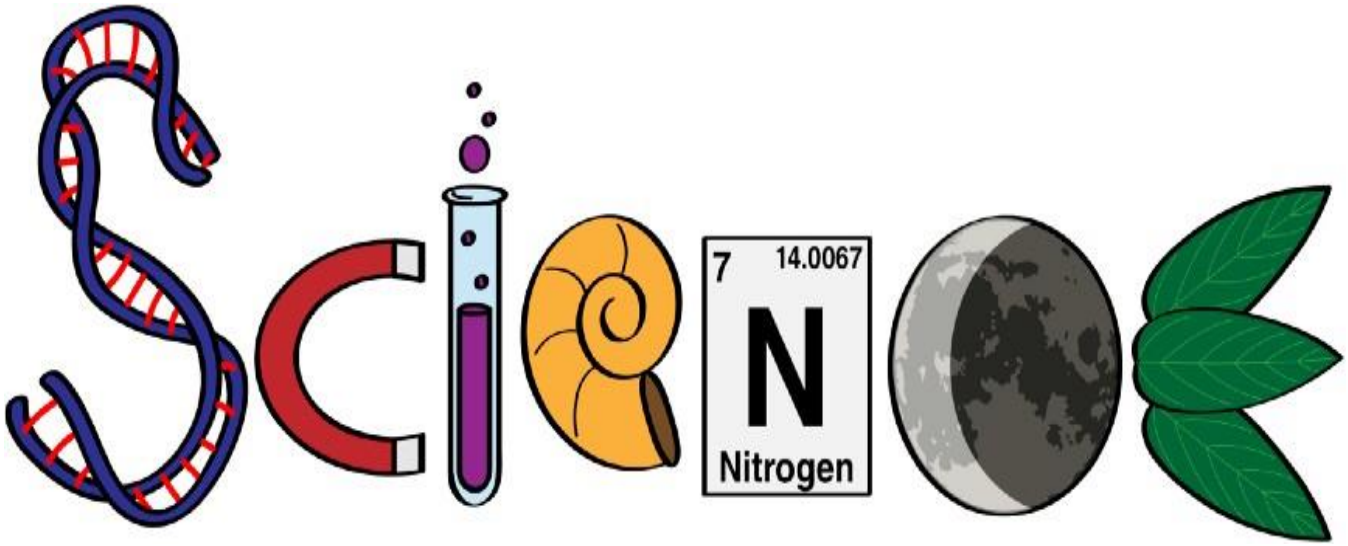


Year Group Overview

National Curriculum

Purpose of study

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Aims

The National Curriculum for Science aims to ensure that all pupils:

- Develop scientific knowledge and conceptual understanding through the specific disciplines of Biology, Chemistry and Physics.
- Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
- Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Early Years Foundation Stage

The Foundation Stage has developed carefully constructed teaching and learning opportunities, which are underpinned by The Early Years Framework (2021) and the Educational Programme.

Educational Programme: Understanding the World

Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world.

As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

Children in the EYFS learn about themselves, nature, talk about seasonal changes, observe changes over time and group and classify.

As well as topic work and the discrete teaching of language, knowledge and skills, children in EYFS are given the opportunity to continually practice and embed their learning through enhancements in the areas of provision set up in the indoor and outdoor learning environments. A language rich, knowledge and skill-based curriculum prepares children for their journey into Year 1.

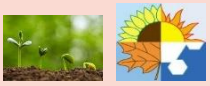
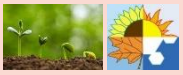
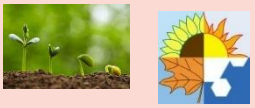
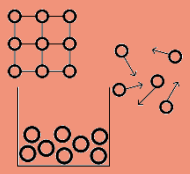
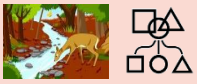
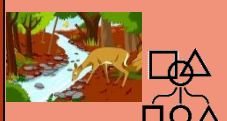
At the end of the Early Years Foundation Stage, children at the expected level of development will:

ELG: The Natural World

Children at the expected level of development will:

- Explore the natural world around them, making observations and drawing pictures of animals and plants;
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Science Overview

