The Science Curriculum at Kings Heath Primary School

Subject intent

We believe a high-quality science education provides the foundation 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 as such all pupils should be taught the essential aspects of the knowledge, methods, processes and uses of science. We believe that through building up a body of key foundational knowledge and concepts, children 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.

Subject Goals

By the end of KS2 we aim to have developed in children a sense of excitement and curiosity about natural phenomena and an understanding of how science has changed our world and its importance to the world's future prosperity and development. Our curriculum will have developed children's scientific and conceptual knowledge through the disciplines of, biology, chemistry and physics and their understanding of the nature, processes and methods of science through differing types of science enquiry, helping them to answer scientific questions about the world around them. We aim for them to be equipped with the scientific knowledge required to understand the uses and implications of science today and for the future and the confidence to use this knowledge to actively engage in the world around them.

Science Overview

The science themes are well sequenced to provide a coherent subject scheme that develops children's skills and knowledge of scientific concepts.
Themes are placed alongside other subject projects where there are opportunities for making meaningful connections.
'Working scientifically' specifies the understanding of the nature, process and methods of science. Working scientifically is embedded in the science curriculum content, so that children learn to use a variety of approaches to answer relevant scientific questions. This scientific enquiry includes: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Children seek answers to questions through collecting, analysing and presenting data.

EYFS

Pupils in the EYFS explore animals and their habitats and investigate changes in the seasons. They explore the properties of materials and sort according to criteria. Their knowledge of animals is built upon in the Spring term as pupils learn about nocturnal and diurnal animals. Pupils build their knowledge of materials by exploring ice as well as waterproof and non-waterproof materials. During 'Dangerous Dinosaurs, pupils identify herbivores, omnivores and carnivores. During the Summer term, pupils learn about growth and what plants need to grow. They identify minibeasts and their features. Knowledge of animals and their habitats are revisited when pupils learn about native animals and how they differ to other animals around the world.

Key Stage 1 (Years 1 and 2)

The principle focus of science teaching in KS1 is to enable children to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They are encouraged to be curious and ask questions about what they notice. They are helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests and finding things out by using secondary sources of information. They begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science will be done through the use of first hand practical experiences, but there will also be use of appropriate secondary sources, such as, books, photographs and videos. 'Working scientifically' will always be taught through and clearly related to the substantive science content.

Lower Key Stage 2 (Years 3 and 4)

In Lower Key Stage 2, the principal focus of teaching is to enable children to broaden their scientific view of the world around them. They will do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They are encouraged to ask their own questions about what they observe and make some decisions about which type of scientific enquiry are likely to be the best ways of answering them, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple and fair tests and finding things out using secondary sources of information. They will draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. . 'Working scientifically' will always be taught through and clearly related to the substantive science content.

Upper Key Stage 2 (Years 5 and 6)

In Upper Key Stage 2, the principal focus of teaching is to enable children to develop a deeper understanding of a wide range of scientific ideas. They will do this through

exploring and talking about the ideas: asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. They will encounter more abstract ideas and begin to recognize how these ideas help them to understand and predict how the world operates. They will also begin to recognize that scientific ideas change and develop over time. They will select the most appropriate ways to answer scientific questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources of information. Pupils will draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. . 'Working scientifically' will always be taught through and clearly related to the substantive science content.

