St. Michael's Science Overview 2024

Science In The EYFS

Children will explore Science through Understanding of The World. Throughout our continuous provision for the children, they will have opportunities to become scientists through observing the natural world around them. They will explore and actively show curiosity by being encouraged to question and find answers to our Big Questions as well as their own interests.
Through encouraging curiosity with our big questions, we are able to expose children to ideas and key vocabulary that will support progression into year 1 and contribute to the children's readiness for the Key Stage 1 Science Programme of study.
Each Term our Big Questions will spark children's interest to question ands find answers. They will be able to record and share what they find out, communicating their ideas and suggestions.

To support our readiness for KS1, we will: -

- Use their senses to observe and look closely at the weather daily, discussing what we can see, feel and hear;
- Observe the seasonal changes throughout the year by going on seasonal walks and recording what we found out by taking pictures, drawing and discussing what we have noticed;
- Learn about different animals around the world, identifying and classifying them into groups by finding things that are similar and different;
- Explore different materials and use equipment to test them when building and making, identifying different properties and why we need to use different materials for different things;
- Grow different seeds and begin to understand how they grow, noticing changes and looking at different parts of plants and trees;
- Observe the life cycle of a butterfly;
- Use equipment to perform simple tests to encourage awe and wonder;
- Using their curiosity to explore their own bodies and senses;
- Learn about being healthy, including eating healthily and the importance of physical exercise;
- Develop a sense of curiosity and exploration through a range of resources such as sand and water, and start to ask questions.

Reception Overview

	Autumn		Spring		Summer	
Big Questions	What makes me Unique? What is a traditional tale?		How can I get there? What is my favourite animal and why?		What can I grow? Who can help me?	
Progression links in year 1	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Animals including humans – *ourselves* ***Seasonal weather***	*Everyday Materials* *Three Little Pigs – Traditional tales.* ***Seasonal weather***	Earth and space – Transport (air transport) ***Seasonal weather***	Living things and their habitats – *Animals* *Famous scientists (David Attenborough*	Plants – growth and change ***Seasonal weather*** Animals including humans – growth/ourselves	Inspirational scientists/ people - The NHS
Significant Individuals			David Attenborough			
Key Vocabulary in Reception	Scientist, science, observe, explore, investigate, identify, test, Head, shoulders, knees, toes, arms, legs, feet, eyes, nose, ears, mouth, hear, smell, taste, look, touch, material, recycle, wood, cardboard, plastic, glass, metal, rock, fabric, paper, shiny, hard, soft, rough, smooth, strong, weak, clear, waterproof, float, sink, melt, loud, quiet tree, trunk, branch, leaves, flowers, stem, petals, fruit, root, seeds, grow, sunlight, soil, plant, water, sun, autumn, spring, summer, winter, season, sun, moon, light, dark, temperature, sunny, cloudy, windy, wet, cold, hot, snow, frost, ice animal, habitat, caterpillar, butterfly, mini-beast, tadpole, froglet, frogspawn, egg, sea, ponds, farm, pet, zoo, wild, jungle, forest, desert, arctic, nocturnal, mammals, insects, birds, fish, carnivore, herbivore, prey, predator, natural, wildlife					

Y1		Autumn		Spring	Summer	
Working Scientifically		**During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • **asking simple questions and recognising that they can be answered in different ways** • **observing closely, using simple equipment** • **performing simple tests** • **identifying and classifying** • **using their observations and ideas to suggest answers to questions** • **gathering and recording data to help in answering questions**				
Topic		Animals including humans – All about me	Animals including humans – All about animals	Everyday Materials	Seasonal Changes	Plants
National Curriculum objectives		Pupils should be taught to: • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. •	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; • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets).	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, 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.	Pupils should be taught to: • observe changes across the 4 seasons; • observe and describe weather associated with the seasons and how day length varies.	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.
Whole unit	Expected outcomes	• To discover the basic parts of the human body • To learn about eyes and sight • To learn about ears and hearing investigations. • To explore the tongue and taste • To explore the sense of touch • To discover how your nose smells	• To discover animal families • To learn about differences between mammals and birds • To learn about the differences between amphibians, reptiles and fish	• To identify and name a variety of everyday materials • To distinguish between an object and the material it is made from • To describe the properties of everyday materials • To identify objects thar are natural and those that are manmade • To predict and identify if an object will float or sink • To explore which materials are best for different objects • To build a structure strong enough to withstand wind • To build a waterproof structure • To understand the properties of glass and its	• To understand there are four seasons • To understand the changes that take place in Autumn • To understand the changes that take place in winter • To understand the changes that take place in spring • To understand the changes that take	• To understand that seeds grow into plants • To identify the basic parts of a plant and a tree • To understand that difference plants can grow in the same environment • To know the difference between deciduous and evergreen trees