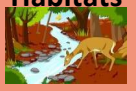
	Autumn Term		Spring Term		Summer Term	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Marvellous Me (Cycle B) Seasonal Changes 	Seasonal Changes 	Seasonal Changes 	Seasonal Changes 	Nature Detectives (Cycle A) Seasonal Changes 	Let's Grow Outside (Cycle B) Seasonal Changes 
Year 1	Animals, including Humans Seasonal Changes 		Everyday Material Seasonal Changes 		Plants Seasonal Changes 	
Year 2	Animals, including Humans 		Everyday Materials 		Plants 	Living things and their Habitats 
Year 3	Light 	Animals, including Humans 	Rocks and Soils 		Plants 	Forces and Magnets 
Year 4	Animals, including Humans 	States of Matter 	Electricity 		Sound 	Living things and their Habitats 
Year 5	Earth and Space 	Forces 	Properties and Changes of Materials 		Living thing and their Habitats 	Animals, including Humans 
Year 6	Living things and their Habitats 	Animals, including Humans 	Light 		Evolution and Inheritance 	Electricity 

Year 1

	Autumn Term		Spring Term		Summer Term	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	**Animals, including humans** **Seasonal Changes**  		**Everyday Materials** **Seasonal Changes**  		**Plants** **Seasonal Changes**  	
Context for Study	This unit is the first science unit where pupils study animals, including humans, as part of the discipline of biology - the study of organisms. From Reception, pupils can name common animals and their babies. Pupils also know that animals that live in particular habitats and know some common features of mini beasts. In **Year 1**, pupils further develop their knowledge of animals as they are introduced to the concept of 'families' and how animals are grouped according to their shared properties including fish, amphibians, reptiles, birds and mammals. Pupils learn the key features of each animal family and group them into their correct families. New learning includes identifying and naming a variety of common animals that are carnivores, herbivores and omnivores. Pupils identify, name, draw and label the basic parts of the human body. Pupils also learn about the senses. This unit is the precursor to work studied in Year 2 where pupils learn about how animals, and humans, grow and change. Pupils study life cycles of humans and animals such as butterflies, chickens and frogs.		This unit is the first science units where pupils study materials as part of the discipline of chemistry - the identification of the properties a substance is made from. In this **Year 1** unit, pupils identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. Pupils distinguish between an object and the material from which it is made including if it is 'man- made' or 'natural'. New learning includes describing the simple physical properties of a variety of everyday materials. The knowledge acquired helps compare and group together a variety of everyday materials on the basis of their simple physical properties vat the end of the unit. This unit comes before work in Year 2 where pupils compare the suitability of objects and compare how different materials can be changed in different ways.		This unit is part of the discipline of biology- the study of organisms (living things). It follows on from learning in Reception about the seasons and changes that happen to the plants during those seasons. Children have also recognised some fruits and vegetables and named the basic parts of a plant (stem, flower, roots). In **Year 1**, the pupils learn about the names of common plants and trees and learn to identify them by their leaves. They learn about the term's 'evergreen' and 'deciduous' and how deciduous plants fit into the change of the seasons. Children identify, name and describe a variety of common wild and garden plants including trees. This unit comes before work studied in Year 2, where pupils recap common plants and trees studied in Year 1, before moving onto observing how plants grow, what plants need to grow healthily and the differences between bulbs and seeds.	
	Seasonal Changes **(taught throughout the year)**  This unit follows on from work in Reception where pupils learn the names of the 4 seasons and look at changes to trees and plants during this time as each season occurs. **In Year 1,** they begin to learn more about the 4 seasons, throughout the year, as and when the seasons occur, including the months that fall into each season and the weather patterns they follow. They will learn about the changes to the earth's light patterns through the seasons and how the seasons affect animals and plants. This unit comes before work studied in year 2 about what plants need to grow well and when plants grow best and is built upon further in Year 3 when children explore the requirements of plants for life and growth and how they vary from plant to plant. They review work studied in year 1 about common plants and how seasons affect deciduous and evergreen plants.					

