Science Curriculum 2023/24 – Years 3 & 4

	Autumn 1	Autumn 2
Topic	***Living Things in Their Habitats*** Children will learn how to group living things in a variety of ways, and will talk about the ways in which they have grouped them. Children will learn what a classification key is and how to use it to help them identify and name living things in their local and wider environment. Children will look at some of the ways in which environments can change and the positive and negative effects it is has on the living things. They will learn about the work of Charles Waterton, that he had an interest in wildlife and a passion to protect it.	***States of Matter*** Children will learn about all matter being made up of particles and that these are arranged in a certain way that define a substance as a solid, liquid of gas. They will learn about and investigate that water, and other substances, can change states of matter at different temperatures. Children will learn about the processes of evaporation and condensation and relate this understanding to changes of state within the water cycle.
Knowledge	***Knowledge*** • Know that animals can be grouped in a variety of ways for example: fish, amphibians, reptiles, birds, and mammals; and snails and slugs, worms, spiders, and insects. • Know that plants can be grouped into categories such as flowering plants (including grasses) and non-flowering plants (for example ferns and mosses). • Know that classification keys can help us to group, identify and name living things. • Know that environments can change and that this can sometimes pose dangers to living things. Pupils should explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation. • Know that Charles Waterton created the world's first nature reserve at Waterton Hall, Wakefield, making him one of the world's first environmentalists. He also invented the bird nesting box. David Attenborough has described him as "one of the first people anywhere to recognise, not only that the natural world was of great importance, but that it needed protection as humanity made more and more demands on it". ***Skills*** • Know how to raise and answer questions to help identify plants and animals in their habitat. • Know how to use classification keys to help group, identify and name a variety of living things in their local and wider environment.	***Knowledge*** • Know simple descriptions of each state of matter, for example: solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container. • Know that materials can be grouped whether they are solids, liquids or gases, depending on the arrangement of the particles it is made up of. • Know what is happening to the particles as a substance changes state, for example: as liquids are heated, the particles gain more energy and move more, taking up more space – expanding. • Know that water changes state when it is heated or cooled. • Know that some other substances, like chocolate, butter, iron and oxygen, change state at different temperatures. • Know the part played by evaporation and condensation in the water cycle. • Know that the rate of evaporation is affected by temperature. ***Skills*** • Know how to compare and group materials together, according to whether they are solids, liquids or gases, using sorting tables. • Know how to set up simple enquiries, comparative and fair tests. • Know how to research and take accurate measurements, using thermometers, of the temperature at which materials change state in degrees Celsius (°C). • Know how to record evaporation over a period of time using simple scientific language, labelled diagrams and tables (they may begin to look at line graphs how they represent a value over time).
Vocab	classification key, habitat, vertebrate, invertebrate, flowering, non-flowering, population, deforestation, pollution, deforestation, nature reserve, conservation	water vapour, condensation, precipitation, evaporation, substance matter, solid, liquid, gas, particles, boiling point, melting point

