Science Medium Term Plan

Saint Augustine Webster CATHOLIC VOLUNTARY ACADEMY

OUR LADY OF LOURDES CATHOLIC MULTI-ACADEMY TRUST

	ELG	How is this achieved in EYFS?	Key Vocabulary to be developed in EYFS		Science KS1	
					Year 1	Year 2
Specific Area of Learning Understanding the World	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 14 The Natural World • Explore the natural world around them, making observations and drawing pictures of animals and plants.	• Discussions at snack time of the importance of healthy food choices. • During lunch time discussions. • Through stories and circle time discussions e.g. the story – Now wash your hands and Funny bones. • P.E lessons that encourage getting dressed and undressed independently. • Naming body parts through songs – Heads, shoulders, knees, and toes. • RSE link – Correct naming of body parts. • Talking about pets at home. • Exploring minibeasts and recording our observations.	• Exercise • Healthy • Wash • Toothbrush • Tooth / Teeth • Body • Bones • Skeleton • Family • Head	• Animal • Human • Mammal • Bird • Fish • Amphibian • Insect • Lifecycle • Nocturnal	Animals, including humans.	

	ELG 14 The Natural World • Explore the natural world around them, making observations and drawing pictures of animals and plants.	• Going on walks to observe the local environment and to compare and learn about the seasons. • Taking photos to compare seasons and discuss. • Planting seeds and plants. • Looking after the EYFS garden. • Creating bug hotels.	• Lifecycle • Plants • Seed • Grow • Roots • Flower	• Seasons • Autumn • Winter • Spring • Summer • Change • Weather	Plants Seasonal Change	 Living things and their habitats
	ELG 14 The Natural World • Understanding some important processes and changes in the natural world around them, including seasons and changing states of matter.	• Growing plants from bulbs and seeds. • Making boats to explore best materials. • Water tray activities to explore water, ice, and materials that float and sink. • Testing the best material for a raincoat for Paddington bear.	• Material • Wood • Plastic • Glass • Float	• Sink • Liquid • Solid	Everyday Materials	Use of Everyday Materials
	Scientific Vocabulary – scientist, sort, observation, identify, compare, group, investigate, test, evaluate					

Year 1	Advent Seasonal Change	Advent Plants	Lent Animals including Humans	Pentecost Everyday Materials
Core Knowledge	Pupils should be taught to: • observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies 1. What are the four seasons?	Pupils should be taught to: • 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	Pupils should be taught to: • 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 1. What is an animal?	Pupils should be taught to: • distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass,

	2. What's the weather like in Autumn, Winter, Spring and Summer? 3. Why does day become night?	1. What are the parts of a plant? 2. What are wild plants and where do you find them? 3. What are garden plants and where do you find them? 4. What makes a tree? 5. What types of tree are there? (Trees that live around my school) 6. What's the difference between trees?	2. What types of animals are there? (Mammals and birds) 3. What types of animals are there? (amphibians, reptiles and fish) 4. What is similar and what is different? 5. What does food tell us about an animal? 6. What makes me an animal? What senses do I have?	metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties 1. What are materials? 2. What are things made of in school? 3. How can I describe materials? 4. Which materials are waterproof and which are not? 5. Which materials are transparent and which are opaque? 6. What's the best material for the job? Why?
Previous Learning	<u>EYFS</u> **The Natural World** Explore the natural world around them, making observations and drawing pictures of animals and plants.	<u>EYFS</u> **The Natural World** Explore the natural world around them, making observations and drawing pictures of animals and plants.	<u>EYFS</u> **The Natural World** Explore the natural world around them, making observations and drawing pictures of animals and plants.	<u>EYFS</u> **The Natural World** Know some similarities and differences between the natural world around them and contrasting environments, drawing on

	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.	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.	Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	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. **Creating with materials** Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; Share their creations, explaining the process they have used; Make use of props and materials when role playing characters in narratives and stories.
Substantive concept	Physics I The study of energy forces mechanics waves structure of atoms physical universe - Earth in Space	Biology I The study of living things, including: Common plants and trees in a local environment	Biology I The study of living things, including: Types of animals Food animals eat Senses	Chemistry I The study of the composition, behaviour and properties of matter
Scientific Enquiry	• Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies.	• Make observations, using equipment such as magnifying glasses. • Compare and contrast familiar plants.	• Use their observations to compare and contrast animals at first hand or through videos and photographs	• Perform simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket?

