



Nursery						
Working scientifically	<ul style="list-style-type: none"> - Explore materials with different properties - Explore natural materials indoors and outside - Use all the senses in hands on exploration of materials - Plant seeds and care for growing animals - Being to understand the need to respect and care for the natural environment - Explore how things work - Explore collections of materials with similar and or different properties - To explore and sort groups - Be aware of the effect their behaviour can have on the environment 					
Nursery	Animals including humans	Autumn	Winter	Spring	Plants and living things	Materials
Key knowledge	<ul style="list-style-type: none"> • Know how humans develop from babies • Know the names of different body parts • Know that sleep, food, hygiene are important for our health • Know the effects of exercise on the body e.g. heart beats faster, get hotter To know that they are a person To know that they were a baby then a toddler then a child and parents are adults 	<ul style="list-style-type: none"> • Observe animals and the natural world closely through a variety of means e.g. magnifiers & photographs To know about and recognise the signs of Autumn 	<ul style="list-style-type: none"> To know about and recognise the signs of Winter/that the weather is changing To know some important processes and changes in the natural world including states of matter (freezing) To know (in a basic form) why Winter happens (days have less sun) To know that winter is cold and that changes occur in the environment when it is winter - frost, ice, snow To know that specific clothes are needed in the winter- warm and waterproof 	<ul style="list-style-type: none"> To know about and recognise the signs of Spring To know about features of my own immediate environment and how they might vary from another. To plant seeds To know that the weather is changing To know that plants change at different times of the year To know that Spring is a season To know what changes occur in the environment when it is Spring - new growth, longer days, warmer 	<ul style="list-style-type: none"> • Most plants start growing from a seed or bulb • All plants need water & light to grow & survive • Observe plants closely through a variety of means e.g. magnifiers & photographs • Use all the senses in hands-on exploration of plants • Understand the key features of the life cycle of a plant. • Know how to care for plants • Know about the different seasons & the effect they 	

				days	have on plants, trees & creatures • Know where different insects live & why	
Future knowledge (Reception)	<p>Can describe/compare themselves, family, friends and community.</p> <ul style="list-style-type: none"> • Can create pictures of themselves, family, friends and community and identify their distinguishing features. • Can talk about what they see when using a mirror. • Can compare hand, foot and fingerprints and talk about how they are Different. • Can talk about how they look after themselves and how other people look after them. 	<p>Children will explore and ask questions about the natural world around them.</p> <p>To know that the weather and plants around them are changing</p> <p>To know that Autumn is a season and why it happens</p> <p>To know that leaves on some trees are dying (changing colour) and some are not</p> <p>To know that Autumn is a season and leads on from Summer and leads into Winter</p>	<p>Children will talk about features of the environment they are in and learn about the different environments.</p> <p>To know that the weather is changing and that Winter is a season</p> <p>To know that leaves on some trees are still green To know why Winter happens (days have less sun and plants need sunshine)</p> <p>To know what changes occur in the environment when it is winter - frost, ice, snow</p> <p>To know that Winter is a season and leads on from Autumn</p>	<p>To know the names of basic features of animals To know that young and adult animals have specific names To know that animals need warmth, food, water, sleep, shelter and caring for to live. To know that different animals live in different parts of the world To know that different animals have adaptations for survival (hibernation - retrieval) camouflage , herbivore, carnivore, omnivore To know that some animals are born and some hatch To know the basic stages of the life cycle of an animal</p>	<p>Children will make observations about animals discussing similarities and differences. To know that Spring is a season</p> <p>To know that leaves on some trees are still green and that some leaves are starting to grow</p> <p>To know what changes occur in the environment when it is Spring - new growth, longer days, warmer days</p> <p>To know that Spring is a season and leads on from Winter (the world is going round the sun)</p> <p>To know the names of parts of plants</p> <p>To know that plants need specific conditions for successful growth.</p>	<p>Children will know some important processes and changes in the natural world, including states of matter.</p> <p>Children will make observations about plants discussing similarities and differences. To know that we use different materials for different reasons (retrieve knowledge of warm clothes in winter) To know that things are made from different materials for a purpose - fabric, metal, wood, plastic, man made/natural To know that properties identify different materials - heavy/light, float/sink, waterproof, insulating</p>