Science Curriculum 2023/24 – Years 3 & 4

	Spring 1	Spring 2
Topic	***Electricity*** Children will learn about common electrical appliances and that there are safety precautions when working with electricity. Children will learn how to construct simple series circuits. They will become familiar with the names of the basic parts and how to draw them. They will be able to identify whether or not a bulb will light in a simple series circuit, by being able to identify a complete circuit**.**	***Electricity*** Learning will continue from Spring 1. The children will learn that Joseph Swan and Thomas Edison were known for the invention of the light bulb. They will learn about switches and that a switch needs to be closed in order for a bulb to light. Children will relate this learning about switches to the use of everyday electrical devices, i.e. a light switch, a house alarm system. They will investigate and explore which materials are conductors and insulators, and they will observe patterns, whether or not some materials are better than others.
Knowledge	***Knowledge*** • Know of common appliances that run on electricity. • Know that electricity can be dangerous and there are precautions we need to take in order to work safely with electricity. • Know that a battery or cell stores electricity. • Know common appliances that run on electricity, and that they either plug in to the mains or have a battery. • Know the names of the basic parts of a simple series circuits, including cells, wires, bulbs, switches and buzzers. • Know that a simple series circuit needs to have a complete loop and a battery in order for a bulb to light. ***Skills*** • Know how to construct a simple series circuit, using the electricity kits, trying different components including: bulbs, buzzers and motors. • Know how to draw the circuit as a pictorial representation, but not using conventional circuit symbols at this stage; these will be introduced in year 5/6.	***Knowledge*** • Know that Joseph Swan, alongside Thomas Edison, is the person most credited with the invention of the light bulb. • Know that a switch open and closes a circuit and that this determines whether or not a bulb will light in a simple series circuit. • Know that circuits are used in everyday electrical devices. • Know that some common materials are conductors and insulators. ***Skills*** • Know how to construct a simple series circuit, trying different components, including bulbs, buzzers, motors and including switches, and use their circuits to create simple devices. • Know how to draw the circuit as a pictorial representation, including switches. • Know how to observe patterns, that metals tend to be good conductors of electricity. • Know how to record and report findings using simple scientific language, tables and labelled diagrams.
Vocab	simple series circuit, wire, battery, cell, bulb, buzzer, motor, mains, appliance *(Note: cells and batteries are used interchangeably)*	circuit, wire, battery, cell, bulb, buzzer, motor, switch, mains, appliance, conductor, insulator *(Note: cells and batteries are used interchangeably)*

Science Curriculum 2023/24 – Years 3 & 4

	Summer 1	Summer 2
Topic	***Animals Including Humans*** Children will revisit their learning about carnivores, herbivores and omnivores and learn about predator-prey relationships, using examples from British wildlife. They will explore food chains and food webs, emphasising the change in numbers as energy is lost at each stage. Children will look at the different types of human teeth, considering their functions. They will understand the need to look after them, and think about the diet choices that we can make to ensure that our teeth function healthily for as long as possible. In this unit, children will learn about the digestive system, the functions of each part and the importance of having a balanced diet to keep each part functioning fully.	**Sound** In this unit, children will explore making sounds in lots of different ways, and they will explore sound using a range of musical insturments. Children will learn how we hear sounds, due to vibrations, and that sound waves travel through a medium, such as water or air, before reaching our ear. They will explore how the volume and pitch of sounds can be changed, by the features of an object or by the distance of the sound source. They will learn about the work of famous and modern day scientists, including Alexander Bell and Caoimhe Doyle.
Knowledge	***Knowledge*** • Know that the mouth, tongue, teeth, oesophagus, stomach, small and large intestine and the anus are the main body parts associated with the digestive system. • Know the simple functions of the basic parts of the digestive system in humans. • Know that a balanced diet will help our digestive system to function (e.g. calcium for teeth; fibre for digestion; water for the large intestine). • Know about the different types of teeth in humans (incisors, canines, pre-molars and molars) and their simple functions. • Know that a food chain includes producers, predators and prey. • Know that the scientist, Washington Sheffield, invented the first modern toothpaste in a tube and how this had impacted on us today. ***Skills*** • Know how to draw and discuss their ideas about the parts of the digestive system and compare them with models and images to help them to understand their special functions. • Know how to construct and interpret a variety of food chains, identifying the producers, predators and prey. • Know how to set up simple practical enquiries, including comparative and fair tests to investigate what damages teeth. • Know how to report back on findings, including oral and written explanations, displays or presentations	***Knowledge*** • Know that sounds are made when something is vibrating • Know that vibrations from sounds travel through a medium to the ear • Know that the features of an object alter the pitch of a sound • Know that sounds get fainter as the distance from the sound source increases • Know that Alexander Bell invented the telephone and understand the importance of his invention • Know that scientists today have jobs working with sound, in particular learning about Caoimhe Doyle, who creates sounds effects for films. ***Skills*** • Know how to set up simple comparative tests to find out how the pitch and volume can be changed in a variety of ways • Know how to identify differences, similarities or changes related to the way sound is made through vibration in a range of different musical instruments • Know how to find patterns in the sounds that are made by different objects such as saucepan lids of different sizes of elastic bands of different thicknesses.
Vocab	carnivore, herbivore, omnivore, producer, predator, prey, food chain, digest, mouth, teeth, tongue, saliva, oesophagus, stomach, acid, small and large intestine, anus, calcium, fibre, water, teeth, incisors, canines, pre-molars and molars, cut, tear, grind, crush	sound wave, vibration, instrument, volume, pitch, distance