Curriculum Map
Science: Whole School

	Our Changing World Revisited throughout the year in all YGs	**Aut 1**	**Aut 2**	**Spr 1**	**Spr 2**	**Sum 1**	**Sum 2**
		Working Scientifically is incorporated in all topics across all year groups					
EYFS		**Exploring Leaves** Looking at leaves at different stages **Who lives in the woods?** Sorting pictures of animals into woodland animals and non-woodland animals. **Seasons** identify and discuss seasonal changes	**Once Upon a Time** Sorting materials by visible properties e.g. shiny / not shiny	**Feed the birds** Make and set up bird feeders and observe which birds come to visit our outdoor area. **Animals that come out at night** Looking at nocturnal and diurnal creatures. **What happens when I fall asleep?** look at differences between what happens during day and night. **– Frozen** Exploring ice – freeze objects in ice, set children a challenge to keep some frozen and to melt some thinking about where they are going to put them to achieve this. **Seasons** identify and discuss seasonal changes	**Puddles and Rainbows** Naming and Exploring materials and their properties. Looking at waterproof and non- waterproof materials **Dangerous Dinosaurs** **I**dentifying herbivores, omnivores and carnivores	**Sunshine and Sunflowers** naming parts of the plant and what plants need to grow. **Marvellous Minibeasts** **C**ategorising minibeasts through identifiable features e.g. wings, six legs **Sun Safety** How do we protect ourselves from the sun **Seasons** identify and discuss seasonal changes	**Big Wide World**- Looking at animals native to different countries and how they adapt to the climate they live in.
Y1	Plants: How do trees and other plants change over the year - What flowers found in different seasons Animals – which animals live around the school Seasons- weather changes – what can I see and hear that shows seasonal change	**Our Changing World** – Plants/Animal Antics/ Sensing Seasons 4 seasons	**Plant Detectives:** Identify and name basic structure – plants found around the school – similarities and differences between flowers – how is a tree different to a flower	**Looking At Animals** Identifying different animal groups – how they move – nocturnal animals	**Using Our Senses:** The 5 Senses – exploring the world around us using our senses	**Everyday Materials:** Naming materials – looking at different examples of the same material e.g. paper, fabric	**Our Changing World –** Plants/Animal Antics/ Sensing Seasons 4 seasons
Y2	What lives in a habitat? – how the habitat changes over the year – how animals in a habitat depend on each other	**Growing Up:** What do babies need? – changes from birth to now and throughout lives	**Take Care:** Food groups balanced diet Keeping fit Keeping clean	**Materials – Good Choices:** Describing materials and what it is made of The uses of different materials	**Materials – Shaping Up:** How to alter the shape of materials – squashing, stretching, bending Matching properties to material use	**Apprentice Gardener:** Conditions for growth – water, nutrients, light Sequence of growth – planting, germination	**What's In Your Habitat?:** Differing habitats – animals that inhabit these and what they eat Suitability of habitat for different animals
Y3	how the leaves on deciduous/ evergreen trees change through the year - observe seeds, berries and flowers are visible on different plants throughout the year according to their different life cycles	**The Power of Forces:** Magnets Friction	**Amazing Bodies:** Nutrition Movement – the skeleton and muscles	**How Does Your Garden Grow?:** Conditions for growth Functions of parts Life cycles	**Famous Inventors**	**Rocks Detectives:** Properties and how different rocks are used How soil is made Fossils – what are they and how are they formed?	**Can You See Me?:** Light sources Shadows Reflections
Y4	Using leaves to classify trees – classifying and identifying	**In A State:** Properties of	**In A State:** Changes of state	**Switched On:** Simple circuits – complete	**Where Does All That Food Go?:**	**Good Vibrations:** How sounds are made	**Who am I?** Classification | **Human Impact:**

	deciduous trees in winter – classifying plants using their flowers	materials – solid-liquid-gas	Melting – freezing Evaporation - condensation	circuits Making a simple switch Conductors & insulators	Digestion Teeth Food chains	and travel Measuring/ changing the volume of a sound Changing the pitch of sounds	Vertebrates/ invertebrate groupings Construct & use keys	Local impact World habitat destruction Breaking food chains
Y5	develop their understanding of the life cycles of plants and of reproduction as a specific stage of those life cycles	**Feel the Force A:** Measuring forces – newtons Gravity Water/ air resistance	**Sorting Everyday Materials & Marvellous Mixtures:** Differing properties of the same materials Separating solids Mixing & separating solids & liquids	**Circle of Life:** Compare & contrast life cycles of mammals/ amphibians/insects/ birds	**Reproduction in Plants and Animals:** flowering plants/non-flowering plants Amphibians/insects, mammals/birds	**All Change:** Reversible and irreversible changes	**Forces B:** Levers, gears and pulleys	**Earth & Beyond:** Earth rotation Time zones Seasons Moon shape
Y6	ways in which physical characteristics, patterns of behaviour and life cycles help to adapt organisms and improve their chances of survival.	**The Nature Library:** Vertebrate & invertebrate classification Micro-organisms	**Danger Low Voltage:** Changing circuits Switches and resistors Symbolic representation of components	**Body Pump:** Heart, blood & circulatory system	**Body Health:** Nutrition Exercise Effects of drugs	**Everything Changes:** Adaptation Natural selection and evolution Inherited characteristics	**Light Up Your World:** Shadows Reflections and how we see How light travels	