			• To discover the types of food living things eat • To explore the difference between wild animals and pets • To explain the characteristics of an animal	uses • To understand that materials are used to create a variety of furniture • To explore a variety of fabrics and understand their properties • To explain the uses of materials and why they are suitable	place in Summer • To investigate how you can measure rainfall	• To know that fruit and vegetables are varieties of plants • To record the growth of a plant
	Visits/trips/ workshops					School grounds
	Vocab	Head, body, skeleton, limb, joint, brain, eyelash, eye, sight, pupil, sound, ear, sign language, vibration, deafness, tongue, mouth, taste, flavour, sweet, touch, fingertips, skin, organ, brain, smell, odour, nose, nostril	Fish, amphibian, reptile, mammal, bird, feather, warm-blooded, cold-blooded, characteristic, backbone, hatchling, gills, scale, herbivore, carnivore, omnivore, predator, canines, pet, wild, shelter, veterinary, natural, similar, different, compare, climate	material, fabric, wood, plastic, metal, object, glass, property, brick, elastic, opaque, transparent, dull, stiff, natural, manmade, factory, rubber, polyester, predict, float, sink, submerge, buoyant, absorbent, sponge, waterproof, soak, non-absorbent, suitable, evaluate	Season, spring, summer, autumn, winter, hibernate, weather, harvest, sleet, compare, change, grow, chick, temperature, heatwave, rainfall, measuring, record, results, graph	Seed, plant, tree, soil, predict, stem, petal, leaf, root, flower, environment, weed, daisy, dandelion, wild, deciduous, evergreen, fruit, vegetable, growth, seedling, observe
key questions		What body parts can you name? What do the different body parts do? What body part used for each sense?	What is an animal? What is an animal family? How are some animals similar? How are some animals different?	What is a material? What does wood feel like? What does fabric feel like? What does plastic feel like? What does metal feel like?	What is a season? What are the four seasons?	What is a seed? How does a plant grow?
		What are eyes used for? What sense is related to the eyes?	What is a mammal? What is a bird? How are mammals and birds similar? How are mammals and birds different?	What is ___ made from? What is a property?	What happens in Autumn? What does hibernate mean? What is harvest? What is the weather like in autumn?	Where is the stem? Where is the petal? Where is the leaf? Where is the root? Where is the flower?

		What are ears used for? What sense is related to the ears? What is a vibration?	What is a fish? What is a reptile? What is an amphibian? How are they similar? How are they different?	What does opaque mean? What does transparent mean? What does dull mean? What does stiff mean?	What happens in winter? What is the weather like in winter?	What is a garden plant? What is a wildflower?
		What is the tongue used for? What sense is related to the tongue?	What does it mean if something is a living thing? Why do we need to eat? What can food give us? What do different animals eat? What is a herbivore? What is a carnivore? What is an omnivore?	What is manmade? What is natural? Where are manmade materials made?	What happens in spring? What is the weather like in spring?	What are the two types of trees? What is an evergreen tree? What is a deciduous tree? How can we identify the types of trees? What do deciduous leaves look like? How do deciduous leaves feel? What do evergreen leaves look like? How do evergreen leaves feel?
		How can we touch something? What body parts can be used for touch?	What is a wild animal? What is a pet?	What is a prediction? What does float mean? What does sink mean? What does buoyant mean? What does sink mean?	What happens in summer? What is the weather like in summer?	What is a vegetable? What is a fruit?
		What is a nose used for? What sense is related to the nose?	What is a characteristic? What are some characteristics of different types of animals?	What does absorbent mean? What does soak mean?	How can we measure rainfall?	What changes will you see over time?

Y2		Autumn 1		Spring 2		Summer 2	
Topic		Animals including humans – Growth	Animals Including Humans – Life Cycles	Living things and their habitats	Living things and their habitats – habitats from around the world	Everyday Materials	Plants
Working Scientifically		**During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • **asking simple questions and recognising that they can be answered in different ways** • **observing closely, using simple equipment** • **performing simple tests** • **identifying and classifying** • **using their observations and ideas to suggest answers to questions** • **gathering and recording data to help in answering questions**					
National Curriculum objectives		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) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	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) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	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 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 micro-habitats • 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	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 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 micro-habitats • 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	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 uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	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 temperature to grow and stay healthy
Whole unit	Expected outcomes	• To describe the needs of animals for survival	• To order the stages of a human life cycle	• To explore and compare the differences between	• To learn about habitats • To appreciate that	• To identify different materials and	• To know the difference between seeds and bulbs

