial body, gravity, heliocentric model,	



					geocentric model, rotate, axis, North Pole, South Pole, Earth, night, day, moon, gravitational force, satellite	
Seasonal Changes	autumn, daylight, night, weather, season, rainfall, weather, rain gauge, winter, rainy, snowy, windy, cloudy, frosty, sunny, spring, summer					
Sound				vibration, sound, volume, pitch, outer ear, ear bones, cochlea, ear drum, ear canal, decibel, insulate, high-pitched, low-pitched, background noise		
Light			Light sources, natural light sources, artificial light sources, Sun, sunglasses, protect, reflection, shadow			retina, iris, pupil, lens, ray diagram, solar eclipse, refraction, medium, rainbow, prism, coloured filter, spectrum of light



Forces and Magnets			push, pull, force, contact force, friction, magnet, magnetic, poles, magnetic force, non-metal, iron, aluminium, steel, attract, repel		frictional force, motion, air resistance, parachute, surface area, water resistance, streamlined, non-contact force, gravity, weight, lever, gear, pulley, machine	
Evolution and inheritance						variation, species, inheritance, desirable characteristics, polar habitat, desert habitat, adaptations, evolution, common ancestor, natural selection, finch, Galapagos Islands, decompose, Charles Darwin, palaeontologist, Mary Anning Working scientific
Working Scientifically	measure, observe, compare, measurement, growth, trowel, temperature, bend, squash, twist, stretch, absorb		hardness, reaction, bar chart, pictogram, data, increase, decrease, prediction, dissection, scales, filter paper, filter funnel, measuring cylinder, thermometer, conclusion, evaluation, data, volume, decibel meter,		line graph, microscope, anomaly, anomalous result, control, control beaker, sieve, filtering, repeatability, accuracy, correlation, precision, angle, periscope, line graph, scatter graph,	



			stopwatch, beaker, temperature, Petri dish, block chart, bar graph, classifying, classification key		independent variable, dependent variable, controlled variables, duration, theory	
Exposure Words	draw, label, change, same, table, record, tally, pipette, size, predict, similar, different, sort, group, identify, pattern, height, number, amount, hand lens, ruler, counting cubes, centimetres, meters, suitable, unsuitable, match, test, scientific enquiry, comparative test, research, pattern seeking		fair test, identify, group and classify, model, modelling, investigate, changed, measured, stayed the same, millimetres, millilitres, data logger, tape measure, features, scientists, diagram, sorting diagram, block diagram, distance, results		causal relationships, decimals, analyse, interpret, conclude, capacity, mass, approximate, justify, secondary source, evidence, duration, mean, calculate, method	
Sustainability	Earth, helpful, harmful, recycle, reuse, crops, farmer, cook	single-use plastic, wildlife, nature, local	food waste, landfill, food waste recycling, edible, inedible, biodiversity, rewilding, endangered, extinct	mains electricity, battery-powered, renewable energy, non-renewable energy, energy usage, habitat destruction, palm oil, sustainable	global warming, greenhouse gases, fossil fuels, climate change, glacier, carbon footprint, plastic pollution, pollution, microplastic	solar power, wind power, solar panels, wind turbine, migration, glare, light pollution, light trespass, skyglow, urban, rural, light emission