Science Progression of Knowledge and Skills: Themes

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	Identify and name basic structure	Conditions for growth Sequence of growth	Conditions for growth Functions of parts Life cycles			
Living things and habitats		Life processes Interdependence		Human influence Classification	Life cycles Reproduction	Classification
Animals inc. humans	Identify and name basic structure Senses	Life cycle and basic needs	Nutrition Movement	Digestion Food chains	Human life cycle	Circulation Health
Evolution and inheritance						Variation Adaptation Evolution
Rocks			Properties Fossils			
Materials and Properties	Name and simple properties	Materials and their uses			Properties separation	

States of matter				States of matter Changes of state	Changes	
Seasonal change	4 seasons					
Light			Light sources Shadows Reflections			Shadows Reflections and how we see How light travels
Electricity				Simple circuits Conductors and insulators		Symbolic representation of components Changing circuits
Sound				Sound		
Earth and space					Earth, Sun and Moon Day, night and year	
Forces and magnets			Magnets Fiction		Air and water resistance Gravity, Friction Mechanisms	

Science Progression of Knowledge and Skills: KPIs

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically	Ask simple questions and recognising that they can be answered in different ways Observe closely, using simple equipment Perform simple tests Identify and classify Use their observations and ideas to suggest answers to questions Gather and record data to help in answering questions		Ask relevant questions and use different types of scientific enquiries to answer them Set up simple practical enquiries, comparative and fair tests Make systematic and careful observations and , where appropriate, take accurate measurements using standard units, using a range of equipment, inc. thermometers and data loggers Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using scientific language, drawings, labelled diagrams, keys, bar charts, and tables Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to support their findings		Plan different types of scientific enquiries to answer questions, including recognising and controlling variables when necessary Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeating readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use test results to make predictions to set up further comparative and fair tests Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Identify scientific evidence that has been used to support or refute ideas or arguments	
Plants	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	•observe and describe how seeds and bulbs grow into mature plants •find out and describe how plants need water, light and a suitable temperature	•identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers •explore the requirements			

	of common flowering plants, including trees	to grow and stay healthy.	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			
Living things and habitats		•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.		•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.	describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird •describe the life process of reproduction in some plants and animals.	describe 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.
Animals inc. humans	•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*	•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.	•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.	•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.	•describe the changes as humans develop from birth to old age.	•Identify and name the main parts of the human circulatory system, and explain 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.

	human body and say which part of the body is associated with each sense					
Evolution and inheritance						•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.
Rocks			•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.			
Materials and Properties	•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.	•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.			•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	
States of matter				•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.	•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.	
Seasonal change	•observe changes across the four seasons •observe and describe weather associated with the seasons and how day length varies.					
Light			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 a solid object find patterns in the way that the size of shadows change.			•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.
Electricity				•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		•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

				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.		when representing a simple circuit in a diagram.
Sound				•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.		
Earth and space					•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.	
Forces and magnets			•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		•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	

			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.		levers, pulleys and gears, allow a smaller force to have a greater effect.	

Science Year Group Termly Overview

	Our Changing World Revisited throughout the year in all YGs	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2
EYFS		**Exploring Leaves** Looking at leaves at different stages **Who lives in the woods?** Sorting pictures of animals into woodland animals and non-woodland animals. **Seasons** identify and discuss seasonal changes	**Once Upon a Time** Sorting materials by visible properties e.g. shiny / not shiny	**Feed the birds** Make and set up bird feeders and observe which birds come to visit our outdoor area. **Animals that come out at night** Looking at nocturnal and diurnal creatures. **What happens when I fall asleep?** look at differences between what happens during day and night. **– Frozen** Exploring ice – freeze objects in ice, set children a challenge to keep some frozen and to melt some thinking about where they are going to put them to achieve this. **Seasons** identify and discuss seasonal changes	**Puddles and Rainbows** Naming and Exploring materials and their properties. Looking at waterproof and non-waterproof materials **Dangerous Dinosaurs** **I**dentifying herbivores, omnivores and carnivores	**Sunshine and Sunflowers** naming parts of the plant and what plants need to grow. **Marvellous Minibeasts** **C**ategorising minibeasts through identifiable features e.g. wings, six legs **Sun Safety** How do we protect ourselves from the sun **Seasons** identify and discuss seasonal changes	**Big Wide World**- Looking at animals native to different countries and how they adapt to the climate they live in.
Y1	Plants: How do trees and other plants change over the year - What flowers found in different seasons Animals – which animals live around the school Seasons- weather changes – what can I see and hear that shows seasonal change	**Our Changing World** – observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies.	**Plant Detectives:** Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	**Looking At Animals** 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	**Using Our Senses:** identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	**Everyday Materials:** distinguish between an object and the material from which it is made identify and name a variety of everyday	**Our Changing World –** observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies.