		• To describe the needs of human for survival • To explore the importance of eating the right food • To describe what a healthy and balanced diet looks like • To investigate the impact of exercise on our bodies • To investigate the importance of hygiene	• To describe the stages of a human life cycle • To identify offspring and parent of an animal • To explore the life cycle of a chicken • To describe the life cycle of a butterfly • To explore the life cycle of a frog	things that are living, dead, and things that have never been alive • To identify and name a variety of plants and animals in a microhabitat • To design a suitable microhabitat where living things could survive • To find out what animals eat to survive in their habitats • To understand a food chain • To understand the journey food makes from the farm to the supermarket	environments are constantly changing • To explore the rainforest and its problems • To describe life in the ocean • To discover the Artic and Antarctic habitat • To create a model of a habitat	their uses • To understand how to select the right materials to build a bridge • To explore and test the stretchiness of materials • To understand that materials can change their shape by twisting, bending, squashing or stretching • To find out about Charles Macintosh and explore how materials are suitable for different purposes To create a model of a habitat • To discover which materials change shape when making a road with John McAdam	• To design an experiment to find out what plants need to grow • To describe what plants need to grow and stay healthy • To describe the life cycle of a plant • To observe and record the growth of plants over time • To understand that plants adapt to suit their environment
	Visits/trips/ workshops	Hertfordshire Zoo (summer term)	School grounds				Hertfordshire Zoo
	Vocab	Survival, shelter, nutrition, oxygen, essential, vital, non-essential, survive, grow, healthy, protein, carbohydrate, dairy, vitamins, calcium,	Life cycle, grow survive, independent, adult, foetus, womb, helpless, toddler, develop, offspring, inherit, gene, resemble, differences,	Senses, nutrition, reproduce, excrete, respire, habitat, microhabitat, fungi, survive, shelter, antennae, suitable, condition, colony, insect, producer, consumer,	Habitat, microhabitat, organism, environment, mate, rainforest, moisture, extinct, climate, endangered, biodiversity, deforestation, poaching, pollution, rainforest,	Material, property, suitable, object, brick, bridge, obstacle, structure, construction, stretchy, elastic, floppy, hinder, limit, bend, twist, squash,	Seeds, bulbs, growth, plant, compare, predict, investigate, control, experiment, method, photosynthesis, carbon dioxide, oxygen, glucose, energy,

		fat, balanced diet, fresh food, processed food, exercise, strength, flexibility, balance, coordination, hygiene, prevent, germs, bacteria, virus	reproduction, hatchling, chick, predict, transformation, larva, chrysalis, metamorphosis, amphibian, frogspawn, tadpole, froglet	herbivore, carnivore, omnivore, food chain, life cycle, nutrients, rot, caterpillar, automated, canned	plankton, ocean, ecosystem, coral reef, Antarctic, Arctic, caribou, narwhal, tundra, earthworm, desert, lizard, cactus, pond	stretch, force, mackintosh, fluorescent, safety, waterproof, John McAdam, bound, highway, road	pollination, life cycle, germination, reproduction, seedling, manure, crop, insulate, thrive, healthy, forest, desert, adapt, condition, survive
key questions		What does survival mean? How can animals survive? Why is nutrition important?	What is a life cycle? How do humans grow? How are we different from when we were babies? How are our parents different to us? How are our grandparents different to us?	What does it mean if something is living? What does it mean if something is dead?	What is a habitat? What is a microhabitat? Describe a suitable condition for an animal	What is a material? What is brick used for?	What is a seed? What is a bulb? What is the difference?
		What does survival mean? How can humans survive? Why is nutrition important?	What is a life cycle? How do humans grow? How are we different from when we were babies? How are our parents different to us? How are our grandparents different to us?	What is a habitat? What is a microhabitat? Describe a suitable condition for an animal	What is it like in the rainforest? What is it like in the desert? How are the climates similar? How are the climates different?	What are some properties of materials? What is a bridge like? What properties are needed for a bridge? Which materials would be best for a bridge?	What do plants need to grow? How can we make an experiment a fair test?
		Why is exercise important? Why should we eat a variety of foods? Why is protein important? Why are carbohydrates important? Why is dairy important? Why are vitamins important?	What is offspring? How can you identify the offspring of an animal? What is a gene? What does inherit mean?	What do animals eat? Why do animals eat different things? Where do animals get their food? What is a carnivore? What is an herbivore? What is an omnivore?	What are some problems that occur in the rainforest? Why is the rainforest important?	Can materials change? How can materials change? What happens if you stretch a material? What materials can be stretched?	What do plants need to grow? What is photosynthesis? Where do plants get energy from?
		What is a healthy diet? Why are fruits and vegetables important? Why should we eat a variety of foods? Why is protein important? Why are carbohydrates important? Why is dairy important? Why are vitamins important?	What is the life cycle of a chicken?	What is a food chain? What is a consumer?	What can you find in the ocean? What is an ecosystem?	Can materials change? How can materials change? What happens if you twist a material? What happens if you bend a material? What happens if you squash a material?	Describe the life cycle of a plant? What is pollination? What is germination? What is reproduction?

		Why is exercise important? How can exercise change our bodies? How could you improve strength? How could you improve coordination? How could you improve flexibility?	What is the life cycle of a butterfly?	Where does food come from? Is all food fresh?	What is it like in Antarctica?	Who was Charles Macintosh? What did he discover about materials?	What happens to plants as they grow? How can we observe a plants growth?
		What is hygiene? Why is good hygiene important? What is a germ? Why are germs bad? What is bacteria? What is a virus?	What is the life cycle of a frog?		How can you make a suitable habitat? What animal is your habitat for?	Who was John McAdam? What dd he discover about materials?	What is adaptation? How do plants adapt? How do plants grow in the forest? How do plants grow in the desert?