Reception

Working scientifically	<ul style="list-style-type: none"> - To identify features - To identify features of the seasons - To talk about and describe what they can see and feel - Provide first-hand experiences to support children in making sense of micro environments - To sequence life cycles
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	<ul style="list-style-type: none"> - To predict and investigate: what a plant needs to grow, materials ,seasons, plant growth over time - To record the differences between the seasons - To compare similarities and differences between animals - Give opportunities to record findings (eg drawing, writing, making a model, photography) - To reach a conclusion - To know why things change and happen 					
Topic	Animals including humans	Autumn	Winter		Plants and living things	Materials and their Materials
Prior learning (Nursery)	<ul style="list-style-type: none"> • Know how humans develop from babies • Know the names of different body parts & what they do • Know that sleep, food, hygiene are important for our health • Know the effects of exercise on the body e.g. heart beats faster, get hotter To know that children are boys and girls To know that they are a person To know that they were a baby then a toddler then a child To know that parents are adults To know the names of basic features of their body 	<ul style="list-style-type: none"> • Observe animals and the natural world closely through a variety of means e.g. magnifiers & photographs To know about and recognise the signs of Autumn To know about features of the world and Earth 	<ul style="list-style-type: none"> To know about and recognise the signs of Winter To know some important processes and changes in the natural world including states of matter (freezing) To know that the weather is changing To know (in a basic form) why Winter happens (days have less sun To know that winter is cold To know what changes occur in the environment when it is winter - frost, ice, snow To know that specific clothes are needed in the winter- warm and waterproof 	<ul style="list-style-type: none"> To know about and recognise the signs of Spring To know about features of my own immediate environment and how they might vary from another. To plant seeds To know that the weather is changing To know that plants change at different times of the year To know that Spring is a season To know what changes occur in the environment when it is Spring - new growth, longer days, warmer days 	<ul style="list-style-type: none"> Most plants start growing from a seed or bulb • All plants need water & light to grow & survive • Observe plants closely through a variety of means e.g. magnifiers & photographs • Use all the senses in hands-on exploration of plants • Understand the key features of the life cycle of a plant. • Know how to care for plants • Know about the different seasons & the effect they have on plants, trees & creatures • Know where different insects live & why • Know the correct terms to describe the life-cycle of a butterfly 	
Key knowledge	Can describe/compare themselves, family, friends	Children will explore and ask questions about the natural	Children will talk about features of the environment	To know the names of basic features of animals	Children will make observations about animals	Children will know some important processes and

	<p>and community.</p> <ul style="list-style-type: none"> • Can create pictures of themselves, family, friends and community and identify their distinguishing features. • Can talk about what they see when using a mirror. • Can compare hand, foot and fingerprints and talk about how they are Different. • Can talk about how they look after themselves and how other people look after them. 	<p>world around them.</p> <p>To know that the weather and plants around them are changing</p> <p>To know that Autumn is a season and why it happens</p> <p>To know that leaves on some trees are dying (changing colour) and some are not</p> <p>To know that Autumn is a season and leads on from Summer and leads into Winter</p>	<p>they are in and learn about the different environments.</p> <p>To know that the weather is changing and that Winter is a season</p> <p>To know that leaves on some trees are still green</p> <p>To know why Winter happens (days have less sun and plants need sunshine)</p> <p>To know what changes occur in the environment when it is winter - frost, ice, snow</p> <p>To know that Winter is a season and leads on from Autumn</p>	<p>To know that young and adult animals have specific names</p> <p>To know that animals need warmth, food, water, sleep, shelter and caring for to live.</p> <p>To know that different animals live in different parts of the world</p> <p>To know that different animals have adaptations for survival (hibanation - retrieval) camouflage , herbivore, carnivore, omnivore</p> <p>To know that some animals are born and some hatch</p> <p>To know the basic stages of the life cycle of an animal</p>	<p>discussing similarities and differences.</p> <p>To know that Spring is a season</p> <p>To know that leaves on some trees are still green and that some leaves are starting to grow</p> <p>To know what changes occur in the environment when it is Spring - new growth, longer days, warmer days</p> <p>To know that Spring is a season and leads on from Winter (the world is going round the sun)</p> <p>To know the names of parts of plants</p> <p>To know that plants need specific conditions for successful growth.</p>	<p>changes in the natural world, including states of matter.</p> <p>Children will make observations about plants discussing similarities and differences.To know that we use different materials for different reasons (retrieve knowledge of warm clothes in winter)</p> <p>To know that things are made from different materials for a purpose - fabric, metal, wood, plastic, man made/natural</p> <p>To know that properties identify different materials - heavy/light, float/sink, waterproof, insulating</p>
<p>Future learning (Year 1)</p>	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> •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. 	<ul style="list-style-type: none"> •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. 			