			Identify and describe the basic structure of a variety of common flowering plants, including trees	carnivores, herbivores and omnivores describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)		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.	
Y2	What lives in a habitat? – how the habitat changes over the year – how animals in a habitat depend on each other	**Growing Up:** What do babies need? – changes from birth to now and throughout lives notice that animals, including humans, have offspring which grow into adults	**Take Care:** 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.	**Materials – Good Choices:** identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	**Materials – Shaping Up:** find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**Apprentice Gardener:** 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.	**What's In Your Habitat?:** 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.
Y3	how the leaves on deciduous/ evergreen trees change through the year - observe seeds, berries and flowers are visible on different plants throughout the year according to their different life cycles	**The Power of Forces:** 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	**Amazing Bodies:** 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	**How Does Your Garden Grow?:** 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	**9 Famous Inventors**	**Rocks Detectives:** 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	**Can You See Me?:** 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

		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.	identify that humans and some other animals have skeletons and muscles for support, protection and movement.	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		formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter.	their eyes recognise that shadows are formed when the light from a light source is blocked by a solid object find patterns in the way that the size of shadows change.	
Y4	Using leaves to classify trees – classifying and identifying deciduous trees in winter – classifying plants using their flowers	**In A State:** 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.		**Switched On:** 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.	**Where Does All That Food Go?:** 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.	**Good Vibrations:** 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.	**Who am I?** 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	**Human Impact:** recognise that environments can change and that this can sometimes pose dangers to living things.
Y5	develop their understanding of the life cycles of plants and of reproduction as a specific stage of those life cycles	**Feel the Force A:** explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	**Sorting Everyday Materials & Marvellous Mixtures:** compare and group together everyday materials on the basis	**Circle of Life:** describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	**Reproduction in Plants and Animals:** describe the life process of reproduction in some plants and animals.	**All Change:** demonstrate that dissolving, mixing and changes of state are reversible changes explain that some	**Forces B:** recognise that some mechanisms, including levers, pulleys and	**Earth & Beyond:** describe the movement of the Earth, and other planets, relative to the

		identify the effects of air resistance, water resistance and friction, that act between moving surfaces	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		describe the changes as humans develop from birth to old age.	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.	gears, allow a smaller force to have a greater effect.	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.
Y6	ways in which physical characteristics, patterns of behaviour and life cycles help to adapt organisms and improve their chances of survival.	**The Nature Library:** 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.	**Danger Low Voltage:** 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.	**Body Pump:** Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood	**Body Health:** 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.	**Everything Changes:** 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	**Light Up Your World:** 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.	

						environment in different ways and that adaptation may lead to evolution.	