	• Make tables and charts about the weather • Make displays of what happens in the world around them, including day length, as the seasons change.		• Observe closely, and compare and contrast familiar plants • Describe how they were able to identify and group different plants • Draw diagrams showing the parts of different plants including trees. • Record how plants have changed over time and compare and contrast what they have found out about different plants.		• Describe how they identify and group them • Group animals according to what they eat; and using their senses to compare different textures, sounds and smells.		...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'	
Vocabulary	<u>Tier 2</u> dawn dusk mild rotate soaked weather	<u>Tier 3</u> month season spring summer autumn winter	<u>Tier 2</u> bud trunk branch bark seed wild	<u>Tier 3</u> nutrients stem deciduous evergreen	<u>Tier 2</u> blood senses young feathers fur scales	<u>Tier 3</u> mammal amphibian reptile herbivore carnivore omnivore	<u>Tier 2</u> absorb rough smooth waterproof metal plastic	<u>Tier 3</u> materials properties flexible transparent opaque physical

Year 2	Advent Living Things in their Habitats	Advent Animals including Humans	Use of everyday materials	Plants
Core Knowledge	Pupils should be taught to: • 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	Pupils should be taught to: • 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)	Pupils should be taught to: • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	Pupils should be taught to: • observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable

	which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • 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 1. What is alive and what is not? 2. What do all living things have in common? 3. Where do plants and animals live? 4. What plants and animals live in our local environment? 5. What are food chains? How are they connected? 6. Why do plants and animals need each other?	• describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. 1. What is an animal? 2. How do animals change as they mature? 3. How do we change as we mature? 4. What do all animals need to stay alive? 5. Keeping healthy: why do we exercise? 6. Why do we eat different types of food?	• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching 1. What are materials used for? 2. What are materials used for? 3. What happens when we squash, bend, twist or stretch a material? 4. What's the right material for the job? 5. What's the most absorbent material? 6. Who invented waterproofing?	temperature to grow and stay healthy 1.How do seeds germinate and what happens? 2. What happens when bulbs sprout? 3. What do plants need to thrive and be healthy? 4. What can happen if plants don't get the things they need? 5. What do I notice about plants around the school? How are they healthy? How are they unhealthy? 6. How do seeds and bulbs grow? What do plants need to be healthy?
Previous Learning	EYFS – Natural Word Y1 Plants Y1 Animals including humans Y1 Revisit Animals, including	EYFS - Understanding the world. EYFS - Physical development: Health and selfcare	EYFS Natural world Y1 Everyday materials	Y1 Animals, including humans Y1 Plants