Key Knowledge	• 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) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense • use the local environment throughout the year explore and answer questions about animals in their habitat • understand how to take care of animals taken from their local environment and the need to return them safely after study • become familiar with the common names of some fish, amphibians, reptiles, birds and mammals, including those that are kept as pets • have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, songs and rhymes	• 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 • explore, name, discuss and raise and answer questions about everyday materials to become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent • explore and experiment with brick, paper, fabrics, elastic, foil	• 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 • use the local environment answer questions about plants growing in their habitat • observe the growth of flowers and vegetables that they have planted
Key Vocabulary	sight taste aroma healthy exercise hearing require carnivore omnivore herbivore predator amphibian reptile mammal	recycle material property stretchy absorbent bendy object rough hard smooth stiff	evergreen deciduous leaf bud branch root stem trunk

Year 2

	Autumn Term		Spring Term		Summer Term	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	**Animals, including humans** 		**Everyday Materials** 		**Plants** 	**Living Things and their Habitats** 
Context for Study	This unit is the second science unit where pupils study animals, including humans, as part of the discipline of biology - the study of living organisms. Pupils have a secure knowledge of common animals, their babies and their habitats. Pupils can identify and name a variety of common animals that are carnivores, herbivores and omnivores. Pupils can identify, name, draw and label the basic parts of the human body. In **Year 2**, pupils study life cycles and learn that animals, including humans, have offspring which grow into adults. New learning includes the basic needs of animals, including humans, for survival and the importance of exercise, eating the right amounts of different types of food, and hygiene. This unit comes before work studied in lower Key Stage 2, where pupils learn to classify and group animals and learn about skeletons in Year 3 and vital organs and the digestive system in Year 4. In Upper Key Stage 2, pupils continue their learning looking in more depth when they learn about food chains, life cycles, vital organs and the circulatory systems (Year 6).		This unit is the second science unit where pupils study materials as part of the discipline of chemistry - the identification of the properties a substance is made from. Pupils have a secure knowledge from Year 1 of the properties of a variety of everyday materials. Pupils can identify, name and describe an object in terms of the material is made from including if it is 'man-made' or 'natural'. Previous learning includes comparing and grouping together everyday materials on the basis of their simple physical properties. This **Year 2** unit builds on pupils' knowledge of materials and their properties, as pupils identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses. This unit help pupils understand how squashing, bending, twisting and stretching can change the shapes of some solid objects. This comes before work studied in Year 3, rocks and soils. The knowledge acquired help pupils in Year 4, as pupils study materials in terms of solid, liquid and gases. In Year 5, pupils learn about dissolving, mixing and changes of state, and reversible and irreversible changes.		This unit follows on from learning in Reception about the seasons and changes that happen to the plants during those seasons. They have also recognised some fruits and vegetables and named the basic parts of a plant. In Year 1 the pupils learned about the names of common plants and trees and how to identify them by their leaves. They learn the terms and meaning of 'evergreen' and 'deciduous'. In **Year 2**, pupils recap common plants and trees studied in Year 1 before moving onto observing how plants grow, what they need to grow healthily and differences between bulbs and seeds. This unit includes an investigation about growing healthy plants. This comes before work studied in Year 3 where children develop more understanding about what plants need to grow healthily and where they also study water transportation and the process of the life cycle of the plant including pollination, seed formation and seed dispersal. In Year 6, pupils continue to study plants by studying plant classification for flowering and not flowering plants.	Prior to this unit, pupils looked at habitats by looking at minibeasts in Reception. In **Year 2,** pupils learn about the food chains of animals in varying habitats and study microhabitats and the animals that live there. Children learn how animals obtain their food, by constructing a simple food chain. They also learn how to determine if something is alive, was once alive or never lived, using the acronym MRS GREN. This unit comes before work in Year 4, where pupils continue learning about habitats by grouping animals into categories, such as vertebrates/ invertebrates, before pupils move on to identify how animals and plants are adapted to suit their environment in different ways in Year 5. Throughout Year 5, pupils further develop their knowledge of the seven life processes.

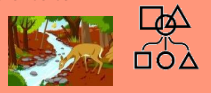
Key Knowledge	• know that animals, including humans, have offspring which grow into adults. • find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. • be introduced to the processes of reproduction and growth in animals. • The following examples used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults include reference to baby, toddler, child, teenager, adult.	• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. • identify and discuss the uses of different everyday materials to become familiar with how some materials are used for more than one thing (metal can be used for coins, cans, cars and table legs)	• 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. • use the local environment to observe how different plants grow. • understand the requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants.	• 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 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. • know that all living things have certain characteristics that are essential for keeping them alive and healthy in their habitat. • be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'micro-habitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter). • Pupils compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest.
Key Vocabulary	reproduction offspring survival exercise active hygiene vitamins germs spread balance diet	absorbent waterproof suitable metal properties transparent stretch squash bend twist natural man-made	condition shade moist germinate require dormant seeds bulbs	living dead once living produce habitat micro-habitat suitable food chain

