St. John The Evangelist RCP School

Science Progression (Intent)

SEND – Ambition and Access in Science	
Ambition – What are we aiming for children with SEND to achieve in this subject?	**Access – What amendments are made in the teaching of science in order to help children with SEND achieve?**
We are ambitious in what our SEND children can achieve. We want children with SEND to take ownership of their own learning. We acknowledge that a child's scientific ability and enquiring mind is not directly related to their writing	• Flashback 4 tasks to revisit and revise previous learning at the start of every lesson. • Displays in class – documenting key vocabulary that are essential for SEND to know. • Word banks to support written work. • Be specific which scaffolds are most useful/suitable. • Use a variety of ways of recording work – scribe, video, labelling pictures etc… • Mixed ability groupings • Adaptation of resources/task if required

St. John The Evangelist RCP School EYFS Science Progression (Intent)	
Topic	**The Natural World**
Intended Vocabulary	**Seasons, water and change in states, weather, plants, nature – minibeasts, temperature, plants, healthy eating and basic hygeine**
Aims & Endpoints	**<u>EYFS End Points (informed by Early Learning Goals)</u>** **Personal, Social and Emotional Development ELG: Speaking** ● Offers explanations for why things might happen. **ELG: Managing Self** ● Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. **ELG: People, Culture and Communities** ● Describes the immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. **Understanding the World** **ELG: The Natural World** ● Explores the natural world around them, making observations and drawing pictures of animals and plants. ● Knows some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. ● Understands some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Intended Skills	• ask questions about aspects of my familiar world such as the place where I live or the natural world	• talk about why things happen and how things work. • start to develop an understanding of growth, decay and changes over time. • show care and concern for living things and the environment • explore the natural world around me. • recognise some environments that are different to the one in which I live.	• explore the natural world around them, making observations and drawing pictures of animals and plants; • know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; • understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.
Links to NC Science units	**Linking to Y1 Seasonal Change (Part 1) Topic:** • talk about the seasons and seasonal changes. • observe and describe plant growth and the life cycle of butterflies. **Linking to Y1 Materials Topic:** • develop my own ideas and decided which materials to use to express them (when making props for a play). • use junk modelling, paint and other materials to make a selection of transport vehicles. • develop my small movement (fine motor) skills: threading, pouring, stirring, constructing and using malleable (mouldable) materials. **Linking to Y1 Animals Topic:** • learn about different habitats and the animals that live in these habitats, linking our understanding to why different animals are found in different countries. • explore the natural world, making observations and drawing pictures of animals and plants having identified the local habitats and contrasting environments. **Linking to Y1 Plants Topic:**		

	• create miniature gardens and discuss ways in which we can care for the garden, as well as the environment. • learn about the life cycle of a butterfly and created a butterfly garden with flowering plants. **Linking to Seasonal Change (Part 2) Topic:** • know when each of the four seasons occurs. • know what the features of autumn are and what happens to trees in this season. • know that days are longer in summer (sunshine hours) than in winter • observe changes across the four seasons.

St. John The Evangelist RCP School Year 1 Science Progression (Intent)					
Topic	**Seasons**	Materials	Animals including humans	Plants	Seasons (continued)
Intended Vocabulary	Season Autumn Winter Spring Summer Weather sunrise sunset	hard soft Stretchy stiff bendy floppy waterproof absorbent breaks tears rough smooth shiny dull see through not see through	head body eyes ears mouth teeth leg tail wing claw fin scales feathers fur beak paws hooves hair	leaf flower petal fruit root seed trunk branch stem bark	Season Autumn Winter Spring Summer Weather sunrise sunset
Aims	The national curriculum for science aims to ensure that all pupils: • develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.				
Statutory Requirements (NC)	• observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies.	• distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical	• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish,	• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees	• observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies.

		properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties.	amphibians, reptiles, birds and mammals, including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.		
	Disciplinary Knowledge				
KS1 Skills End Points (Working scientifically): • Asks simple questions and recognises that they can be answered in different ways. • Observes closely, using simple equipment . • Performs simple tests. • Can identify and classify. • Uses their observations and ideas to suggest answers to questions.	Children can: • Gather and record data about weather conditions in autumn, drawing on observation and using simple equipment (such as a container to measure rainfall) *.* • Use data to create a pictogram and use this to describe changes in day length over the seasons. • Use their evidence to	• Compare and group together a variety of everyday materials on the basis of their simple physical properties. • Classify objects made of one material in different ways e.g. a group of objects made of metal. • Classify one type of object made from a range of materials	• Make first hand close observations of animals from each of the groups (city farm) • Compare the structure of two animals from the same or different group e.g. wings, feathers, vertebrates/invertebrates. • Classify animals using a range of features e.g. lay eggs/give birth to live young. herbivore, omnivore (these terms do not have to be explicitly taught). • Identify animals by matching statements to named images. • Take measurements of parts of the body and present results in a table to interpret. • Conduct simple sense experiments. Which part of my body is good for	• Can sort and group parts of plants using similarities and differences e.g. the shape of leaves, the colour of the flower/blossom. • Can use simple charts and Venn diagrams etc. to identify and classify plants. • Use photographs and their own observations to talk about how plants change over time (e.g. seed to sapling to tree) and over the year (deciduous and	• Collect information about the weather regularly throughout the year** • Present this information in tables and charts to compare the weather across the seasons • Collect information, regularly throughout the year, of features that change with the seasons

• Gathers and records data to help in answering questions.	describe some other features of the weather, surroundings, themselves, animals, and plants found in autumn. • Demonstrate their knowledge in different ways e.g. creating seasonal artwork, creating a pictogram (and use this to ask and answer related questions)	e.g. a collection of spoons made of different materials. • Chosen an appropriate method for testing an object for a particular property. • Use their test evidence to answer the questions about properties e.g. Which cloth is the most absorbent? • Test the properties of objects e.g. absorbency of cloths, strength of party hats made of different papers, stiffness of paper plates, waterproofness of shelters.	feeling, which is not? Which food/flavours can I identify by taste? Which smells can I match?	fruit bearing trees). * • Plant seeds and observe how they grow and change by making simple observations. * • Point to and name the parts of a plant, recognising that they are not always the same e.g. leaves and stems may not be green, the leaves are different shapes.	e.g. plants, animals, humans • Present this information in different ways to compare the seasons** • Gather data about day length regularly throughout the year and present this to compare the seasons • Use gathered evidence to describe the general types of weather and changes in day length over the seasons.** • Use evidence to describe some other features of their surroundings, themselves, animals,

					plants that change over the seasons** ● Demonstrate knowledge in different ways e.g. creating seasonal artwork
	Substantive Knowledge				
	● Knows when each of the four seasons occurs ● Knows what the features of autumn are and what happens to trees in this season ● Knows that days are longer in summer (sunshine hours) than in winter ● Observe changes across the four seasons	● Distinguish between an object and the material from which it is made ● Can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock ● Describe the simple physical properties of a variety of everyday materials ● Know how the properties of a material can make it useful for a range of different purposes	● Knows and can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals e.g. cat, robin, adder, frog, salmon. ● Knows and can identify and name a variety of common animals that are carnivores, herbivores and omnivores. ● Can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	● Knows and can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees ● Knows and can identify and describe the basic structure of a variety of common flowering plants, including trees.	● Knows about and can describe weather in different seasons over a year. ● Knows and can describe the features of different seasons and how they change through the year

		(for example, plastic is waterproof so it can be used to coat fabric for clothing but can also be used for outdoor play equipment) ● knows why and how the properties of materials make them particularly useful for specific purposes (for example, stone is a hard, heavy and durable material so is useful for construction of buildings). ● knows that different materials can share the same properties (for example glass and plastic can both be transparent).			