Science Progression of Vocabulary

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	Flower, grow, leaf, petal, plant, root, seed, stem, horse chestnut, sycamore, woodland plant,	plant (verb and noun), leaf, leaves, bud, twig, branch, tree, roots, stem, shoot, bud, flower, leaf, rough, smooth, shiny, glossy, wrinkled, crinkled, crunchy, crisp, soft, green, olive, brown, orange, red, yellow, rust, flower, blossom, petals, stem, stalk, small, little, big, large, single, lots, deciduous, evergreen, plug plant, soil, compost, manure, dig, prepare, water, watering, vegetable, fruit, names of vegetables and fruits, salad, wash, clean, peel, cut, chop, grate, mix, sprinkle, combine	seeds, plant (verb and noun), apprentice, gardener, bulb, grow, observe, observations, describe, identify, expert, question, predict, prediction, water, compare, answer, investigate, bean, soil, surface, test, bury, light, dark, water, germinate, fair, same, plan, suitable, radicle, root, shoot, leaves, change, evidence, height, tallest, shortest, bar chart, scale, pattern, question, connection, measure, seedling, mature plant, wilting, healthy, unhealthy, warmth, care, die, block, agree, disagree, alive, food store, fi rst, next, later, after…days, order, conclusion, because	plant, roots, stem, trunk, leaf/leaves, flower, leaflet, stalk, veins, surface, edge, lobes, tip, food, root hair, nutrients, anchor, support, seed, germination, seedling, growth, mature plant, flowering, pollination, seed formation, bud, petal, sepal, carpel, stamen, pollen, reproduce, nectar, seed, fruit, dispersal, animal, wind, water, self-dispersal, explosion, sprinkling, competition, air, light, stigma, style, ovary, anther, filament, observe, question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions			
Living things and habitats	Animal, carnivore, herbvore, omnivore, decay, animal, insect, spide, ant, beee, butterfly, caterpillar, change, chrysalis, egg, grow, hatch, ladybird, life cycle, pupa, slug, woodlouse, worm, amphibian, ducling, duck, lamb	butterfly, fly, wasp, bee, frog, spider, woodlice, worm, ant, ladybird, fly, squirrel, fox, dog, puppy, cat, kitten, hedgehog, bird, blackbird, house sparrow, starling, pigeon, seagull, robin, thrush, wagtail, blue tit, chaffinch, great tit, collared dove,	habitat, alive, living, once-lived, dead, never-lived, plants, animals, decay, rocks, soil, air, water, food chain, plants, animals, herbivores (eat plants and parts of plants), carnivores (eat other animals), omnivores (eat plants/parts of plants		environment, impact, positive, negative, litter, pollution, waste, biodiversity, habitat, derelict, graffiti, traffic, destroy, create, location, food chain, producer, consumer, human impact , global issue, destruction,	reproduction, reproduce, flower, organ, carpel, stamen, pollen, seeds, seed head, berry, fruit, pollinator, pollination, fertilisation, reproduction, reproduce, propagate, stem, leaf	General terms: identify, identification, classify, classification, division, family, genus, species, reason, common characteristics, distinguishing characteristics, leaves, shape, size, colour, backbone,

		magpie, wood pigeon, bird table, feeder, nuts, seed, types of seed, fat ball, snail, shell, foot, slime, slimy, striped, stripy, ridged, spiral, terrarium, dandelion, feed, food, leaves, lettuce, paws, claws, fur, whiskers, tail, furry, fluffy, silky, smooth, rough, thick, thin, long, short, big, small, brush, comb, lead, collar, toys, biscuits, chews	and other animals), direction, source of food, suited, habitat, features, names of habitats, living things and animal body parts		deforestation, rainforest, climate, climate change, zoo, endangered, breed, wild, natural, predator, prey, conservation, categories, tally chart, pictogram, bar chart, axes, scale, opinion, point of view, argument, viewpoint, debate features, sequence, key, distinguish, similarities, differences, vertebrate, fish, amphibian, reptile, bird, mammal, backbone, hair, scales, feathers, eggs, wings, beak, lungs, gills, cold blooded, warm blooded, suckle, head, thorax, abdomen, wing, segment, antennae, insects, arachnids (spiders), crustaceans, myriapods, molluscs, worms, observations, sort, group, classify, identify	and root cuttings, runners, tubers, bulbs, rhizomes, gender, male, female, sex, sexual, asexual, metamorphosis, mate, sperm, pregnant, give birth, young, pup, calf, foal, chick, hatch, fledge, fledgling	wings, jointed legs, cased, transparent, antennae, shell, segments, explain, group, small, harmful, beneficial (helpful), colony, colonies, mould, multiply, historically, grouping, Aristotle, Carl Linnaeus, kingdom, Phillip Miller, John Ray, botany, conventions Kingdoms of living things: Animalia, Plantae, Fungi, Protista, and Monera Plant kingdom: flowering plants, conifers, ferns, mosses and algae Animal kingdom: vertebrates, fish, amphibians, mammals, birds, reptiles, invertebrates, molluscs, annelids, arachnids, insects, arthropods Micro-organisms: (3 kingdoms: Fungi, Monera, Protista), micro-organisms (microbes) bacteria
Animals inc. humans	Body, bone, heart, human body, lungs, muscles, skeleton, tendons,	body, head, neck, arms, elbows, hands, fingers, legs, knees, feet, face, skin, ears, eyes, nose, nostrils, hair, mouth, teeth, tall, taller, short, shorter, big, bigger, small, smaller, louder, softer, loud, quiet, high, low, senses, taste, hearing, touch, smell, sight, bitter, sweet, sour, sharp,	food, sort, classify, Venn diagram, Carroll diagram, healthy diet, dairy, fruits, vegetables, meat, fish, beans, fat, sugar, bread, potatoes, cereals, exercise, physical activity, hot, sweaty, heart beating, pulse, tired, aching, muscles, clean, hygiene, hygienic, wash, bath,	stay alive, survive, food, balanced diet, nutrition, nutrients, fruit and vegetables, carbohydrates, protein, roughage, fibre, sugar, fat, dairy, skeleton, bones, protect, support, move, muscles, joints, ribs, heart, skull, brain, backbone, spine, spinal column, vertebrate, footprint,	mouth, oesophagus, stomach, small intestine, large intestine, rectum, anus, digestive system, digestion, carbohydrate, fat, sugar, protein, roughage, dairy, fruit, vegetables, vitamins, minerals, balanced diet, healthy, mechanical process, chemical process,	life cycle, birth, growth, reproduction, metamorphosis, aging, death, animal, mammal, amphibian, insect, bird, elephant, toad, bumblebee, blue tit, hedgehog, bat, polar bear, mountain gorilla, cubs, pups, hibernate, nocturnal, marsupial, toad, newt, salamander,	aorta, artery, atrium, blood, blood vessel, body temperature, capillaries, carbon dioxide, cells, chamber, chest cavity, circulation, circulatory system, deoxygenated blood, digestive system, digestive tract, health, heart, heart valves, humans, hydration, lubricant,