Y3		Autumn		Spring		Summer	
Topic		Animals Including Humans	Rocks	Light	Forces and Magnets	Plants	Scientific Enquiry
Working Scientifically		**During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • **asking relevant questions and using different types of scientific enquiries to answer them** • **setting up simple practical enquiries, comparative and fair tests** • **making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers** • **gathering, recording, classifying and presenting data in a variety of ways to help in answering questions** • **recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables** • **reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions** • **using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions** • **identifying differences, similarities or changes related to simple scientific ideas and processes** • **using straightforward scientific evidence to answer questions or to support their findings.**					
National Curriculum objectives		Pupils should be taught to: • identify that animal, 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	Pupils should be taught to: • compare and group together different kinds of rocks based on 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	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 change.	Pupils should be taught to: • 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,	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.	Pupils should be taught to: • conduct a scientific enquiry

					depending on which poles are facing.		
Whole unit	Expected outcomes	• To explore the 5 key groups • To learn about the nutrition found in food • To learn about the different types of skeleton • To learn about the human skeleton • To learn about animals and their skeletons • To explore the role of muscles	• To explore the formation and properties of igneous rocks • To explore the formation of sedimentary and metamorphic rocks • To understand weathering and the suitability of rocks for different purposes • To explore how water contributes to the weathering of rocks • To understand how fossils are formed • To explore different types of soil	• To identify the difference between light sources and non light sources • To explore the light that comes from the sun and how to stay safe • To explore materials which are reflective • To discover how shadows are formed • To investigate how shadows change throughout the day • To investigate how you can change the size of a shadow	• To explore contact and non contact forces • To compare how things move on different surfaces • To explore different types of magnets • To explore the properties of magnets and everyday objects that are magnetic • To understand that magnetic forces can act at a distance • To explore the uses of magnets	• To compare the effect of different factors on plant growth • To identify and describe the functions of different parts of a flowering plant and how they are used in photosynthesis • To investigate the way in which water is transported within plants • To explore the part that flowers play in the life cycle of flowering plants • To understand the pollination process and the ways in which seeds are dispersed • To compare the effect of different factors on plant growth	• How can a solar oven be made more effective: posing questions and writing predictions • How can a solar oven be made more effective: recording and presenting results • Cleaning coins: writing a method and carrying out a practical test • Cleaning coins: writing a conclusion • Making a cake: fair testing, controls and variables • Making a cake: scientific enquiry
	Visits/trips/ workshops						
	Vocab	Nutrition, carbohydrate, protein, vitamin, mineral, portion, energy, balanced diet, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic skeleton, humerus, ulna, radius,	Igneous rocks, intrusive igneous rocks, extrusive igneous rocks, crystals, magma, sedimentary rock, metamorphic rock, limestone, marble, sandstone, weathering, chemical weathering, physical weathering,	Light, source, natural, artificial, reflect, vitamin D, ultraviolet rays, sunburn, exposure, protection, fluorescent, high visibility, reflective, surface, materials, shadow, opaque, sundial, rays, blocks, position, cast, opposite,	Force, contact force, non contact force, air resistance, friction, motion, surface, resistance, texture, tilt, magnet, attract, repel, bar magnet, horseshoe magnet, magnetism, magnetic, magnetic field, iron, steel,	Nutrients, fertiliser, nursery, potassium, stunted, chlorophyl, stomata, xylem, photosynthesis, UV light, phloem, absorb, transpiration, anther, stigma, style, filament, reproduction, pollination, pollen,	Solar, renewable energy, scientific, investigation,

		tibia, fibular, skull, ribcage, spine, muscle, contract, hamstrings, biceps, diaphram	biological weathering, acid rain, texture, appearance, submerged, erosion, receding, fossil, extinct, sediment, embedded, amber, decompose, fragments, clay soil, chalky soil, sandy soil	direction, length, size, shape, closer, further	recycle, compass, magnetic needle, magnetic north, direction, orienteering	nectar, seed dispersal, pollinator, germination, vulnerable, anchor, sapling, formation	
key questions		What are the 5 food groups? What is nutrition? Why are carbohydrates important? Why is protein important? Why are vitamins and minerals important?	What is an igneous rock? What is the difference between an intrusive igneous rock and an extrusive igneous rock? How are crystals formed?	What is a light source? What is a non-light source?	What is a contact force? What is a non-contact force? What causes friction? What is air resistance?	What do plants need to grow? What might affect plant growth? How does nutrients affect plant growth?	How can a solar oven be made more effective?
		How can we know about the nutrition in food? Are all foods healthy? Are you surprised by what is in any food?	What is a sedimentary rock? What is a metamorphic rock? How are sedimentary rocks formed? How are metamorphic rocks formed?	What is the main source of light? What can happen if you spend too much time in the sun?	What is a surface? Does the surface affect how things move?	What is photosynthesis? What part of the plant is used for photosynthesis? What does the stomata do? What does the xylem do?	How can a solar oven be made more effective?
		What is a skeleton? What types of skeletons are there? What is the difference between an endoskeleton and an exoskeleton?	What happens to rocks during different types of weather? What is chemical weathering? What is physical weathering? What is biological weathering?	What does reflective mean? What does fluorescent mean? What happens if a light is reflected?	What is a magnet? What is the difference between a horseshoe and a bar magnet? What does attract mean? What does repel mean?	How is water transported in plants? What parts of the plant transport water?	How can we clean a coin?
		What type of skeleton do humans have? Can you name some bones in the human skeleton?	What happens to rocks if submerged in water? What is erosion?	What is a shadow? How is a shadow formed? What happens if an object blocks the light? Will a shadow appear if an object is not opaque?	What are some properties of magnets? What material are magnets?	What is the role of the anther? What is the role of the stigma? What is the role of the style? What is the role of the filament? How do plants reproduce?	How can we clean a coin?
		What type of skeletons do animals have? Do all animals have the same skeletons?	What is a fossil? How are fossils formed?	How do shadows change throughout the day? Describe the length of a shadow.	Do you need to be close for a magnet to attract? Are all magnets strong?	What is pollination? How are seeds dispersed?	How can you make a cake during a fair test?
		What is a muscle? What is the role of a muscle? Can you name some muscles in the body?	What types of soil are there? What is difference between clay, chalky and sandy soil?	How can you change the shape of a shadow?	Have you ever used a magnet? When are magnets used?	What do plants need to grow? What might affect plant growth? How does nutrients affect plant growth?	How can you make a cake during a fair test?