Topic	**Animals (including humans): adults and offspring**	Animals (including humans): basic needs for survival	Use of everyday materials	Living things and their habitats	Plants
Intended Vocabulary	offspring reproduction growth exercise breathing hygiene germs disease	offspring reproduction growth exercise breathing hygiene germs disease	transparent translucent opaque flexible rigid reflective non-reflective absorbent	living dead never been alive habitat micro-habitat food chain	seed bulb germinate seedling bud flower fruit berry root
Aims	The national curriculum for science aims to ensure that all pupils: • develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.				
Statutory Requirements (NC)	• notice that animals, including humans, have offspring which grow into adults • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts	• notice that animals, including humans, have offspring which grow into adults • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different	• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing,	• explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how	• observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

	of different types of food, and hygiene	types of food, and hygiene	bending, twisting and stretching.	they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	
	Disciplinary Knowledge				
KS1 Skills End Points (Working scientifically): • Asks simple questions and recognises that they can be answered in different ways. • Observes closely, using simple equipment. • Performs simple tests. • Can identify and classify.	• Ask questions and use secondary sources to find out about the life cycles of some animals • Observe animals growing over a period of time e.g. chicks, caterpillars, a baby • Ask questions of a parent about how they look after their baby • Ask pet owners questions	• Investigate the effect of exercise on their bodies • Classify food in a range of ways, including using the Eatwell guide • Investigate washing hands, using glitter gel • Describe, using diagrams, the life cycle of some animals, including humans, and their growth to	• Classify and sort materials by their properties e.g. manmade, natural • Investigate and observe what happens to different materials during testing and use this to inform explanation of their properties • Investigate	• Explore the outside environment regularly to find objects that are living, dead and have never lived • Classify objects found in the local environment • Observe animals and plants carefully, drawing and labelling diagrams	• Make close observations of seeds and bulbs • Classify seeds and bulbs • Research and plan when and how to plant a range of seeds and bulbs • Look after the plants as they grow – weeding, thinning, watering etc. • Make close observations and measurements

• Uses their observations and ideas to suggest answers to questions. • Gathers and records data to help in answering questions.	about how they look after their pet	adults e.g. by creating a life cycle book for a younger child • Measure/observe how animals, including humans, grow. • Collate what they know about looking after a baby/animal by creating a parenting/pet owners' guide • Explain how development and health might be affected by differing conditions and needs being met/not met	which materials are fit for a purpose e.g. What is the best material for an umbrella? • Explain from their observations how materials change when a force is exerted on them by squashing, bending, twisting and stretching. • Investigate the transparency of objects, recording class data in a table and drawing simple conclusions from the findings. • Ask and answer questions about everyday materials	• Create simple food chains for a familiar local habitat from first hand observation and research • Create simple food chains from information given e.g. in picture books (Gruffalo etc.) • Can sort into living, dead and never lived • Can give key features that mean the animal or plant is suited to its micro-habitat • Using a food chain can explain what animals eat • Can explain in simple terms why an animal or plant is suited to a habitat	of their plants growing from seeds and bulbs • Make comparisons between plants as they grow • Can spot similarities and difference between bulbs and seeds
	Substantive Knowledge				
	• Can describe	• Knows that exercise is	• Knows and can explain why	• Knows and can explain the	• Knows that plants may

	how animals including humans have offspring which grow into adults, using the appropriate names for the stages • Knows that to survive animals need sunlight, water, air, food and a suitable habitat (including shelter for protection from predators and the environment	important to humans and can explain why. • Knows the different food groups and the benefits of each as part of a healthy, balanced diet • Knows which food groups common foods belong to. • Knows about general hygiene and its importance and can state examples of hygienic practice.	some materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard are particularly suited to specific purposes • Knows how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching • Knows the difference between materials that are transparent, translucent and opaque.	differences between things that are living, dead, and things that have never been alive • Knows that most living things live in habitats to which they are suited • Knows and can describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Knows and can name a variety of plants and animals in their habitats, including micro-habitats • Knows and can describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and	grow from either seeds or bulbs. • knows that seeds and bulbs can germinate and then grow into seedlings and then continue to grow into mature plants. • Knows that mature plants may have flowers which then develop into seeds, berries and fruits etc. • knows that seeds and bulbs need to be planted at particular times of the year and will germinate and grow at different rates. • knows that some plants are better suited to growing in full sun and some grow better in partial and full shade. • Knows that

				identify and make the different sources of food.	plants need water, light and a suitable temperature to grow and stay healthy