Year 3

	Autumn		Spring		Summer	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	Light 	Animals, including humans  	Rocks 		Plants 	Forces and Magnets 
Context for Study	This unit is the first science unit where pupils learn about light as part of the discipline of physics. They know what plants need, including light, to grow well and how energy from light is the start of a food chain. this year 3 unit builds upon pupils' prior knowledge of materials as they recognise that shadows are formed when an opaque object blocks the light from a light source. Pupils find patterns in the way that the size of shadows changes. In **Year 3**, pupils learn we need light in order to see things and that dark is the absence of light. New learning includes that light is reflected from surfaces and it can be separated into a prism of colours. Pupils learn that light from the sun can be dangerous and that there are ways to protect their eyes. Pupils will secure their knowledge of the terms opaque, transparent and translucent. This is the precursor to work studied in Year 6, as pupils learn how shadows are formed. The knowledge acquired in this unit will help pupils to understand how light travels in straight lines and how the amount of light entering the eye is controlled by the pupil.	This unit is the fourth science unit where pupils study animals, including humans, as part of the discipline of biology. Pupils have a secure knowledge of life cycles and what animals, including humans, need to survive and the importance of a healthy lifestyle. Pupils can identify and name a variety of animals. Pupils can use classification keys to help group, identify and name a variety of living things in their local and wider environment. In this **Year 3** unit, pupils learn 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. Pupils further develop their knowledge of what humans need to thrive by learning about a balanced diet, including how sugar can cause tooth decay and obesity, the food groups and their role in human development. New learning includes how humans and some other animals have skeletons and muscles for support, protection and movement.	This unit is the third science unit where pupils study materials as part of the discipline of chemistry. Pupils have a secure knowledge of the properties of materials and can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses. Pupils know that squashing, bending, twisting and stretching can change the shapes of some solid objects. This **year 3** unit builds on pupils' knowledge of properties of materials as pupils learn about rocks and soils. New learning includes comparing and grouping together different kinds of rocks on the basis of their appearance and simple physical properties. Pupils describe how fossils are formed when things that have lived are trapped within rock and recognise that soils are made from rocks and organic matter. The knowledge acquired of rocks and soils during this unit will help pupils understand the significance of the life and works of palaeontologist Mary Anning. This supports the knowledge pupils acquire in the upcoming science unit on forces and magnets where pupils		This unit is the third science unit where pupils learn about plants as part of the discipline of biology. Pupils are able to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Pupils are also able to identify and describe the basic structure of a variety of common flowering plants, including trees. During this **Year 3** unit, pupils revise a significant amount of knowledge from Year 2: the parts of a plant/tree; what seeds and plants need to grow and be healthy. This unit also reviews and builds upon pupils' knowledge of germination, pollination and life cycle diagrams. New learning includes seed formation and the four methods of seed dispersal. Pupils investigate the way in which water is transported within plants. The knowledge acquired in this unit help pupils to group and classify living things in Year 4. This unit comes before work studied in Year 5 when pupils construct food chains and in Year 6 when pupils study Linnaean classification, adaptations and sexual reproduction in plants.	This unit is the first of science unit where pupils study forces as part of the discipline of physics. Pupils will develop a secure knowledge of resistance and friction, are able to compare how things move on different surfaces and know that applying forces to objects can change their shape. This **Year 3** unit intrpduces knowledge of how things move on different surfaces with a focus on the force friction. New learning is based on magnetism as pupils notice that some forces need contact between two objects, but magnetic forces can act at a distance. Pupils describe magnets as having two poles and observe how magnets attract or repel each other. Pupils further develop their knowledge of everyday materials as they compare and group according to whether they are attracted to a magnet, and identify some magnetic materials. The knowledge acquired in this unit will help pupils as they learn more about materials and their properties. This unit comes before work in Year 5. where pupils revise magnetism and learn about thermal and electrical conductivity.