	humans Y1 Second revisit of Animals, including human and plants		Y1 Animals including humans Y1 Revisit Animals, including humans Y1 Second revisit of Animals, including human and plants				Y2 Living things and their habitats Y2 Uses of everyday materials	
Substantive concept	Biology I The study of living things, including Characteristics of living things Relationship of living things and their environment.		Biology I The study of living things, including Reproduction Basic needs Diet and exercise for humans.		Chemistry I the study of the composition, behaviour and properties of matter		Biology I The study of living things, including Growth Health Relationship of living things and their environment	
Scientific Enquiry	Sort and classify things according to whether they are living, dead or were never alive, and recording their findings using charts. Describe how they decided where to place things, exploring questions Construct a simple food chain that includes humans (e.g. grass, cow, human). Describe the conditions in different habitats and micro-habitats and find out how the conditions affect the number and type(s) of plants and animals that live there.		Observe, through video or first-hand observation and measurement, how different animals, including humans, grow Ask questions about what things animals need for survival and what humans need to stay healthy Suggest ways to find answers to their questions.		Compare the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs) Observe closely, identify and classify the uses of different materials, and recording their observations.		Observe and record, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb Observe similar plants at different stages of growth Set up a comparative test to show that plants need light and water to stay healthy.	
Vocabulary	**<u>Tier 2</u>** thrive depend producer consume prey predator	**<u>Tier 3</u>** oxygen nutrition respiration sensitivity reproduction excretion	**<u>Tier 2</u>** healthy survive exercise heart lungs muscles	**<u>Tier 3</u>** Hygiene Larva pupa vertebrates' invertebrate's metamorphosis	**<u>Tier 2</u>** artificial brittle extracted fabric manufactured natural	**<u>Tier 3</u>** ceramic durable inflexible reflective rigid translucent	**<u>Tier 2</u>** wither dormant mature bulb anchor sustain	**<u>Tier 3</u>** germination perennial carbon dioxide glucose clone

Year 3	Advent Rocks	Advent Animals including Humans	Lent Forces and Magnets	Lent Light	Pentecost Plants
Core Knowledge	Pupils should be taught to: • compare and group together different kinds of rocks on the basis of their appearance and 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 1. How are rocks formed? 2. What types of rocks are there? 3 Can rocks change? 4. How can we test a rock to see if it is limestone or chalk? 5. Is soil just dirt? What makes soil? 6. How are fossils formed?	Pupils should be taught to: • identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • identify that humans and some other animals have skeletons and muscles for support, protection and movement. 1. What effect does the food we eat have? 2. Where is my skeleton and what does it do? 3. Where are my muscles and what do they do?	Pupils should be taught to • compare how things move on different surfaces • notice that some forces need contact between 2 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 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing	Pupils should be taught to: • recognise that they need light in order to see things and that dark is the absence of light • 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 an opaque object • find patterns in the way that the size of shadows changes 1. Do we need light to see things? Remember: what are light sources and what are not light sources? 2. How are shadows formed? 3. What happens to the size of a shadow when the object moves closer	Pupils should be taught to: • identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • 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. 1. What are the parts of a flowering plant? What do they do? 2. Do all plants need the same things to thrive and grow? 3. How do leaves make food for the plant? 4. How does water move through a plant?

			1. What are contact forces? 2. How do surfaces affect the motion of an object? 3. How does friction affect moving objects? 4. What is a non-contact force? How is this different to a contact force? 5. How do magnets attract and repel? 6. Which materials are magnetic?	to, or away from, the light source?	5. What do flowers do? 6. What is pollination?
Previous Learning	EYFS – Natural Word Y1 Plants Y1 Animals, including humans Y2 Animals, including humans Y2 Living things and their habitats Y2 Revisit Living things and their habitats	EYFS Natural world Y1 Animals, including humans Y2 Animals, including humans Y2 Living things and their habitats	Y1 Seasonal changes Y1 Everyday materials Y2 Uses of everyday materials	Y1 Seasonal changes Y1 Everyday materials Y2 Uses of everyday materials Y3 Forces and magnets	Y1 Plants Y1 Animals, including humans Y2 Living things and their habitats Y2 Plants
Substantive concept	Biology I The study of living things, including Growth Health Relationship of living things and their environment Reproduction Basic needs Diet and exercise for humans	Biology I The study of living things, including Amount and type of nutrition Structure of humans and animals	Physics I The study of energy forces mechanics waves structure of atoms physical universe I Earth in Space	Physics* I The study of energy forces mechanics waves structure of atoms and the physical universe I Earth in Space	Biology I The study of living things, including Structure and function Food and survival Life systems. Reproduction