Science Curriculum 2024/25 – Years 3 & 4

	Autumn 1	Autumn 2
Topic	***Rocks and Soils***	***Animals including Humans***
Knowledg	***Knowledge*** ***Skills***	***Knowledge*** ***Skills*** •
Vocab		

Science Curriculum 2024/25 – Years 3 & 4

	Spring 1	Spring 2
Topic	**Forces & Magnets**	**Forces & Magnets**
Knowledg	***Knowledge*** ***Skills***	***Knowledge*** ***Skills*** •
Vocab		

Science Curriculum 2024/25 – Years 1 & 2

	Summer 1	Summer 2
Topic	**Light**	**Plants**
Knowledg	***Knowledge*** ***Skills***	***Knowledge*** ***Skills*** •
Vocab		

Science Curriculum 2024/25 – Years 3 & 4

	Spring 1 & 2
Topic	***Forces & Magnets*** Children will learn about forces and magnets and work scientifically to compare, raise questions, carry out tests, gather and record data. They will also begin to consider how magnets and forces can be useful in everyday life and they will suggest creative uses for forces and magnets.
Knowledge	***Knowledge*** • Know that some forces need contact between 2 objects, but magnetic forces can act at a distance. • Know that magnets attract or repel each other and attract some materials and not others. • Know some magnetic materials. • Know that magnets have 2 poles. • Know that magnetic forces can act without direct contact. • Know that friction acts between 2 surfaces. • Know how magnets can be useful in everyday items and suggest creative uses for different magnets. ***Skills*** • Know how to compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet • Know how to predict whether 2 magnets will attract or repel each other, depending on which poles are facing • Know how to describe forces as push or pulls. • Know how to compare how things move on different surfaces. • Know how to raise questions and carrying out tests to find out how far things move on different surfaces. • Know how to gather and record data to find answers to questions. • Know how to explore the strengths of different magnets and find a fair way to compare them.
Vocab	force, contact, magnet, magnetic, push, pull, friction, attract, repel, surface, friction, fair test, record, compare, poles

Science Curriculum 2024/25 – Years 3 & 4

	Summer 1	Summer 2
Topic	***Light*** Children will learn about light and work scientifically to compare, raise questions, carry out tests, gather and record data. They will also begin to consider how light is useful in everyday life and how it can be manipulated for a purpose. They will also consider safety with regards to looking at bright lights.	***Plants*** Children will learn about plants and work scientifically to compare, raise questions, carry out tests, gather and record data. They will be introduced to the relationship between structure and function: the idea that every part has a job to do. They will explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction.
Knowledge	***Knowledge*** • Know we need light in order to see things • Know that dark is the absence of light • Know that light is reflected from surfaces • Know that light from the sun can be dangerous and that there are ways to protect their eyes • Know not to look directly into the sun or other bright lights • Know that shadows are formed when the light from a light source is blocked by an opaque object • Know patterns in the way that the size of shadows change ***Skills*** • Know how to explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. • Know how to look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.	***Knowledge*** • Know the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers ***Skills*** • Know how to 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 • Know how to investigate the way in which water is transported within plants • Know how to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal
Vocab	light, dark, shadow, reflection, surface, source, opaque, transparent, translucent, concave, convex, refraction	air, light, water, soil, grow, transported, roots, stem, trunk, leaves, flowers, nutrients, life cycle, pollination, formation, dispersal