Y4		Autumn		Spring		Summer	
Topic		Animals Including Humans	Electricity **(Cross-curricular link – D&T light up Christmas cards).**	Living things and their habitats **(Cross-curricular link – Geography Rainforests).**	Living things and their habitats - Conservation	States of Matter	Sound
Working Scientifically		**During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • **asking relevant questions and using different types of scientific enquiries to answer them** • **setting up simple practical enquiries, comparative and fair tests** • **making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers** • **gathering, recording, classifying and presenting data in a variety of ways to help in answering questions** • **recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables** • **reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions** • **using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions** • **identifying differences, similarities or changes related to simple scientific ideas and processes** • **using straightforward scientific evidence to answer questions or to support their findings.**				

National Curriculum objectives		Pupils should be taught to: • describe the simple functions of the basic parts of the digestive system in humans describe the functions of the main organs in the digestive system • identify the different types of teeth in humans and their simple functions to investigate the effects of different liquids on teeth • construct and interpret a variety of food chains, identifying producers, predators and prey	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 a lamp will light in a simple series circuit, based on whether 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 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: • 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.	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.	Pupils should be taught to: • compare and group materials together, according to whether they are solids, liquids or gases to explore how particles behave in solids, liquids and 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) to explore freezing and boiling points • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	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

Whole unit	Expected outcomes	• identify the organs in the digestive system • describe the functions of the main organs in the digestive system • to identify the types of human teeth and their functions • to investigate the effects of different liquids on teeth • to understand food chains • to explore food webs	• to explore electrical appliances and electrical safety • to learn about electrical components in a series circuit • to investigate electrical circuits • to explore conductors and insulators • to learn about electrical switches • to investigate how electrical components can change within a circuit.	• explore different habitats • to research a habitat • to explore how animals can be classified • to create a classification key • to learn about adaptations and classification within species • to explore and classify pond plants.	• describe the ecosystems and how they are affected by changes in the seasons • to understand the human impact on the environment through deforestation • to explore air pollution • to understand water pollution • to explore methods that can be used to conserve water • to understand that humans can have a positive impact on nature	• to compare and group the 3 states of matter • to explore how particles behave in solids, liquids and gases • to investigate melting points • to explore freezing and boiling points • to explore evaporation and condensation • to understand the water cycle	• identify how sounds are made • to explore how vibrations from sounds travel through a medium to the ear • to explore sound insulation • to explore volume • to explore pitch to explore sounds from near and far
	Visits/trips/ workshops						
	Vocab	**Digestive system, oesophagus, stomach, small intestine, large intestine, saliva, peristalsis, absorb, liver, gall bladder, incisors, canines, molars, jaw, gum, enamel, plaque, tooth decay, cavity, fluoride, ecosystem, producer, consumer, prey, predator, food web, tundra, interdependence, threatened**	Electricity, batteries, mains electricity, appliance, socket, circuit, series circuit, component, cell, voltage, current, power, battery, wire, bulb, conductor, insulator, metal, copper, rubber, switch, current, control, incomplete circuit, complete circuit, non-renewable energy, renewable energy, wind turbines, solar panels, hydropower	Habitat, microhabitat, conditions, adapted, camouflage, coastal, grassland, environment, climate, exposure, classify, characteristics, vertebrate, invertebrate, species, identify, criteria, classification keys, organism, adapted, region, features, colouring, blubber, ecosystem, oxygenised, flowering plant, non-flowering plant, pond dipping	Ecosystem, northern hemisphere, southern hemisphere, migrate, monsoon, rainforest, deforestation, drought, biodiversity, recycling, fossil fuels, pollution, greenhouse gases, emissions, climate change, chemicals, sewage, contaminate, pesticides, water treatment, conserve, freshwater, pure, endangered, marine sanctuaries, protect, conservation areas	Matter, solid, liquid, gas, volume, particle, bond, arranged, cooled, heated, melting, melting point, temperature, thermometer, freezing, reverse, boiling, sublimation, deposition, evaporation, condensation, water vapour, process, water cycle, precipitation, surface runoff, transpiration, groundwater	Vibration, medium, waves, eardrum, signals, source, energy, particles, echo, vacuum, materials, reflect, absorb, insulate, defenders, volume, decibels, decibel metre, amplitude, power, pitch, high pitch, low pitch, instruments, orchestra, travel, sound source, fade