Scientific Enquiry	Prior learning: Describe in simple terms how fossils are formed when things that have lived are trapped within rock. Compare and group together different kinds of rocks on the basis of their appearance and 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.		Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. Identify that humans and some other animals have skeletons and muscles for support, protection and movement		Compare how things move on different surfaces Notice that some forces need contact 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		Recognise that they need light in order to see things and that dark is the absence of light 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 an opaque object. Find patterns in the way that the size of shadows changes.		Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers 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.	
Vocabulary	<u>Tier 2</u> cemented compacted decay prehistoric soil transform	<u>Tier 3</u> fossil igneous magma metamorphic minerals sedimentary	<u>Tier 2</u> minerals skeleton skull voluntary involuntary nerves	<u>Tier 3</u> biceps triceps vertebrae vitamins proteins carbohydrates	<u>Tier 2</u> consequence contact force attract north south	<u>Tier 3</u> magnet resistance friction repel pole magnetic field	<u>Tier 2</u> absence cast (shadow) impenetrable reflect shadow source (light)	<u>Tier 3</u> constant dependent independent illuminate translucent variable	<u>Tier 2</u> adapt essential glucose transport variety vital	<u>Tier 3</u> transpiration stoma pollination stamen pistil photosynthesis

Year 4	Advent Living things and their habitats	Advent States of Matter	Lent Animals including Humans	Pentecost Electricity	Pentecost Sound
Core Knowledge	Pupils should be taught to: • 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. 1. What are the characteristics of living things? 2. What animals are vertebrates? 3. What animals are invertebrates? 4. What groups are plants classified in? 5. What is classification? How do I use a key? 6. What happens if the environment in a habitat change?	Pupils should be taught to: • 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. 1. What is matter? What does 'state' mean? 2. What are solids, liquids and gases? 3. Melting: how do materials change state? If you find you need to consolidate or focus pupil learning, you can select one or two of these	Pupils should be taught to: identify the different types of teeth in humans and their simple functions • describe the simple functions of the basic parts of the digestive system in humans • construct and interpret a variety of food chains, identifying producers, predators and prey. 1. What teeth do humans have? What do they do? 2. How does our mouth and teeth help digestion? What's the process? 3. Can teeth tell us what animals eat?	Pupils should be taught to: • 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 with being good conductors.	Pupils should be taught to: • 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. 1. What is sound?

		working scientifically lessons. 4. Evaporating: how do materials change state? 5. Condensing: how do materials change state?		1. What appliances use electricity? What sort of power makes them work? Notice it – what are the everyday appliances that run on electricity - battery or mains 2. Name it - what are the components in a simple series circuit? Test it – what happens when a circuit is open or closed? 3. Diagnose it – what are the effects of changing circuit components and batteries?	2. How does sound travel? 3. What is the pitch and loudness of sound?
Previous Learning	Y1 Plants Y1 Animals, including humans Y2 Living things and their habitats Y2 Plants Y3 Plants	Y1 Everyday materials Y2 Use of everyday materials Y3 Forces and magnets	Y1 Plants Y1 Animals, including humans Y2 Living things and their habitats Y2 Plants Y3 Plants Y4 Living things and their habitats	Y1 Seasonal changes Y1 Everyday materials Y2 Uses of everyday materials Y3 Forces and magnets	Y1 Seasonal changes Y1 Everyday materials Y2 Uses of everyday materials Y3 Forces and magnets Y4 Electricity
Substantive concept	Biology I The study of living things, including Grouping Classification Environmental change and impact.	Chemistry I the study of the composition, behaviour and properties of matter	Biology I The study of living things, including Structure of digestive system	Physics I The study of energy forces mechanics waves structure of atoms physical universe	Physics I The study of energy forces mechanics waves structure of atoms physical universe