		This unit is the precursor to work in year 4 as pupils learn about the digestive system, teeth and food chains. The knowledge acquired in this unit help pupils in Year 5 as they learn about puberty and gestation periods of animals before studying the circulatory system in Year 6.	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. This unit is the precursor to work studied in Year 4 when pupils study materials in terms of solids, liquids and gases. Year 5 pupils learn about dissolving, mixing and changes of state, and reversible and irreversible changes. Pupils also build on previous knowledge of magnetic and non-magnetic metals.		
Key Knowledge	• recognise that we 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 • look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change	• 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 • continue to learn about the importance of nutrition Know the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions	• 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 • explore different kinds of rocks and soils, including those in the local environment	• 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 • explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction	• 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 • observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing)
Key Vocabulary	light dark transparent opaque translucent reflect emit proximity shadow light source absence	human skeleton bones muscles joints protect vertebrate balanced diet nutrients	igneous rock metamorphic rock sedimentary rock palaeontologist fossil preserved decay permeable erosion soil	sepal evaporation pollination pollinator germination fertilisation stamen carpel (pistil) seed dispersal	magnetic force poles attract repel magnetize iron gravity

Year 4

	Autumn		Spring		Summer	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	1 Animals including Humans 	States of Matter 	Electricity 	Sound 		Living Things and their Habitats 
Context for Study	This unit is the sixth science unit where pupils study animals, including humans, as part of the discipline of biology. Pupils have a secure knowledge of life cycles and what animals, including humans, need to survive. Pupils know the importance of a healthy lifestyle, including a balanced diet and the effects of sugar, the food groups and their role in human development. Pupils can identify and name a variety of animals and can use classification keys to help group, identify and name a variety of living things in their local and wider environment. Pupils know that humans and some other animals have skeletons and muscles for support, protection and movement. In this **Year 4** unit, pupils learn about the simple functions of the basic parts of the digestive system in humans. New learning includes identifying the different types of teeth in humans and their simple functions. Pupils construct and interpret a variety of food chains, identifying producers, predators and prey. This unit comes before work in Year 5, where pupils learn about puberty and gestation periods of animals. The knowledge acquired in this unit will help pupils in Year 6 learn about the circulatory system.	This unit is the fourth science unit where pupils study materials as part of the discipline of chemistry. It is also the study of forces as part of the discipline of physics. Pupils have a secure knowledge of the properties of materials and can identify and compare the suitability of a variety of everyday materials. Previous learning includes knowing that squashing, bending, twisting and stretching can change the shapes of some solid objects. Pupils can compare and group different kinds of rocks on the basis of their appearance and simple physical properties. Pupils know how fossils are formed and recognise that soils are made from rocks and organic matter. This **year 4** unit builds on pupils' knowledge of properties of materials as pupils learn about states of matter. Pupils compare and group materials together, according to whether they are solids, liquids or gases. New learning includes 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). The knowledge acquired during this unit help pupils understand the water cycle in geography: the part played by evaporation and associate the rate of evaporation with temperature. This unit comes before work studied in Year 5 where pupils learn about dissolving, mixing and changes of state, and reversible and irreversible changes.	This unit is the first of two science units where pupils learn about electricity as part of the discipline of physics - the study of the processes that shape our world and how we use it. Children will have limited prior knowledge before studying this unit. During this **Year 4** unit, pupils identify common appliances that run on electricity and construct a simple series electrical circuit, identifying and naming its basic parts. Pupils investigate 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. Pupils recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. They recognise some common conductors and insulators, and associate metals with being good conductors. The knowledge acquired in this unit helps pupils to compare and group together everyday materials on the basis of their properties, in terms of conductivity, in Year 5. This is also a precursor to work studied in Year 6 when pupils use recognised symbols when representing a simple circuit in a diagram. Pupils investigate the brightness of lamps or the volume of buzzers with the number and voltage of cells used in the circuit. They also compare and give reasons for variations in how components function.	This is a stand-alone unit where pupils learn about sound as part of the discipline of physics. It is important to assume that all pupils have very little prior knowledge in this unit. During teaching, extra attention must be given to explicitly teaching the precise meaning of subject specific vocabulary as pupils may be unfamiliar with this. This unit does not link directly with any future science teaching so it is important that knowledge is secured during the unit. In **Year 4,** pupils identify how sounds are made and recognise that vibrations from sounds travel through a medium to the ear. Learning includes the anatomy of the ear. The knowledge of sound acquired in this unit helps pupils find patterns between the pitch of a sound and features of the object that produced it. It also helps pupils find patterns between the volume of a sound and the strength of the vibrations that produced it. Pupils know that sounds get fainter as the distance from the sound source increases.		This unit is the fourth science units where pupils learn about plants and animals as part of the discipline of biology. Pupils have a secure knowledge of the functions of the different parts of flowering plants and the requirements of plants for life and growth. They know how water is transported within plants and the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. This **Year 4** unit builds upon pupils' prior knowledge of plants as they identify and name a variety of living things in their local and wider environment. Pupils group living things and begin to use classification keys for flowers (flowering and nonflowering). Animals are classified into warm blooded and cold-blooded, vertebrates and invertebrates. New learning includes knowing the names of common woodland species. Pupils learn that environments can change and that this can sometimes pose dangers to living things. The knowledge of plants acquired in this unit helps pupils at the end of Year 4 to construct and interpret a variety of food chains, identifying producers, predators and prey. This unit comes before work studied in Year 6 when pupils identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. They will also describe the life process of reproduction in some plants and animals.