key questions		What organs are in the digestive system? What is the role of the stomach? What is the role of the small and large intestine?	What kind of appliances use electricity? How can we be safe when using electricity?	What is a habitat? Are there different types of habitat? What is a microhabitat?	What is an ecosystem? How do the seasons affect the ecosystems? What does migrate mean? What animals migrate?	What are the three states of matter? How are they different?	How are sounds made? What is a vibration?
		What organs are in the digestive system? What is the role of the stomach? What is the role of the small and large intestine? What is the function of the liver? What is the function of the pancreas?	What is a circuit? What might you find in a circuit?	What would you like to find out about a habitat? What is a grassland habitat like? What is a coastal habitat like?	What is deforestation? What effect does deforestation have?	What is a particle? What are the particles like in gases? What are the particles like in liquids? What are the particles like in solids?	How do sounds travel? How do particles affect sound?
		What types of teeth do humans have? What are the differences between the three types of teeth?	How can you turn on a light in a circuit?	What does classify mean? How can animals be classified?	What is pollution? What causes air pollution? What is an emission?	What happens if something melts? How can you make something melt? What happens to the particles if something melts?	How do sounds travel? How do particles affect sound? What is sound insulation?
		What is the effect of different liquids on teeth? What causes tooth decay? What is enamel? What does fluoride do?	What is a conductor? What is an insulator? What would be a good material for a conductor? What would be a good material for a insulator?	What does classify mean? How can animals be classified? What is a classification key?	What types of pollution are there? What causes water pollution?	What happens if something freezes? How can you make something freeze? What happens to the particles if something freezes?	How can volume be changed? How is volume measured?
		What is a food chain? Who is at the top of a food chain? Who is at the bottom of the food chain?	What happens if a switch is open? What happens if a switch is closed? What is an incomplete circuit? What is a complete circuit?	What does adaptation mean? How have animals adapted to their habitats? Why do animals need to adapt?	What does conserve mean? How could we conserve water?	What is evaporation? What is condensation?	What is pitch? What effects pitch?
		What is a food web? What is the difference between a food web and a food chain?	How could you change a circuit? What would happen if there was not a battery in the circuit? What would happen if you used two bulbs?	What animals can be found in a pond? How can those animals be classified?	Do you think humans have an impact on nature? What positive impact do humans have on nature?	Describe the water cycle	How do sounds travel? How do particles affect sound? What are sounds like that are near? What are sounds like that are far?

Y5		Autumn		Spring		Summer	
Topic		Properties of Materials	Changes of Materials	Earth and Space	Forces DT: making models	Living things and their habitats – Life Cycles	Animals Including Humans
Working Scientifically		**During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • **planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary** • **taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate** • **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs** • **using test results to make predictions to set up further comparative and fair tests** • **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations** • **identifying scientific evidence that has been used to support or refute ideas or arguments**				

National Curriculum objectives		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 • 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	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 • 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	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, 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	Pupils should be taught to: • 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 have a greater effect	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	Pupils should be taught to: • describe the changes as humans develop to old age.

		bicarbonate of soda	usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda				
Whole unit	Expected outcomes	• To explore properties of materials • To explore thermal conductors and thermal insulators • To explore the hardness of materials • To discover materials that become soluble in the water • To investigate the solubility of materials • Explore how mixtures could be separated by filtering, sieving, evaporating or magnets •	• To use evaporation to recover the solute from a solution • To show with evidence how different places on earth experience night and day at different times • To recognise and describe reversible changes • To observe chemical reactions and describe how we know new materials are made • To investigate rusting reactions • To investigate burning reactions • To investigate chemical reactions – acids and bicarbonate of soda	• To explore the solar system and its planets • To understand the heliocentric model of the solar system • To explore the Earth's movement in space • To explain the Earth's rotation and night and day • To explain the movement of the moon • Design a planet using knowledge gained	• To explore the gravity and the life and work of Isaac Newton • To examine the connection between air resistance and parachutes • To explore factors which affect an object's ability to resist water • To investigate the effects of friction on different surfaces • To investigate mechanisms – levers and pulleys • To investigate mechanisms - gears •	• To understand the life process of a plant • To understand the life cycles of mammals • To compare the life cycle of insects and amphibians • To understand the life cycle of birds and reptiles • To know about the life and work of Jane Goodall and David Attenborough • To research and present the life cycle of a creature •	• To identify the key stages of a mammal's life cycle • To explore the gestation periods of mammals • To learn about foetal development • To learn about the hand span of different aged children • To learn about the changes experienced during puberty To describe the changes humans may experience during adulthood and old age.