Year 1

Working scientifically KS1	<p><u>Ask questions</u></p> <ul style="list-style-type: none"> - Question why things happen - Ask simple questions and recognise that they can be answered in different ways - Ask relevant questions and use different types of scientific enquiries to answer them <p><u>Make observations and take measurements</u></p> <ul style="list-style-type: none"> - Talk about things found - Observing closely, using simple equipment - Making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers <p><u>Engage in practical enquiry to answer questions</u></p> <ul style="list-style-type: none"> - Notice simple similarities and differences - Performing simple tests - Identifying and classifying - Setting up simple practical enquiries, comparative and fair tests <p><u>Record and present evidence</u></p> <ul style="list-style-type: none"> - Create simple representations of people and objects - Gathering and recording data to help in answering questions - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables <p><u>Answer questions and conclude</u></p> <ul style="list-style-type: none"> - Begin to use science words when talking and have own ideas about what is seen - Using their observations and ideas to suggest answers to questions - Using straightforward scientific evidence to answer questions or to support their findings 		
Topic	Animals including humans	Materials and their Properties	Plants
Prior learning (Reception)	<ul style="list-style-type: none"> • Talk about members of their immediate family and community. • Name and describe people who are familiar to them. • Recognise some environments that are different to the one in which they live 	<ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. 	<ul style="list-style-type: none"> • Draw information from a simple map. • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them.
Key knowledge	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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.

	<ul style="list-style-type: none"> • 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. 	<p>everyday materials.</p> <ul style="list-style-type: none"> • Compare and group together a variety of everyday materials on the basis of their simple physical properties. 	
Future learning (Year 2)	<ul style="list-style-type: none"> • 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. • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. • Identify and name a variety of plants and animals in their habitats, including microhabitats.
Seasonal Changes Throughout the year			
Prior learning	<ul style="list-style-type: none"> • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Understand the effect of changing seasons on the natural world around them. 		
Key knowledge	<ul style="list-style-type: none"> • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies. 		
Future learning	<ul style="list-style-type: none"> • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.(year 3) 		

Year 2

Working scientifically KS1	<p><u>Ask questions</u></p> <ul style="list-style-type: none"> - Question why things happen - Ask simple questions and recognise that they can be answered in different ways - Ask relevant questions and use different types of scientific enquiries to answer them <p><u>Make observations and take measurements</u></p> <ul style="list-style-type: none"> - Talk about things found - Observing closely, using simple equipment - Making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers <p><u>Engage in practical enquiry to answer questions</u></p> <ul style="list-style-type: none"> - Notice simple similarities and differences - Performing simple tests - Identifying and classifying - Setting up simple practical enquiries, comparative and fair tests <p><u>Record and present evidence</u></p> <ul style="list-style-type: none"> - Create simple representations of people and objects - Gathering and recording data to help in answering questions - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables <p><u>Answer questions and conclude</u></p> <ul style="list-style-type: none"> - Begin to use science words when talking and have own ideas about what is seen - Using their observations and ideas to suggest answers to questions - Using straightforward scientific evidence to answer questions or to support their findings
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Topic	Animals including humans	Materials and their properties	Living things and their habitats	Plants
Prior learning (Year 1)	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. (Y1 - Plants) • Identify and describe the basic structure of a variety of common flowering plants, including trees. (Y1 - Plants) • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. (Y1 - Animals including humans) • Identify and name a variety of common animals that are carnivores, herbivores and 	<ul style="list-style-type: none"> • 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.