Key Knowledge	• describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey • be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine • explore questions that help them to understand their special functions	• 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 • explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container) • observe water as a solid, a liquid and a gas and note the changes to water when it is heated or cooled	• 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 • construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices • draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in year 6	• 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 • explore and identify the way sound is made through vibration in a range of different musical instruments from around the world • find out how the pitch and volume of sounds can be changed in a variety of ways	• 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 • use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat • identify how the habitat changes throughout the year • explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants • begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects • group plants into categories such as flowering plants (including grasses) and non-flowering plants, such as ferns and mosses •
Key Vocabulary	digestion oesophagus stomach intestines (small and large) teeth: incisors, canines, molars predator prey producer	solid liquid gas melting freezing condensation evaporation precipitation transpiration vapour	electricity electron circuit battery motor bulb switch insulator conductor	ear eardrum sound waves decibel vibration pitch sound proof absorb sound volume	habitat kingdom classification bacteria climate change woodland ecosystem ecology interdependent

Year 5

	Autumn		Spring		Summer	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Overview	**Earth and Space** 	**Forces** 	**Properties and Changes of Materials**  		**Living Things and their Habitats** 	**Aimals including Humans** 
Context of Study	This unit is the last of three science units where pupils study forces as part of the discipline of physics. Pupils will learn links in their next topic of forces and understand the knowledge of the effects of air resistance, water resistance and friction, that act between moving surfaces. Pupils will also make links with the next unit on forces that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Pupils know about magnetic and non-magnetic materials, and thermal and electrical conductivity. In this **Year 5** unit, pupils describe the Sun, Earth and Moon as approximately spherical bodies. New learning includes knowing about the movement of the Earth, and other planets, relative to the Sun in the solar system. Pupils learn the movement of the Moon relative to the Earth. By the end of the unit, pupils use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. This unit is the precursor to work studied in KS3 when pupils continue to study forces as part of the discipline of physics.	This unit is the second science unit where pupils study forces as part of the discipline of physics. There are also many links to the discipline of chemistry. Pupils have a secure knowledge of resistance and friction and know that applying forces to objects can change their shape. In **Year 5**, pupils revise and build upon previous learning on magnetism from Year 3. They know some forces need contact between two objects, but magnetic forces can act at a distance. Pupils know magnets have two poles and that they attract or repel each other. Pupils further develop their knowledge of magnetic and non-magnetic materials with thermal and electrical conductivity. New learning in this unit includes knowing that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Pupils study the effects of air resistance, water resistance and friction, that act between moving surfaces. The knowledge acquired in this unit helps pupils as they learn more about materials and their properties. This unit supports the Earth and Space unit studied prior when pupils study the movement of the Earth in space.	This unit is the final science unit where pupils study materials as part of the discipline of chemistry. Pupils have a secure knowledge of the properties of materials and can identify and compare the suitability of a variety of everyday materials. Pupils know that squashing, bending, twisting and stretching can change the shapes of some solid objects. Previous learning includes knowing different kinds of rocks based on their appearance and simple physical properties. Pupils know how fossils are formed and recognise that soils are made from rocks and organic matter. In this **Year 5** unit, pupils further develop their knowledge as they compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, electrical and thermal conductivity. Pupils also revise their prior knowledge of magnetic and non-magnetic metals from Year 3. New learning includes knowing that some materials will dissolve in liquid to form a solution, and knowing how to recover a substance from a solution. This unit also builds on pupils' previous knowledge of states of matter. Pupils know that some materials change state when they are heated or cooled (e.g. evaporation and condensation in the water cycle) and associate the rate of evaporation with temperature. Pupils use their knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. The knowledge acquired during this unit helps pupils understand that dissolving, mixing and changes of state are reversible changes. By the end of the unit, pupils will be able to 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. This unit is the precursor to work studied in KS3 as pupils continue to learn about states of matter.	This unit is the fifth science unit where pupils learn about plants and animals as part of the discipline of biology. Pupils have a secure knowledge of the functions of the different parts of flowering plants and the requirements of plants for life and growth. They know how water is transported within plants and the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Pupils can identify and name a variety of living things and use classification keys to help group plants and animals. In **Year 5**, pupils revise their prior knowledge of food chains, identifying producers, predators and prey. Pupils identify how animals and plants are adapted to suit their environment in different ways. New learning includes knowing particular species of animals and plants and describing the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Pupils further develop their knowledge of the seven life processes. The knowledge acquired in this unit helps pupils understand the life process of reproduction in some plants and animals. This comes before work in Year 6 when pupils study classification, adaptations and sexual reproduction in plants and animals.	This unit is the seventh science unit where pupils study animals, including humans, as part of the discipline of biology. Pupils have a secure knowledge of life cycles and what animals, including humans, need to survive. Pupils can use classification keys and interpret food chains by identifying producers, predators and prey. Pupils know that humans and some other animals have skeletons and muscles for support, protection and movement. Previous learning includes the importance of a healthy lifestyle and their role in human development. Pupils know the functions of the basic parts of the digestive system and the functions of different types of teeth in humans. In this **Year 5** unit, pupils learn about the changes a human goes through as they develop across their lifetime. Pupils describe the changes as humans mature to old age and draw a timeline to indicate stages in the growth and development. Pupils learn what older people need to stay healthy and the difficulties they may face. In SRE sessions, pupils learn how babies grow and develop, and about puberty. New learning includes the gestation period and life expectancy of different species of animals. This unit comes before work in Year 6 when pupils learn about the circulatory system