	Vocab	Conductive, magnetic, durable, transparent, versatile, thermal, molecules, degrees Celsius, insulator, hardness, force, iron, steel, stone, dissolve, solute, insoluble, soluble, solvent, substance, saturation, mixture, filtering, sieving, evaporation	Pure substance, solute, solvent, solution, evaporate, reversible, mixture, physical change, melting, irreversible, chemical change, compare, effervescence, product, fair test, variable, control variable, corrosion, rusting, combustion, fuel, oxygen, extinguish, smother, reaction, predict, acid, bicarbonate of soda, carbon dixoide	Terrestrial planet, gas giant planets, solar system, spherical, orbit, astronomy, heliocentric, geocentric, dwarf planet, axis, poles, season, hemisphere, sundial, time zone, gnomon, shadow, moon phase, waxing, waning, eclipse, rocky planet, has planet, moon	Sir Issac Newton, gravity, astronomy, weight, mass, Galileo Galilei, air resistance, opposing, streamlined, parachute, water resistance, upthrust, buoyant, sink, friction, lubricant, newton meter, newton, lever, load, pivot, fulcrum, pulley, mechanism, gear, rack and pinion, bevel gear	Reproduction, asexual, fertilisation, tuber, genes, pouch, mammary glands, placental mammal, monotreme mammal, marsupial, metamorphosis, caterpillar, amphibian, larva, pupa, egg, fledgling, egg tooth, hatch, embryo, naturalist, primatologist, endangered, natural sciences, living organism, reproduction, life cycle, vertebrate, warm-blooded	Foetus, dependent, adolescent, puberty, reproduce, gestation, pregnant, duration, extreme, breeding, womb, umbilical cord, embryo, trimester, midwife, growth spurt, childhood, motor skills, milk teeth, constant, adolescence, hormones, mood swing, develop, lifestyle, keratin, elasticity, neurodivergent
key questions		What is a material? Can you name some materials? How can you distinguish between materials?	What is evaporation? What is a solute? What is a solution? How can we recover a solute from a solution?	What is in our solar system?	Who was Sir Issac Newton? What is gravity?	Describe the life cycle of a plant	Describe the life cycle of a mammal
		What is a conductor? What is a thermal conductor? What is an insulator? What is a thermal insulator?	What is a reversible change? Are all changes reversible?	What is the heliocentric model of the solar system?	What is air resistance? Why do parachutes need air resistance?	Describe the life cycle of a mammal	What is the gestation period?
		How can we test the hardness of a material?	What is a reaction? What is a chemical reaction? How do we know if a reaction has taken place?	What happens to Earth in space? Why does this happen?	What is water resistance? What affects water resistance?	Describe the life cycle of an insect. Describe the life cycle of an amphibian. How are they different? How are they similar?	What is a foetus? What happens in foetal development?
		What does soluble mean? What happens if we mix a material with water?	What happens during rusting?	What happens to the Earth's rotation at night? What happens to the Earth's rotation in the day?	What is friction? How can we test friction on different surfaces?	Describe the life cycle of a reptile. Describe the life cycle of a bird. How are they different? How are they similar?	What is hand span? Why do we have different hand spans?
		How can we test if a material is soluble?	What happens during burning?	What happens to the movement of the moon? How does the moon's movement effect Earth?	What is a mechanism? What do levers and pulleys do?	Who is Jane Goodall and what did she discover? Who is David Attenborough and what did he discover?	What is puberty? What happens to males during puberty? What happens to females during puberty?

		How can we separate materials? What is the difference between sieving and filtering?	What happens during chemical reactions?	What will your planet be like?	What is a mechanism? What do gears do?	What life cycle do you want to find out more about? Are there any life cycles you don't know about?	What changes happen to humans between adulthood and old age?

Y6		Autumn		Spring		Summer	
Topic		Animals including humans	Electricity (Cross-curricular link with D&T – Electronic quiz game and Moving vehicle)	Light (Cross-curricular link with Maths – Measurement and graphs)	Living things and their habitats	Evolution and Inheritance	Looking after the environment
Working Scientifically		**During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • **planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary** • **taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate** • **recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs** • **using test results to make predictions to set up further comparative and fair tests** • **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations** • **identifying scientific evidence that has been used to support or refute ideas or arguments**				
National Curriculum objectives		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 body's function • describe the ways in which nutrients and water are transported within animals, including humans.	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.	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: • 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.	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	