	basic parts of the human body and say which part of the body is associated with each sense.	the basis of their simple physical properties.	omnivores. (Y1 - Animals including humans) • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). (Y1 – Animals, including humans) • Observe changes across the four seasons. (Y1 - Seasonal change)	
Key knowledge	<ul style="list-style-type: none"> • 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. • 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. (Y2 - Living things and their habitats) 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. • Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals including humans) 	<ul style="list-style-type: none"> • 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. • Identify and name a variety of plants and animals in their habitats, including microhabitats.(Y2 - Living things and their habitats)
Future learning (Year 3)	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) • 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. 	<ul style="list-style-type: none"> • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) 	<ul style="list-style-type: none"> • 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/dispersal.

Year 3

<p>Working scientifically Lower KS2</p>	<p><u>Ask questions</u></p> <ul style="list-style-type: none"> - Ask simple questions and recognise that they can be answered in different ways - Ask relevant questions and use different types of scientific enquiries to answer them - Plan different types of scientific enquiries to answer question, including recognising and controlling variables where necessary <p><u>Make observations and take measurements</u></p> <ul style="list-style-type: none"> - Observing closely, using simple equipment - Making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate <p><u>Engage in practical enquiry to answer questions</u></p> <ul style="list-style-type: none"> - Performing simple tests - Setting up simple practical enquiries, comparative and fair tests - Plan different types of scientific enquiries to answer question, including recognising and controlling variables where necessary <p><u>Record and present evidence</u></p> <ul style="list-style-type: none"> - Gather and record data to help in answering questions - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs <p><u>Answer questions and conclude</u></p> <ul style="list-style-type: none"> - Using their observations and ideas to suggest answers to questions - Use straightforward scientific evidence to answer questions or to support findings - Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
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Topic	Animals including humans	Forces and magnets	Light	Plants	Rocks
<p>Prior learning (Year 1 or 2)</p>	<ul style="list-style-type: none"> • 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. • Describe how animals 	<ul style="list-style-type: none"> • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials) 	<ul style="list-style-type: none"> • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) • Describe the simple physical properties of a variety of everyday materials. (Y1 - Materials) 	<ul style="list-style-type: none"> • 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. • Identify and name a variety of plants and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats) 	<ul style="list-style-type: none"> • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials)

	obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. (Y2 - Living things and their habitats)				
Key knowledge	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.
Future learning (Year 4, 5 or 6)	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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, 	<ul style="list-style-type: none"> • 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. (Y5 - Properties and changes of materials) • Recognise that light appears to travel in straight lines. • Use the idea that light travels in 	<ul style="list-style-type: none"> • Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) • Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - 	<ul style="list-style-type: none"> • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6 - Evolution and inheritance)

		pulleys and gears, allow a smaller force to have a greater effect. (year 5)	<p>straight lines to explain that objects are seen because they give out or reflect light into the eye.</p> <ul style="list-style-type: none"> • 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. 	Living things and their habitats)	
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Year 4	
Working scientifically Lower KS2	<p><u>Ask questions</u></p> <ul style="list-style-type: none"> - Ask simple questions and recognise that they can be answered in different ways - Ask relevant questions and use different types of scientific enquiries to answer them - Plan different types of scientific enquiries to answer question, including recognising and controlling variables where necessary <p><u>Make observations and take measurements</u></p> <ul style="list-style-type: none"> - Observing closely, using simple equipment - Making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate <p><u>Engage in practical enquiry to answer questions</u></p> <ul style="list-style-type: none"> - Performing simple tests - Setting up simple practical enquiries, comparative and fair tests - Plan different types of scientific enquiries to answer question, including recognising and controlling variables where necessary <p><u>Record and present evidence</u></p> <ul style="list-style-type: none"> - Gather and record data to help in answering questions - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs <p><u>Answer questions and conclude</u></p> <ul style="list-style-type: none"> - Using their observations and ideas to suggest answers to questions - Use straightforward scientific evidence to answer questions or to support findings - Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Topic	Animals including humans	Electricity	Sound	States of matter	Living things and their habitats
<p>Prior learning (Year N, 1, 3)</p>	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Explore how things work (Nursery) 	<ul style="list-style-type: none"> Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. (Y1 - Animals, including humans) 	<ul style="list-style-type: none"> Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks) Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) 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. (Y3 - Forces and magnets) 	<ul style="list-style-type: none"> Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants)
<p>Key knowledge</p>	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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. Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity) 	<ul style="list-style-type: none"> 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. Construct and interpret a variety of food chains, identifying producers, predators and prey. (Y4 - Animals, including humans)