					Function of digestive system Relationship food chains		I Earth in Space		I Earth in Space	
Scientific Enquiry	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.		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.		Compare the teeth of carnivores and herbivores, and suggest reasons for differences Find out what damages teeth and how to look after them. Draw and discuss their ideas about the digestive system and compare them with models or images.		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 with being good conductors.		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	
Vocabulary	**Tier 2** classification environment interdependence	**Tier 3** vertebrate invertebrate biotic	**Tier 2** permanent particle solid	**Tier 3** evaporate condense melt	**Tier 2** expel compact digestion	**Tier 3** incisor canine molar	**Tier 2** associate identify portable	**Tier 3** component electrical insulator	**Tier 2** produce property source	**Tier 3** vibrate pitch volume

	interacts beneficial hierarchy	ecosystem species niche	liquid gas vapour	matter state volume	acid stomach intestines	enzyme saliva peristalsis	effect appliance series	electrical conductor circuit hypothesis variable	frequent regular affect	medium vacuum sound wave

Year 5	Advent Properties and changes of materials	Lent Animals including humans	Lent Earth and space	Living things and their habitats
Core Knowledge	Pupils should be taught to: • 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 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	Pupils should be taught to: describe the changes as humans develop to old age • Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty. • Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows. 1.What is the human timeline? 2.How do we change into adults? 3. How does human and animal lifespan compare?	Pupils should be taught to: 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, the Earth and the 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. 1. What are the planets in our solar system? 2. How does our view of the Moon change in a lunar month? 3. Why does the rotation of Earth result in night and day? 4. Why is the Earth's tilt (axis) responsible for the seasons?	Pupils should be taught 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. 1. Life cycle differences – what's the difference between a mammal and an amphibian? 2. Life cycle differences – what's the difference between an insect and a bird? 3. What is similar and what is different between the life cycles of a mammal, an insect, an amphibian and a bird? 4. Summer birds – who was Maria Merion and what did she do? 5. The science of life - how do living things reproduce? 6.

	• 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. 1. What properties do materials have? How do we use them? 2. What is a solution and what is a mixture? 3. How can we separate materials from a mixture? 4. How can we separate materials from a solution? 5. What changes are reversible? 6. What changes are irreversible?			Plants and animals: what's the life process of reproduction?
Previous Learning	Y1 Everyday materials Y2 Uses of everyday materials Y3 Rocks Y3 Light Y4 States of matter	Y1 Animals, including humans Y2 Animals, including humans Y3 Animals, including humans Y4 Animals, including humans	Y3 Forces and magnetism Y3 Light Y4 States of matter Y4 Electricity Y4 Sound	Y1 Plants Y2 Plants Y3 Plants Y3 Living things and their habitats Year 4 Living things and their habitats
Substantive concept	Chemistry | the study of the composition, behaviour properties of matter	Biology | The study of living things Lifespan and life cycle Change and growth	Physics | Matter Forces and motion Sound, light and waves Electricity and magnetism Earth in Space	Biology | The study of living things, including Structure, Order Life cycles Reproduction

Scientific Enquiry	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 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.		Describe the changes as humans develop to old age.		Prior learning: see forces Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. 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.		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.	
Vocabulary	<u>Tier 2</u>	<u>Tier 3</u> Atom	<u>Tier 2</u>	<u>Tier 3</u>	<u>Tier 2</u>	<u>Tier 3</u> Orbit	<u>Tier 2</u>	<u>Tier 3</u> embryo

	property particle separate combine recover comparative	molecule chemical (changes) physical (changes) reversible reaction	development diverse unique generation mature equipped	adolescence puberty gestation embryo foetus womb	luminous phenomenon attraction approximately relative apparent	axis crescent gravitational waxing waning	deduce process re-form transform adolescence contrast	sexual metamorphosis incubates biochemical fertilisation

Year 6	Advent Living things and their habitats	Lent Light	Lent Animals including humans	Pentecost Electricity	Pentecost Evolution and Inheritance
Core Knowledge	Pupils should be taught to: • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics. 1. Who was the scientist Carl Linnaeus and what did he do? 2. How do we classify vertebrates? 3. How do we classify invertebrates we know? 4. How do we classify invertebrates we don't know? (Sponges, Jellyfish and Flatworms)	Pupils should be taught to: • 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 • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	Pupils should be taught to: 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 animals, including humans. 1. What is blood made of and why do we need it? 2. Why do our bodies need nutrients and	Pupils should be taught to: • 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 representing a simple circuit in a diagram. 1. What is electricity? How does it work? How do we build and represent a series circuit?	Pupils should be taught to: • 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 are adapted to suit their environment in different ways and that adaptation may lead to evolution