St. John The Evangelist RCP School Year 3 Science Progression (Intent)					
Topic	Light	Animals including humans	**Rocks**	Magnets and forces	Plants
Intended Vocabulary	light dark light source transparent translucent opaque shadow reflect mirror	nutrition nutrients carbohydrates proteins vitamins and minerals fibre skeleton bones muscles joints	rock fossil soil	force magnetic force magnet attract repel poles contact force non-contact force	roots stem/trunk leaves photosynthesis pollen pollination seed formation seed dispersal germination
Aims	The national curriculum for science aims to ensure that all pupils: • develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.				
Statutory Requirements (NC)	• recognise that they need light in order to see things and that dark is the absence of light	• identify that animals, including humans, need the right types and amount of nutrition, and that	• compare and group together different kinds of rocks on the basis of their appearance and	• compare how things move on different surfaces • notice that some forces need contact	• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.

	• notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by a solid object • find patterns in the way that the size of shadows change.	they cannot make their own food; they get nutrition from what they eat • identify that humans and some other animals have skeletons and muscles for support, protection and movement.	simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter	between two objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing.	• explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow) and how they vary from plant to plant • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
	Disciplinary Knowledge				
Lower KS2 Skills	• Observe and	• Classify food in a	• Can compare	• Record and	• Observe what

(Working Scientifically) End Points: • Asks relevant questions and use different types of scientific enquiries to answer them. • Sets up simple practical enquiries, comparativ e and fair tests. • Makes systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Gathers, records, classifies and presents data in	identify changes to the size and orientation of shadows, relative to their proximity to the light source. • Observe and identify the difference in shadows of opaque, translucent and transparent objects/materials . • Observe how shadows are formed and affected by different circumstances. • To notice that light can be reflected off surfaces and Replace with 'investigate the visibility of different materials (eg shiny; foil, mirrors and matt; sugar paper) in a darker environment according to which reflect most light.'	range of ways • Use food labels to explore the nutritional content of a range of food items • Use secondary sources to find out the types of food that contain different nutrients * * * • Use food labels to answer enquiry questions e.g. How much fat do different types of pizza contain? How much sugar is in soft drinks? • Plan a daily diet contain a good balance of nutrients and record and present findings * * * * * • Explore the nutrients contained in fast food • Use secondary sources to	and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Can devise tests to explore the properties of rocks and use data to rank the rocks* • Can link rocks changing over time with their properties e.g. soft rocks get worn away more easily • Can present in different ways their understandin g of how fossils are formed e.g. in role play, comic strip, chronological report, stop-go animation	report on findings from investigations , involving how things move on different surfaces* • Compare and group materials following magnetic testing, recording findings and use the outcome to answer questions about which materials are magnetic.* • Make and investigate predictions on whether two magnets will attract or repel, depending on which poles are facing.	happens to plants over time when the leaves or roots are removed. • Observe the effect of putting cut white carnations or celery in coloured water. • Investigate what happens to plants when they are put in different conditions e.g. in darkness, in the cold, deprived of air, different types of soil, different fertilisers, varying amount of space. • Spot flowers, seeds, berries and fruits outside throughout the year. • Observe flowers carefully to identify the pollen • Observe flowers being visited by pollinators e.g. bees and butterflies in the summer. • Observe seeds

a variety of ways to help in answering questions. • Records findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Reports on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Uses results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Identifies differences, similarities or changes related to	• Investigate the size of shadows according to times of day and year, by tracing shadows outside and comparing differences. • Classify materials according to opaque, transparent and translucent. • Use oral and written explanations to report on why shadows are formed and how the length and size of a shadow can be changed. • Investigates questions related to an object and the shadow it will cause..*	research the parts and functions of the skeleton* • Investigate pattern seeking questions such as ; Can people with longer legs run faster?; Can people with bigger hands catch a ball better? • Compare, contrast and classify skeletons of different animals	etc. • Can identify plant/animal matter and rocks in samples of soil • Can devise a test to explore the water retention of soils		being blown from the trees e.g. sycamore seeds. • Research different types of seed dispersal. • Classify seeds in a range of ways including by how they are dispersed. • Create a new species of flowering plant • Can explain observations made during investigations . • Can look at the features of seeds to decide on their method of dispersal. • Can draw and label a diagram of their created flowering plant to show its parts, their role and the method of pollination and seed dispersal.