Key Knowledge	• 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 sun • use a model of the Sun and Earth to explain day and night • know that the sun is a star at the centre of our universe orbited by eight planets • know that the moon is a celestial body that orbits a planet	• 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 • explore falling objects and raise questions about the effects of air resistance • explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall • experience forces that make things begin to move, get faster or slow down • explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel • explore the effects of levers, pulleys and simple machines on movement • find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation	• 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 • explore and compare the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4 • explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes • explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda	• 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 • study and raise questions about their local environment throughout the year • observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment • find out about the work of naturalists and animal behaviorists, for example, David Attenborough and Jane Goodall find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals	• describe the changes as humans develop to old age • draw a timeline to indicate stages in the growth and development of humans • learn about the changes experienced in puberty
Key Vocabulary	spherical universe solar system axis rotate orbit revolve planet	force mass gravity attract friction motion repel	chemical change physical change solution substance filter sieve reversible/ irreversible	mammal amphibian bird insect metamorphosis environment asexual/ sexual reproduction tuber	life cycle fertilisation offspring gestation puberty reproduce hormones

Year 6

	Autumn		Spring		Summer	
	Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Overview	**Living things and their Habitats**  	**Animals including Humans**  	**Light** 		**Evolution and Inheritance** 	**Electricity** 
Context of Study	This unit is the last of six science units where pupils learn about plants and animals as part of the discipline biology. Pupils have a secure knowledge of the functions of different parts of the flowering plants and the requirements of plants for life and growth. They know how water is transported within plants and the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Pupils can identify and name a variety of living things in their local and wider environment and use classification keys to help group plants and animals. In Year 5, pupils revise their prior knowledge of food chains, identifying producers, predators and prey. This **Year 6** unit builds on pupils' understanding of how environment can change and that this can sometimes pose dangers to living things. Pupils identify how animals and plants are adapted to suit their needs. Pupils learn about plants and animal taxonomy (Linnaean	This is the final unit of eight science units where pupils study animals, including humans, as part of the discipline of biology. Pupils have a secure knowledge of life cycles and what animals, including humans, need to survive. Pupils know that humans and some other animals have skeletons and muscles for support, protection and movement. Pupils know the functions of the basic parts of the digestive system and the functions of different types of teeth in humans. Previous learning includes the changes a human goes through as they develop across their lifetime. Pupils know what older people need to stay healthy and the difficulties they may face as a result of old age. This **Year 6** unit builds on pupils' knowledge of the importance of a healthy lifestyle. New learning includes recognising the impact of diet, exercise, drugs and lifestyle on the way their bodies function. ,	This unit is the second of two science units where pupils learn about light as part of the discipline of physics. Pupils have a secure knowledge of the terms opaque, transparent and translucent. Previous learning includes pupils knowing we need light in order to see things and that dark is the absence of light. This unit builds upon pupils' prior knowledge that shadows form when the light from a light source is blocked by an opaque object. Pupils already know that light is reflected from surfaces and it can be separated into a prism of colours. In this **Year 6** unit, new learning includes knowing how light appears to travel in straight lines. Pupils learn that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. This new knowledge acquired in Year 6 is used to explain why shadows have the same shape as the objects that cast them and that those objects are seen because they give out or reflect light into the eye. This comes before work studied in KS3 as pupils continue to learn about how light