	5. How do we classify invertebrates we don't know? (Starfish and Sea urchins, Crustacea and Myriapoda) 6. Apply it: what animals can I classify? What animals and plants exist in my local environment?	1. How does light travel? 2. What colour is light made of? 3. Reflection - how does light help us to see objects? 4. Which surfaces make the best reflectors? 5. Why do we see objects as a particular colour? 6. What happens to the appearance of objects when placed in water?	how are they transported? 3. What is our circulatory system? 4. What is our heart like inside? How does it work? 5. Who influenced what we know about our circulatory system? 6. What can we do to keep healthy?	2. What are the components in a series circuit? Test it - How does the number of cells and voltage affect components in a circuit? 3. Diagnose it – what are the effects and consequences of changing circuit components and batteries?	1. How have living things changed over time? How do we know? 2. How has life evolved over time? 3. What is DNA and what does it do? Working scientifically 4. Are all offspring identical to their parents? 5. Darwin and Wallace – what evidence did they share to argue the case for evolution? 6. Survival of the fittest - how have animals adapted and evolved to suit their environment?
Previous Learning	Y1 Plants Y2 Plants Y3 Plants Y3 Living things and their habitats Year 4 Living things and their habitats Y5 Living thing and their habitats	Y1 Everyday materials Y2 Uses of everyday materials Y3 Light Y4 States of matter Y4 Sound Y4 Electricity Y5 Forces Y5 Earth in Space	Y1 Animals, including humans identify animals – mammal, reptile, bird, amphibian, fish Y2 Animals, including humans Reproduction and basic needs Y3 Animals, including humans Nutrition Structure of humans and animals Y4 Animals, including humans - Human digestion Y5 Animals, including humans Lifespans and life cycles, g	Y1 Everyday materials (chem) Y2 Uses of everyday materials (chem) Y3 Light Y4 States of matter Y4 Sound Y4 Electricity Y5 Forces Y5 Earth in Space	Y3 Plants Y4 Living things and their habitats Y5 Living things and their habitats Y6 Living things and their habitats

Substantive concept	Biology | The study of living things, including Pioneering scientists and Classification		Physics | Matter Forces and motion Sound, light and waves Electricity and magnetism | Earth in Space		Biology | The study of living things Structure and function of the circulatory system Health and exercise.		Physics | Matter Forces and motion Sound, light and waves Electricity and magnetism		Biology | The study of living things Change Evolution Adaption Environment	
Scientific Enquiry	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. Give reasons for classifying plants and animals based on specific characteristics.		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. Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them		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 animals, including humans.		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 representing a simple circuit in a diagram.		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 are adapted to suit their environment in different ways and that adaptation may lead to evolution	
Vocabulary	<u>Tier 2</u> Characteristic Interdependence Specific Categorise Primitive Hierarchy	<u>Tier 3</u> Fungus Arthropod Taxonomy Kingdom Phylum Genus	<u>Tier 2</u> Impurity Emit Absorb Constituent Filter Artificial	<u>Tier 3</u> Refraction Incidence Spectrum Prism Lux Piment	<u>Tier 2</u> Cell Chamber System Circulation Vessel Clot	<u>Tier 3</u> Plasma Platelet Artery Capillary Vein	<u>Tier 2</u> Component Consequence Systematic Represent Source Generate	<u>Tier 3</u> Proton Neutron Electron Terminal Series Voltage	<u>Tier 2</u> Characteristic Adaptation Acquire Theory Modify Generation	<u>Tier 3</u> Evolve Survival Species Clone

					Filter Expel Substance Function Regulate Transform	Ventricle Kidney Bladder Urine Excretion Toxin Nutrient				Inherit Fossil