simple scientific ideas and processes. • Use straightforward scientific evidence to answer questions or to support their findings					
	Sunstantive Knowledge				
	• Knows that light is needed to see things and that dark is the absence of light • Knows that light is reflected from surfaces • knows that light from the sun can be dangerous and that there are ways to protect the eyes • knows that shadow are formed when the light from a light source is blocked by an opaque object. • Knows and can explain some of the reasons why the size of	• Animals, unlike plants which can make their own food, need to eat in order to get the nutrients they need. • Food contains a range of different nutrients that are needed by the body to stay healthy – carbohydrate s including sugars, protein, vitamins, minerals, fibre, fat, sugars, water. • A piece of food will often provide a	• Rock is a naturally occurring material. • There are different types of rock e.g. sandstone, limestone, slate etc. which have different properties. • Rocks can be hard or soft. They have different sizes of grain or crystal. • Rocks can be different shapes and sizes (stones, pebbles,	• Knows that friction affects the way that things move on different surfaces • Knows that some forces need contact between two objects, but magnetic forces can act at a distance • Knows that magnets attract or repel each other and attract some materials and not others • Knows and can describe	• Knows and can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. • Knows the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. • Knows through investigation, the ways in which water is transported within plants • Knows the part

	shadows changes. • Knows how the shadows of transparent, opaque and translucent materials vary.	range of nutrients. • Humans and some other animals have skeletons and muscles which help them move and provide protection and support	boulders) and some absorb water. • Knows, in simple terms, how fossils are formed when things that have lived are trapped within rock. • Knows that soils are made from rocks and organic matter.	magnets as having two poles • Knows whether two magnets will attract or repel each other, depending on which poles are facing.	that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

St. John The Evangelist RCP School Year 4 Science Progression (Intent)					
Topic	**Living things and their habitats**	Electricity	Animals including humans	Sound	States of matter
Intended Vocabulary	classification classification key environment habitat migrate hibernate vertebrates invertebrates	electricity electrical appliance mains electrical circuit cell and battery electrical component switch conductor insulator	digestive system digestion herbivore carnivore omnivore producer consumer predator prey food chain	sound sound source vibrations pitch volume sound insulation	change of state melting freezing melting point boiling point evaporation condensation water cycle temperature
Aims	The national curriculum for science aims to ensure that all pupils:				

	• develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.				
Statutory Requirements (NC)	• recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things	• identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals	• describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey	• identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases.	• compare and group materials together, according to whether they are solids, liquids or gases • observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

		with being good conductors.			
	Disciplinary Knowledge				
Lower KS2 Skills (Working Scientifically) End Points: • Asks relevant questions and use different types of scientific enquiries to answer them. • Sets up simple practical enquiries, comparative and fair tests. • Makes systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	• Observe plants and animals in different habitats throughout the year and use recordings to compare and contrast the living things observed. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Classify living things found in different habitats based on their features. • Create a simple identification key based on observable features.	• Construct and investigate a range of circuits. • Investigate which materials can be used instead of wires to make a circuit . • Classify materials that conduct electricity and those that don't following investigation and record findings..* • Investigate the effect of a switch and combinations of switches in simple circuits. • Investigate switches and consider variations for specific uses, such as a pressure switch for a burglar alarm. • Apply their knowledge of conductors	• Construct and interpret a variety of food chains, identifying producers, predators and prey. • Can create food chains based on research.* • Identifies differences, and similarities of different types of teeth according to herbivore, omnivore and carnivore. • Can record the teeth in their mouth (make a dental record). • recreate the human stomach and observe representation of how food breaks down. • Label the different parts of the digestive system.	• Experiment with at least three different instruments to observe and explore volume and pitch. • Make predictions and draw conclusions about the pitch and volume of sounds.* • Note how vibrations make sounds of different volumes and travel to our ears. • Identify and show how sound travels through particles and into the ear. • Make own instruments that produce a range of pitches.	• Observe closely and classify a range of solids and liquids. • Explore making gases visible • Classify materials according to whether they are solids, liquids and gases. • Observe a range of materials melting. • Investigate how to melt ice more quickly. • Observe the changes that are non-reversible relating (common ingredients). • Investigate melting point of different materials. • Explore freezing different liquids. • Observe and measure temperature