<p>Future learning (Year 5, 6 or KS3)</p>	<ul style="list-style-type: none"> • Describe the changes as humans develop to old age. • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) • Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) 	<p>Y6</p> <ul style="list-style-type: none"> • 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. 	<p>KS3</p> <ul style="list-style-type: none"> • Waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition. • Frequencies of sound waves, measured in Hertz (Hz); echoes, reflection and absorption of sound. • Sound needs a medium to travel, the speed of sound in air, in water, in solids. • Sound produced by vibrations of objects, in loud speakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal. • Auditory range of humans and animals. • Pressure waves transferring energy; use for cleaning and physiotherapy by ultra-sound. • Waves transferring information for conversion to electrical signals by microphone. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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.
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<p>Year 5</p>	
<p>Working scientifically Upper KS2</p>	<p><u>Ask questions</u></p> <ul style="list-style-type: none"> - Ask relevant questions and use different types of scientific enquiries to answer them - Plan different types of scientific enquiries to answer question, including recognising and controlling variables where necessary - Ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience <p><u>Make observations and take measurements</u></p> <ul style="list-style-type: none"> - Making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate

- Make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements

Engage in practical enquiry to answer questions

- Setting up simple practical enquiries, comparative and fair tests
- Plan different types of scientific enquiries to answer question, including recognising and controlling variables where necessary
- Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate

Record and present evidence

- Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements

Answer questions and conclude

- Use straightforward scientific evidence to answer questions or to support findings
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- Identify scientific evidence that has been used to support or refute ideas or arguments
- 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
- Use test results to make predictions to set up further comparative and fair tests

Topic	Forces	Earth and Space	Properties and changes of materials	Living things and their habitats	Animals including humans
Prior learning (Year 4)	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Observe changes across the four seasons. (Y1 – Seasonal changes) • Observe and describe weather associated with the seasons and how day length varies. (Y1 – Seasonal changes) 	<ul style="list-style-type: none"> • 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. • Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity) 	<ul style="list-style-type: none"> • 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. • Construct and interpret a variety of food chains, identifying producers, 	<ul style="list-style-type: none"> • 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.

	<ul style="list-style-type: none"> • Predict whether two magnets will attract or repel each other, depending on which poles are facing. 			predators and prey. (Y4 - Animals, including humans)	
Key knowledge	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Describe the changes as humans develop to old age. • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) • Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats)
Future learning (Year 6)	<p>KS3</p> <ul style="list-style-type: none"> • Magnetic fields by plotting with compass, representation by field lines. • Earth's magnetism, compass and navigation. • Forces as pushes or pulls, arising from the interaction between two objects. • Using force arrows in diagrams, adding forces in 	<p>KS3</p> <ul style="list-style-type: none"> • Gravity force, weight = mass x gravitational field strength (g), on Earth $g=10$ N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and Sun (qualitative only). • Our Sun as a star, other stars in our galaxy, other 	<p>KS3</p> <ul style="list-style-type: none"> • Chemical reactions as the rearrangement of atoms. • Representing chemical reactions using formulae and using equations. • Combustion, thermal decomposition, oxidation and displacement reactions. • Defining acids and alkalis in terms of neutralisation reactions. • The pH scale for measuring acidity/alkalinity; and indicators. 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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