Whole unit	Expected outcomes	• To understand the function of the heart and its role in the circulatory system • To identify and compare blood vessels • To explore blood • To learn how the body transports water and nutrients • To investigate what affects your heart rate • To learn about the impact of drugs and alcohol on the body .	• To describe the parts of an electric circuit • To explore voltage and its effect on an electrical circuit • To apply knowledge to identify and correct problems in a circuit • To investigate what affects the output of a circuit • To build a set of traffic lights • To apply knowledge of conductors and insulators	• To explore how light travels • To explore reflection • To explore reflection and explain how it can be used to help us see • To investigate how shadows can change • To investigate how we can show why shadows have the same shape as the objects that cast them • To investigate how we see objects	• To classify living organisms • To understand the kingdoms of life • To classify living things using the Linnaean system • To identify the characteristics of different types of microorganisms • To investigate asexual reproduction through spore dispersal • To classify and describe a living organism	• To understand how offspring vary and are not identical to their parents • To learn about animal adaptations • To learn about plant adaptations • To explore what we can learn from fossils • To explore the theory of evolution • To explore human evolution	• To learn about climate change • To explore ways to reduce how much rubbish is sent to landfill • To explore ways to reduce energy consumption • To explore what happens when fuels are burnt • To explore the outcomes of COP26 • To compare data associated with the weather
	Vocab	Circulatory system, atrium, ventricle, vessel, valves, artery, vein, capillary, microscope, blood, plasma, platelet, white blood cell, red blood cell, absorb, diffusion, osmosis, concentration, nutrients, diet, exercise, heart rate, BPM, pulse, drug, painkiller, stimulant, depressant, hallucinogens	Symbol, circuit, circuit diagram, battery, wires, electricity, current, voltage, voltmeter, brightness, blown, resistor, variable resistor, LED, dimmer switch, output, variable, fair test, control test, systematically, synchronised, signal, sensor, closed electric circuit, conductor, insulator	Light, eye, light source, symbol, scientific diagram, reflected, prediction, fair test, variable, table, periscope, angle, mirror, line of sight, utilise, shadow, block, opaque, transparent, translucent, sunshade, rotate, direction, optical, phenomena, disperse, spectrum, refraction	Classify, microorganism, fern, living organism, conifer, kingdom, mrs gren, cell, multicellular, unicellular, Carl Linnaeus, classification, species, domain, bacteria, fungi, mycelium, ecosystem, habitat, reproduction	Offspring, characteristic, inherit, variation, environmental, adaptation, habitat, climate, nutrition, epiphytes, toxic, predators, pollinate, fossil, Mary Anning, palaeontologist, ichthyosaurus, Jurassic coast, Charles Darwin, evolved, extinct, natural selection, theory, ancestor, tools, primate, homo sapien, neanderthal	Weather, climate, prevent, global warming, climate change, recycle, landfill, rubbish, biodegrade, council, net zero, renewable, non-renewable, greenhouse gages, emissions, industrial revolution, fossil fuel, coal, combustion, fuel, COP, sustainability, conference, pledge, subsidy, species, sensitive, natural disaster, habitat, vulnerbale

key questions		What is the function of the heart? What is its role in the circulatory system?	What parts make up an electric circuit? What is the function of the battery? What is the function of the wires?	How does light travel?	What is a living organism? What does it mean to classify?	Why are we different to our parents? What is a characteristic? What does inherit mean? What is variation? What causes variations?	What is climate change? What is global warming?
		What is the function of a blood vessel? What is the function of a capillary? What is the function of a vein? What is the function of an artery?	What effect does voltage have on a circuit?	How could we explore reflection? How could we test reflection?	What is a kingdom? What does the acronym 'mrs gren' stand for?	How do animals adapt? Why do animals need to adapt?	How can we reduce the amount of rubbish going to landfill? What are the benefits of recycling?
		What is the function of plasma? What are the types of blood cells found in the body?	What would cause a problem in a circuit? How would you know if a circuit was not operating properly? How do you fix a circuit?	How do we see a reflection? What is a periscope?	What is the Linnaean system? How does the system affect how we classify living organisms?	How do plants adapt? Why do plants need to adapt?	How can we reduce energy consumption? Why does energy consumption need to be reduced?
		How is water transported around the body? How are nutrients transported around the body? Describe the process of osmosis.	What affects the output of a circuit? How can you ensure you change the output while conducting a fair test?	What is a shadow? How do they change? What does opaque mean? What happens if a light source is blocked?	What is a characteristic? What are microorganisms?	What is a fossil fuel? Who was Mary Anning and what did she discover? What is a palaeontologist?	What happens when fuels are burnt? Describe the process of combustion.
		How does diet effect heart rate? How does exercise effect heart rate?	How do traffic lights work? What is the role of a sensor?	Why do shadows create different shapes? Does the shape of a shadow ever change?	What is spore dispersal? What is asexual reproduction?	Who was Charles Darwin and what did he discover? What is evolution? What is the process of natural selection?	What is COP?
		What impact does taking drugs have on the body? What impact does alcohol consumption have on the body?	What is a conductor? What is an insulator?	How do we see objects? What affects what we see?	What is a living organism? Does habitat impact how we classify?	How have humans evolved? Why have humans evolved?	What is a natural disaster? What causes natural disasters?