• Gathers, records, classifies and presents data in a variety of ways to help in answering questions. • Records findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. • Reports on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • Uses results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • Identifies	• Use research to explore human impact on the local environment e.g. litter, tree planting.* • Use secondary sources to find out about how environments may naturally change.* • Use secondary sources to find out about human impact, both positive and negative, on environments and write a report on this.*	and insulators to design and make different types of switch.			of icy water, tap water, hot water. • Observe water evaporating and condensing. • Set up investigations to explore changing the rate of evaporation.* • Use secondary sources to find out about the water cycle.* • Using their data, can explain what affects how quickly a solid melts. • From their data, can explain how to speed up or slow down evaporation. • Present learning about the water cycle in a range of ways e.g. diagrams, explanation text, story of a water droplet.

differences, similarities or changes related to simple scientific ideas and processes. • Use straightforward scientific evidence to answer questions or to support their findings					
	Sunstantive Knowledge				
	• Knows that living things can be grouped in a variety of ways. • Knows and can name living things in a range of habitats. • Knows and can relate the key adaptational features of an organism to the known features of its habitat. • Knows and can give examples of how an	• Can identify and name appliances that require electricity to function • Knows the basic parts of a circuit, including cells, wires, bulbs, switches and buzzers • Knows that for an appliance to work within a circuit, it has to be part of a complete loop with a battery. • Knows that a switch in a circuit is a temporary break in an	• Knows the basic parts of the digestive system in humans. • Knows and can identify the different types of teeth in humans and their simple functions. • Knows which organisms are producers, predators and prey and apply to the construction and interpretation of food chains.	• Knows how sounds are made, associating some of them with vibrating. • Knows how sound travels from a source to our ears. • Knows the correlation between pitch and the object. • Knows the correlation between the volume of a sound and the strength of the	• Knows how to distinguish between a solid, liquid and gas. • Knows that some materials change state when they are heated or cooled. • Knows the temperatures at which ice, water and water vapour change state. • Knows the part played by

	environment may change both naturally and due to human impact.	otherwise 'complete circuit'. • All metals conduct electricity but some, such as aluminium and titanium, are relatively poor conductors. • Knows the recognised symbols used to represent components of a circuit and uses these to represent a circuit pictorially.		vibrations that produced it. • Know that sounds get fainter as the distance from the sound source increases.	evaporation and condensation in the water cycle.

St. John The Evangelist RCP School Year 5 Science Progression (Intent)					
Topic	**Earth and Space**	Materials: Changing state	Forces	Living things and their habitats	Animals including humans
Intended Vocabulary	Earth Sun Moon planets solar system star rotate orbit	thermal insulator thermal conductor electrical insulator electrical conductor dissolve solution soluble insoluble sieve filter	force gravity forcemeter Newton (N) air resistance water resistance friction mechanisms simple machines	life cycle reproduction sexual reproduction asexual reproduction fertilise metamorphosis runner bulb cutting tuber	puberty sexual reproduction menstruation (period) sperm egg foetus gestation life expectancy

		evaporation reversible change non-reversible change			
Aims	The national curriculum for science aims to ensure that all pupils: • develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.				
Statutory Requirements (NC)	• describe the movement of the Earth, and other planets, relative to the Sun in the solar system • describe the movement of the Moon relative to the Earth • describe the Sun, Earth and Moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	• compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • use knowledge of solids, liquids and gases to decide how mixtures might	• explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to	• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals	• describe the changes as humans develop to old age.

		be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	have a greater effect.		
	Disciplinary Knowledge				
Upper KS2 Skills End Points (Working Scientifically):	• Use secondary sources to help create a model	• Investigate the properties of different	• Investigate the pull on different	• Grow and observe plants that reproduce	• Create an information PowerPoint