		tingly, fizzy, milky, creamy, buzzer, doorbell, radio, tocker timer, bird song, wind blowing, car horn, traffic noise, loud/er, quiet/er, peaceful, silent, silence, noise, noisy, bang, crash, whistle, buzz, ring, squeak, creak, rattle, bang, knock, tick, chime, feel, touching, sensitive, sense, sensory, rub, pinch, prod, rough, smooth, bumpy, wrinkled, grooved, shiny, smooth, soft, hard, crunchy, slippery, slimy, fragrance, scent, pong, flowery, fruity, sour, bitter, sharp, strong, gentle, smelly, delicate, sensitive, fabric, material, layers, thick, thin, thicker, thinner, soft, hard, clock, window, door, floorboards, kettle, fire, chicken, sheep, cow, cluck, baa, moo	shower, brush, comb, toothbrush, toothpaste, soap, water, shampoo	trail, vitamins, minerals, question, classify, investigation, survey, measure, pattern, evidence, draw conclusions	absorb, nutrients, water, saliva, chemicals, enzyme, teeth, canine, incisor, premolar, molar, jaw, cutting, tearing, grinding , dental hygiene, decay, dentist, brushing, toothpaste, floss, mouthwash, food, plants, animals, food chain, food web, producer, consumer, predator, prey, herbivore, omnivore, carnivore	tree frog, metamorphosis, tadpole, larva, frog, toad, gills, cold blooded, ladybird, butterfly, dragonfly, head, thorax, abdomen, antennae, egg, pupa, cocoon, adult, thrush, peregrine falcon, ostrich, emperor penguin, breeding cycle, clutch, brood, hatch, fledge, prey, predator, reproduce, habitat, environment, humpback whale, blue whale, swift, osprey, wildebeest, caribou, monarch butterfly, migrate, migration, navigate, genetic, endangered, threatened, extinct, extinction, evolution, giant panda, black rhino, peregrine falcon, bumblebee, salamander, osprey, koala bear	lungs, muscular system, nutrients, nutrition, oxygen, oxygenated blood, plasma, platelets, pump, red blood cell, skeletal, system, transport, valve, vein, vena cava, ventricle, vessel, waste, waste gases, white blood cells alcohol, asthma, athlete, balanced diet, beats per minute (bpm), benefits, breathing, caffeine, calories, cancer, carbohydrates (including sugars), cheating, cigarettes, clinical trial, consequences, dairy, diet, doping, drugs, eat well plate, energy, exercise, fat, fibre, heart, heart rate, intensity, illegal, impact, James Lind, legal, lifestyle, long-term effect, lungs, medicine, mental benefits, mineral, motivation, norm, nutrition, oxygen, passive smoking, peer pressure, performance enhancing, persuade, physical benefits, protein, pulse rate, RDA (recommended daily allowance), recovery rate, resting rate, rickets, roughage, saturated fat, scurvy, short-term effect, smoking,