can be reflected, refracted and dispersed		This unit is the final of six science units where pupils learn about plants and animals as part of the discipline of biology. This unit comes after pupils have studied a variety of living things in their local and wider environment. Pupils will learn about species of animals and plants from a variety of habitats and explain how they are adapted to suit their environment and that adaptation may lead to evolution. Pupils can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Pupils have secure knowledge of the seven life processes, the requirements of plants for life and growth and food chains. In this unit, pupils revise and further develop their knowledge of the functions of the different parts of flowering plants related to reproduction. In **Year 6**, pupils learn that sexual reproduction in plants happens in a cycle-like pattern: germination, pollination, fertilization and seed dispersal (Year 3 revision). This unit builds on	This unit is the second of only two science units where pupils learn about electricity as part of the discipline of physics. Pupils are able to identify common appliances that run on electricity. Pupils have a secure knowledge of simple series electrical circuits including that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. They know some common conductors and insulators, and associate metals with being good conductors. In **Year 6**, pupils revise and build upon their previous knowledge of electrical circuits as they use recognised symbols when representing a simple circuit in a diagram. New learning includes associating the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Pupils 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.

	classification system – the science that finds, identifies and describes, classifies and names organisms). New learning also includes knowing particular species of animals and plants of the amazon rainforest and describing the difference in the life cycles of a mammal, an amphibian and insect and a bird. Pupils further develop their knowledge of the seven life processes. The knowledge acquired in this unit will help children understand the life processes of reproduction in some plants and animals. This is the precursor to work studied in the science unit Evolution and Inheritance, when pupils study adaptations and evolutionary.	Pupils identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. Pupils also describe the ways in which nutrients and water are transported within animals, including humans. This comes before work studied in KS3 when pupils continue to study the human body.		pupils' previous knowledge of the classification of living things. In Year 6, pupils 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. Pupils learn about plant taxonomy- the science that finds, identifies, describes, classifies, and names plants. Pupils learn about Charles Darwin and his journey to the Galapagos island. Children will focus on the evolutionary theory including investigating the peppered moth.	

Key Knowledge	• 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 • build on their learning about grouping living things in year 4 by looking at the classification system in more detail • be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided • through direct observations where possible classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals) • discuss reasons why living things are placed in one group and not another find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification	• 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	• 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 explore the way that light behaves, including light sources, reflection and shadows	• 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 • Building on what they learned about fossils in the topic on rocks in year 3, pupils find out more about how living things on earth have changed over time • be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, labradors are crossed with poodles appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer, or the development of insulating fur on the arctic fox find out how Charles Darwin and Alfred Wallace developed their ideas on evolution	• 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 building on their work in year 4, pupils should construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors learn how to represent a simple circuit in a diagram using recognised symbols
Key Vocabulary	Carl Linnaeus taxonomy classification kingdoms micro-organisms vertebrates invertebrates amphibian reptiles	circulation heart/ heart chambers blood/ blood vessels veins arteries aorta pulse/ bpm carbon dioxide oxygen oxygenated/ deoxygenated	fraction spectrum visible spectrum prism	fossils variation adaptation evolution species inherited/ inheritance characteristics environment natural selection	circuit circuit symbols circuit diagram cell battery switch voltage voltmeter