• Plans different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Takes measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. • Records data and results of increasing complexity using scientific diagrams and labels, classification	e.g. role play or using balls, to show the movement of the Earth around the Sun and the Moon around the Earth. • Use secondary sources to create a model to show why day and night occur • Make first-hand observations of how shadows caused by the Sun change through the day • Make a sundial and report on findings following observation of the changing place of the shadow, making conclusions as to what this demonstrates and how the sundial was used to indicate the time. • Research time zones • Consider the views of scientists in the past and	materials in order to recommend materials for particular functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat • Explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate • Investigate rates of dissolving by carrying out comparative and fair test and records findings * * • Separate mixtures by sieving, filtering and evaporation,	objects using a newton meter and record forces in Newtons (N). • Report on conclusions relating to an object's mass and its weight in Newtons. • Investigate the effect of friction in a range of contexts . • Investigate the effects of water resistance in a range of contexts e.g. dropping shapes through water, pulling shapes e.g. boats along the surface of water. • Investigate	asexually e.g. strawberries, spider plant, potatoes • organise mammals into different groups - sea and land and marsupials and use scientific evidence to refute/support correct/incorrect statements (such as 'dolphins are fish'). • Draw and label appropriate scientific diagrams following use of secondary sources and first hand observations relating to the life cycle of a range of animals. • compare and contrast the life cycles of different living things and present findings • identify which insects complete which type of metamorphosis and	to describe the changes as humans develop to old age

keys, tables, scatter graphs, bar and line graphs. • Reports and presents findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. • Uses test results to make predictions to set up further comparative and fair tests. • Identifies scientific evidence that has been used to support or refute ideas or	how evidence was used to deduce the shapes and movements of the Earth, Moon and planets before space travel.	choosing the most suitable method and equipment for each mixture • Explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning • Carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced? • Research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton)	the effects of air resistance in a range of contexts e.g. parachutes, spinners, sails on boats. • Explore how levers, pulleys and gears work. • Research how the work of scientists such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.	present findings • identify the key differences between some amphibians – for example, toads and frogs, and present findings in different forms. • Use data to compare and find patterns, for example to compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth/Look for patterns between the size of an animal and its expected life span)	

arguments.					
	Substantive Knowledge				
	• The Sun is a star. It is at the centre of our solar system. There are 8 planets (can choose to name them, but not essential). These travel around the Sun in fixed orbits. • Earth takes 365¼ days to complete its orbit around the Sun. • The Earth rotates (spins) on its axis every 24 hours. • As Earth rotates half faces the Sun (here it is day) and half is facing away from the Sun (night). As the Earth rotates the Sun appears to move across the sky. • The Moon orbits the Earth. It takes about 28 days to complete its orbit. • The Sun, Earth and	• Materials have different uses depending on their properties and state (liquid, solid, gas). Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets. • Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment. • Mixtures can be separated by filtering, sieving and evaporation. • Some changes to materials such as	• Knows that unsupported objects fall to Earth because of the force of gravity acting between the earth and the falling object • Knows and can identify the effects of air resistance, water resistance and friction, that act between moving surfaces • Knows that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater	• Knows and can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Knows and can describe the life processes of reproduction in some plants (including the pollination process) and animals • Knows that bulbs, tubers, runners and plantlets are examples of plant reproduction involving only one parent	• • Baby – toddler – child – teenager – adult – old age • Babies feed only on milk and then smooth food. Toddlers begin to eat solid food. • Children go through puberty as they move into teenage years. • Puberty involves changes such as - Girls: menstruation, breast growth, pubic hair, spots; Boys: pubic hair (& chest), genital growth, voice

	Moon are approximately spherical.	dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.	effect.		deepens, sweat more, begin to produce sperm, spots. • Puberty also means both sexes produce lots of hormones which can affect mood and behaviour. • As we reach old age, our bodies don't work as well. We become more vulnerable to disease and injury. • Some people may shrink in old age.