							sodium, solvents, steroids, tobacco, training, unsaturated fat, vitamin
Evolution and inheritance							population, variation, environment, inheritance, adaptation, selective breeding, generation, survival, natural selection, evolution, fossils, genes, genetics, DNA, extinct, extinction, speciation, question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions
Rocks				sandstone, granite, chalk, limestone, marble, pumice, rough, smooth, hard, soft, rock, stone, pebble, texture, particle, crystal, granule, properties, soil, clay, sandy, loam, peat, organic material, weather, weathering, frost, beach, cliff, trilobite, starfish, sea urchin, ammonite, fossil, fossilise, remains			
Materials and Properties	Hard, magnetic, material, soft, waterproof, dry, fabric, not waterproof, wet, attract, force, magnet, non-magnetic, pole, pull, push, repel	materials, wood, wooden, plastic, metal, glass, water, rock, brick, paper, writing, wrapping, shiny, drawing, display, greaseproof, kitchen towel, handkerchief, wallpaper, sand paper, fabric, wool, nylon, silk, fleece	material, wood, property, metal, plastic, glass, rock, brick, paper, cardboard, fabric, smooth, rough, soft, hard, bendy, squashy, stiff, rigid, shiny, dull, see through, cold, warm, breaks, fold, crease, waterproof, absorb, absorbent,			properties, material, solid, liquid, gas, compare, contrast, group, organise, criteria, hardness, soluble, insoluble, transparent, transparency, opaque, hardness, strength, rigidity, flexibility, elastic, elasticity, ductile,	

		fibre, properties, hard, soft, fluffy, rough, smooth, shiny, dull, light, heavy, transparent (see-through), opaque (can't see-through), translucent (see something through), harder, lighter, rougher, stretch, stretchy, elastic, stiff, bend, bendy, not bendy, press, squash, twist, shape, waterproof, absorb, absorbent, soak up, mop up; frozen, freeze, melt, salt, tissue paper, button, glass bead, marble, pebble, pasta	wet, sunglasses, lenses, light, block, transparent, opaque, translucent, strength, strong, weak, tear, teabag, tea leaves, chair, legs, arms, seat, backrest, cushion, tent, stretchy, tent cover, frame, flexible, measure, record twist, squash, bend, stretch, squashing, bending, twisting, stretching, push, pull, pushing, pulling, roll, pinch, press, smooth, flexible, rigid, stretchy, squashy, elastic, stiff, properties, suitable, stretchiness, weight, catapult, frame, missile, strong, table, column, Venn diagram, set, sort, label, measure, record, bar chart			electrical conductor/insulator, thermal conductor/insulator, magnetic, non-magnetic, attract, repel, viscosity, viscous, thick, thicker, types of plastic – polyester, nylon, polythene, PVC, polystyrene acrylic – recycle, reuse, biodegradable, environmentally friendly material, compare, contrast, separate, mixture, sieve, filter, evaporate, solid, liquid, gas, powder, particle, dissolve, soluble, solution, contamination, contaminate, contaminated, impurity, pure, purity, suspension, saturated, saturation, reversible, non-reversible, microbes, bacteria, types of oil, liquid, solid, detergent, sticky, filter, mechanical, boom, residue, environment, biological, marine life, purify, drinkable, sterilise	
States of matter					solid, liquid, hard, soft, pour, flow, pile, pool, surface, horizontal, runny, viscous, sticky, grain, powder, ice, water, temperature, cool, cooling, warm,	material, change, compare, contrast, solid, liquid, gas, change of state, dissolve, melt, reversible, non-reversible, mixture, powder, particle,	

					warming, hot, degree Celsius, melt, melting, freeze, freezing, solidify, solidifying, heating, states of matter, change of state, melting point, freezing point, process, gas, air, carbon dioxide, helium, oxygen, bubbles, empty, particle, weight, compress, squash, shape, volume, dry, evaporate, evaporation, water vapour, boil, boiling, boiling point, steam, thermometer, data logger, sensor, droplets, condense, condensation, water, droplets, cycle, model, snow, expand, scale, calibrate, heat sensitive, sensor, observe, measure, fair test, variable, collect, present, interpret, data, axis, scale, interval, control, keep the same, evidence, annotate, accuracy, describe, explain, evaluate, reliable, repeatable	tablet, bubbles, carbon dioxide, change, reaction, inflate, rust, oxidise, oxygen, corrode, tarnish; types of metal: iron, steel, chromium, tin, zinc; boil, vapour, fuel, heat, burn, burning, flammable, flame, melts, solidifies, candle, wick, wax material, compare, contrast, separate, mixture, sieve, filter, evaporate, solid, liquid, gas, powder, particle, dissolve, soluble, solution, contamination, contaminate, contaminated, impurity, pure, purity, suspension, saturated, saturation, reversible, non-reversible, microbes, bacteria, types of oil, liquid, solid, detergent, sticky, filter, mechanical, boom, residue, environment, biological, marine life, purify, drinkable, sterilise	
Seasonal change	Autumn, change, seson, spring, summer, weather, winter, dark, daytime, light, moon, night, star, sun, frost, growth,	seasons, autumn, winter, spring, summer, evidence, similar, different, group, compare, change, names of the months of the year, temperature, hot, warm, cold, cool, freezing, frosty, wet, dry, sunny, cloudy, showery, stormy,					