	<p>one dimension, balanced and unbalanced forces.</p> <ul style="list-style-type: none"> • Moment as the turning effect of a force. • Forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way; resistance to motion of air and water. • Forces measured in Newtons, measurements of stretch or compression as force is changed. 	<p>galaxies.</p> <ul style="list-style-type: none"> • The seasons and the Earth’s tilt, day length at different times of year, in different hemispheres. • The light year as a unit of astronomical distance. 		<p>characteristics.</p> <ul style="list-style-type: none"> • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance) • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 - Evolution and inheritance) 	<p>nutrients and water are transported within animals, including humans.</p> <ul style="list-style-type: none"> • 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. (Y6 - Living things and their habitats) • Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)
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Year 6	
<p>Working scientifically Upper KS2</p>	<p><u>Ask questions</u></p> <ul style="list-style-type: none"> - Ask relevant questions and use different types of scientific enquiries to answer them - Plan different types of scientific enquiries to answer question, including recognising and controlling variables where necessary - Ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience <p><u>Make observations and take measurements</u></p> <ul style="list-style-type: none"> - Making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - Take measurements, using a range of scientific equipment, with increasing accuracy and precision, take repeat readings when appropriate - Make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements <p><u>Engage in practical enquiry to answer questions</u></p> <ul style="list-style-type: none"> - Setting up simple practical enquiries, comparative and fair tests - Plan different types of scientific enquiries to answer question, including recognising and controlling variables where necessary - Select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables, where appropriate <p><u>Record and present evidence</u></p> <ul style="list-style-type: none"> - Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific

language, drawings, labelled diagrams, keys, bar charts, and tables

- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements

Answer questions and conclude

- Use straightforward scientific evidence to answer questions or to support findings
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- Identify scientific evidence that has been used to support or refute ideas or arguments
- 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
- Use test results to make predictions to set up further comparative and fair tests

Topic	Animals including humans	Light	Electricity	Living things and their habitats	Evolution and inheritance
Prior learning	<p>Y5</p> <ul style="list-style-type: none"> • Describe the changes as humans develop to old age. • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) • Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) 	<p>Y3</p> <ul style="list-style-type: none"> • Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change. 	<p>Y4</p> <ul style="list-style-type: none"> • 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. 	<p>Y5</p> <ul style="list-style-type: none"> • 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. 	<p>Y5</p> <ul style="list-style-type: none"> • Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)
Key knowledge	<ul style="list-style-type: none"> • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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, 	<ul style="list-style-type: none"> • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, 	<ul style="list-style-type: none"> • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth

	<ul style="list-style-type: none"> • 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. • 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. (Y6 - Living things and their habitats) • Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)v 	<p>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.</p>	<p>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.</p>	<p>including microorganisms, plants and animals. • Give reasons for classifying plants and animals based on specific characteristics. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. (Y6 - Evolution and inheritance) • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. (Y6 - Evolution and inheritance)</p>	<p>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.</p>
<p>Future learning (KS3)</p>	<ul style="list-style-type: none"> • Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. • The consequences of imbalances in the diet, including obesity, starvation and deficiency diseases. • The effects of recreational drugs (including substance misuse) on behaviour, health 	<ul style="list-style-type: none"> • The similarities and differences between light waves and waves in matter. • Light waves travelling through a vacuum; speed of light. • The transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface. • Use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye. • Light transferring energy from source to absorber leading to chemical and electrical effects; photo-sensitive material in the retina and in cameras. • Colours and the different frequencies of 	<ul style="list-style-type: none"> • Electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge. • Potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential difference (p.d.) to current. • Differences in resistance between conducting and insulating components (quantitative). • Static electricity. 	<ul style="list-style-type: none"> • Reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta. • Reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative 	<ul style="list-style-type: none"> • Heredity as the process by which genetic information is transmitted from one generation to the next. • A simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model. • The variation between species and between individuals of the same species means some organisms compete more successfully, which can drive natural selection. • Changes in

and life processes.

- The structure and functions of the gas exchange system in humans, including adaptations to function.
- The mechanism of breathing to move air in and out of the lungs.
- The impact of exercise, asthma and smoking on the human gas exchange system.

light, white light and prisms (qualitative only); differential colour effects in absorption and diffuse reflection.

investigation of some dispersal mechanisms. • Differences between species.

the environment may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.