St. John The Evangelist RCP School Year 6 Science Progression (Intent)					
Topic	Light	Evolution and Inheritence	Animals including humans	Electricity	**Living things and their habitat**

Intended Vocabulary	light source straight lines light ray reflect shadow	evolution offspring inherited characteristics variation adapted environment species fossil	heart pulse blood blood vessels lungs circulatory system diet exercise drugs lifestyle	circuit circuit symbol circuit diagram cell battery switch voltage	vertebrate fish amphibian reptile bird mammal invertebrate plants
Aims	The national curriculum for science aims to ensure that all pupils: • develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.				
Statutory Requirements (NC)	• recognise that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes	• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • identify how animals and plants	• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within	• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics

	• use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	are adapted to suit their environment in different ways and that adaptation may lead to evolution.	animals, including humans.	representing a simple circuit in a diagram.	
	Disciplinary Knowledge				
Upper KS2 Skills End Points (Working Scientifically): • Plans different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • Takes measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when	• Plan and conduct a test to investigate how light travels and explain/present the findings. • Investigate the use of mirrors to reflect light and record using straight line diagrams to indicate the direction of light. • Use mirrors, torches and protractors to demonstrate and record how light is reflected in a mirror and how we see ourselves in a mirror. • Measure and record the angle of incidence and	• Follow lines of enquiry to support Explanation of the process of evolution. • Demonstrate an understanding, with specific examples, of how an animal or plant has evolved over time e.g. penguin, peppered moth. • Identify characteristics that will make a plant or animal suited or not suited to a particular habitat. • Compare the	• Plan and conduct a scientific enquiry to identify different food groups. • Use labelled diagrams to support understanding of how nutrients and oxygen are delivered around the body. • Use information to identify the main components of the heart. • Predict what will happen to the heart during exercise. • Construct and analyse the variables that make a fair test.	• Draw circuit diagrams of a range of simple series circuits, using recognised symbols. • Communicate structures of circuits using circuit diagrams with recognised symbols • make electric circuits and demonstrate, following investigation, how variation in the working of particular components can be changed. • Plan and select resources for a fair scientific	• Classify plants and animals and record conclusions from the use of classification keys. • Use information about the characteristics of an unknown animal or plant to assign it to a group. • Use secondary sources to learn about the formal classification system devised by Carl Linnaeus and why it is important. • Research an unfamiliar animal or plant using its characteristics

appropriate. • Records data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Reports and presents findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. • Uses test results to make predictions to set up further comparative and fair tests. • Identifies	angle of reflection using a protractor and detailed diagram.	ideas of Charles Darwin and Alfred Wallace on evolution. • Research the work of Mary Anning and understand how this provided evidence of evolution. • Referring to and using examples of fossil evidence that support the theory of evolution.	• Conduct a fair investigation on the effects of exercise on the heart. • Use scientific equipment to track results and record data using tables and graphs. ** • Analyse whole class data after investigation to compare and reflect on findings and draw conclusions. • Use information acquired to write a scientific report on how the human circulatory system works.	enquiry, deciding which variables to control. • Record results from an experiment using tables and graphs • Evaluate and explain their investigation, results and conclusions.	to establish where it belongs in the classification system.

scientific evidence that has been used to support or refute ideas or arguments.					
	Substantive Knowledge				
	• Light appears to travel in straight lines • Knows and can explain that objects are seen because they give out or reflect light into the eye • Knows and can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Knows and can explain, with reference to how light travels, why shadows have the same shape as the objects that cast them	• All living things have offspring of the same kind. The offspring are not identical to their parents and vary. • Plants and animals have characteristics that make them suited (adapted) to their environment. • If the environment changes rapidly some variations may not suit the new environment and will die. If it changes slowly, animals and plants with • variations that are best suited survive and	• Can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • Recognise the impact of diet, exercise, drugs and lifestyle on the way the body functions • Knows and can describe the way in which nutrients and water are transported within animals, including humans	• that the brightness of a bulb, or the volume of a buzzer, correlates with the voltage of cells used in the circuit. • Knows and can give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • Knows the effect of adding more components to a circuit with one cell and	• Plants can be divided broadly into two main groups – flowering plants and non-flowering plants. • Living things can be formally grouped according to characteristics. • Animals can be divided into two main groups — vertebrates and invertebrates. • Each group has common characteristics.

		reproduce. • Over a very long period of time these characteristics may be so different that a new species is created. This is evolution. • Fossils give us evidence of what lived on the Earth millions of years ago scientists such as Darwin and Wallace observed how living things adapt to different environments		the effect of adding multiple cells Knows and can use the recognised symbols to represent a simple circuit in a diagram.	