		windy, breeze, gale, rainy, sunny, snow, shower, drizzle, puddle, breeze, gale, thunder, lightning, sleet, fog, mist, hat, gloves, mittens, scarf, muffler, ear muffs, boots, coat, umbrella, wellies, kite, windmill, sunglasses, thick, thin, woolly, furry, warm, waterproof					
Light				light, dark, shadow, mirror, bright, dim, reflect, eye, opaque, transparent, translucent, ultraviolet, ray, beam, absorb, luminous, non-luminous, infrared, question, investigation, fair test, change, measure, predict, prediction, explain, explanation, observations, draw conclusions			light, dark, shadow, mirror, bright, dim, reflect, eye, opaque, transparent, translucent, ultra violet, ray, beam, refraction, periscope, spectrum, dispersion, inverted, medium, question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions
Electricity					electricity, electrical, mains, plugged in, battery, power, rechargeable, solar, wind up, sound, light, heat, movement, cell, wire, bulb, bulb holder, buzzer, motor, component, circuit, complete circuit, short circuit, flow, break, make, metal, connect, disconnect, terminal, positive, negative, switch, press switch, toggle switch, tilt switch, pendulum switch, property, electrical conductor,		cell, battery, lamp, wire, buzzer, motor, circuit, current, filament, electrical insulator, electrical conductor, mains electricity, terminal, switch, toggle switch, push switch, slide switch, tilt switch, trembler switch, pressure switch, reed switch, series circuit, resistance, resistor, current, circuit diagram, recognised symbols, generate, generator, coal, gas, oil, fossil fuels, nuclear, biomassfired

					electrical insulator, electron, filament, sets, Venn diagram, Carroll diagram, table, conclusion, evidence, annotate		power stations, wind turbine, wave hub, tidal flow, hydro-electric, grid, pylon, transmission, transformer, solar panels
Sound					sound, loud, quiet, high, low, repeating, continuous, strike, blow, shake, pluck, vibration, vibrate, solid, gas, volume, strength of vibrations, sound source, fainter, distance, pitch, particles, question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions		
Earth and space						Aldebaran, Arctic, Antarctic, British Summer Time, Earth, Greenwich Meridian, International Date Line, Jupiter, Mars, Mercury, Milky Way, Moon, North Pole, Saturn, South Pole, Sun, Neptune, Universe, Uranus, Venus, asteroid, autumn, axis, compass, crescent, dawn, degrees, dusk, equator, equinox, fixed stars, Full Moon, galaxy, gibbous, hemisphere, horizon, illuminate, leap year, longitude, lunar month, meridian, nebula, New Moon, northern, orbit, planet, reflect, rotate,	

						rotation, solar system, solstice, southern, spin, spring, star, summer, sunrise, sunset, telescope, temperature, tilt, time zone, waning, waxing, winter, year, change, compare, draw conclusions, explain, explanation, investigation, line graph, measure, model, observations, plan, predict, prediction, presentation, question, record, review, scientific diagram, table	
Forces and magnets				push, pull, twist, force, air, turns, fast, slow, slows down, material, surface, magnet, attracts, magnetic material, magnetism, acts at a distance, non-magnetic material, metal, non-metal, strength, north pole, south pole, repel, question, investigation, fair test, change, measure, predict, prediction, explanation, observations, draw conclusions		air resistance, Aristotle, balanced, balanced forces, bevel gears, clockwork, cogs, compress, extend, effort, force arm, forces, force, friction, force arrow, fulcrum, gravity, Galileo, gear ratio, gears, gear trains, lever, lift, machine, mechanisms, movement, Newton, Newton meter, pinion, pivot, pulley, pull, push, rack, resistance, rotary motion, simple machines, speed, time, unbalanced force, upthrust, water resistance, weight arm, wheel	