



Curriculum Progression map – Science

Key knowledge

Science Intent: Continue to develop the Science Curriculum and monitor its effective implementation including developing expertise across the school – This will be done through developing the experience of science even more, drawing on a wide range of resources and tools and raising the profile of science across key stakeholders. Also, by developing and supporting the effective use of assessment; marking and feedback ensuring that pupils embed knowledge and use it fluently and assist teachers in producing clear next steps leading towards extending pupils scientific enquiry skills.

Key Area	Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals, including Humans	<p>Understanding the World</p> <p>Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children’s personal experiences increases their knowledge and sense of the world around them – from visiting parks,</p>	<p>Animals, including Humans</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 	<p>Animals including Humans</p> <ul style="list-style-type: none"> • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • notice that animals, including humans, have offspring which grow into adults 	<p>Animals including Humans</p> <ul style="list-style-type: none"> • identify that humans and some animals have skeletons and muscles for support, protection and movement. • identify that animals, including humans, need the right types and amount of nutrition • They cannot 	<p>Animals including Humans</p> <ul style="list-style-type: none"> • construct and interpret a variety of food chains, identifying producers, predators and prey. • describe the simple functions of the basic parts of the digestive system in humans • identify the different types of 	<p>Animals, including Humans</p> <ul style="list-style-type: none"> • draw a timeline to indicate stages in the growth and development of humans. • describe the changes as humans develop to old age. • AIH3 learn about the changes experienced in puberty. 	<p>Animals, including Humans</p> <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 • explore questions to understand how the circulatory system enables the body to function.



	<p>libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.</p>	<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. • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) 	<ul style="list-style-type: none"> • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. 	<p>make their own food; they get nutrition from what they eat</p> <p>-</p> <p>---</p> <p>---</p> <p>---</p>	<p>teeth in humans and their simple functions</p>		<ul style="list-style-type: none"> • AIH3 describe the ways in which nutrients and water are transported within animals, including humans. • explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health. • learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body. • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
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Key Area	Year 2	Year 4	Year 5	Year 6
Living Things and their Habitats	<p>Living Things and their Habitats</p> <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 and name a variety of plants and animals in their habitats, including micro-habitats• identify that most living things live in habitats to which they are suited• describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other• describe how animals obtain their food from plants and other animals• understand a simple food chain, and identify and name different sources of food	<p>Living things and their Habitats</p> <ul style="list-style-type: none">• recognise that living things (including those in the locality) 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.	<p>Living things and their Habitats</p> <ul style="list-style-type: none">• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird• find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.• describe the life process of reproduction in some plants and animals.• raise questions about their local environment throughout the year.• find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.	<p>Living things and their Habitats</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• should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals).• give reasons for classifying plants and animals based on specific characteristics.• know that broad groupings, such as micro-organisms, plants and animals can be subdivided.• find out about significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.



Key Area	Year 1	Year 2	Year 4	Year 5
Materials	<p>Everyday Materials</p> <ul style="list-style-type: none">• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock• distinguish between an object and the material from which it is made• describe the simple physical properties of a variety of everyday materials - hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent• compare and group together a variety of everyday materials on the basis of their simple physical properties <p>explore and experiment with a wide variety of materials, for example brick, paper, fabrics, elastic, foil.</p>	<p>Uses of Everyday Materials</p> <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	<p>States of Matter</p> <ul style="list-style-type: none">• compare and group materials together, according to whether they are solids, liquids or gases• explore a variety of everyday materials and develop simple descriptions of the states of matter• 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	<p>Properties and changes of materials</p> <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• give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic• 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• demonstrate that dissolving, mixing and changes of state are reversible changes



				<ul style="list-style-type: none">• PM6 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.• PM7 explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes.• PM8 explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda.
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Key Area	Year 1	Year 2	Year 3
Plants	<p>Plants</p> <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.	<p>Plants</p> <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.	<p>Plants</p> <ul style="list-style-type: none">• 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• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers• explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.• investigate the way in which water is transported within plants• know that plants make their own food.



Key Area	Year 3	Year 5
Forces and magnets	<p>Forces and Magnets</p> <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.	<p>Forces</p> <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• find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.• identify the effects of air resistance, water resistance and friction, that act between moving surfaces• explore the effects of friction on movement and find out how it slows or stops moving objects.• explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall.• recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.



Key Area	Year 3	Year 6
Light	<p>Light</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 a solid object• find patterns in the way that the size of shadows change.	<p>Light</p> <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• use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.• 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• work scientifically by: deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works.• look at a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).



Key Area	Year 4	Year 6
Electricity	<p>Electricity</p> <ul style="list-style-type: none">• identify common appliances that run on electricity• construct a simple series circuit, identifying/naming its basic parts, including cell, wire, bulb, switch and buzzer• draw the circuit as a pictorial representation (not necessarily using conventional circuit symbols)• identify whether or not a lamp will light in a simple series circuit/• recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit• use their circuits to create simple devices• about precautions for working safely with electricity.• recognise some common conductors and insulators, and associate metals with being good conductors.	<p>Electricity</p> <ul style="list-style-type: none">• E5 learn how to represent a simple circuit in a diagram using recognised symbols.• E3 use recognised symbols when representing a simple circuit in a diagram.• E4 construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors.• E1 associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit• E2 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



Key Area	Year 1
Seasonal changes	<p>Seasonal Changes</p> <ul style="list-style-type: none">• SC1 observe changes across the four seasons• SC2 observe and describe weather associated with the seasons and how day length varies.

Key Area	Year 3
Rocks	<p>Rocks</p> <ul style="list-style-type: none">• R1 compare and group together different kinds of rocks (including those in the locality) on the basis of appearance and simple physical properties• R2 describe in simple terms how fossils are formed when things that have lived are trapped within rock• R3 recognise that soils are made from rocks and organic matter.



Key Area	Year 4
Sound	<p>Sound</p> <ul style="list-style-type: none">• S1 identify how sounds are made, associating some of them with something vibrating• S2 recognise that vibrations from sounds travel through a medium to the ear• S3 find patterns between the pitch of a sound and features of the object that produced it• S4 find patterns between the volume of a sound and the strength of the vibrations that produced it• S5 recognise that sounds get fainter as the distance from the sound source increases.

Key Area	Year 5
Earth and Space	<p>Earth and Space</p> <ul style="list-style-type: none">• ES1 describe the movement of the Earth, and other planets, relative to the Sun in the solar system• ES2 describe the movement of the Moon relative to the Earth• ES3 describe the Sun, Earth and Moon as approximately spherical bodies • ES4 use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.• ES5 learn that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006).• ES6 understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).



Key Area	Year 6
Evolution and Inheritance	<p>Evolution and Inheritance</p> <ul style="list-style-type: none">• E11 recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago• E12 recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents• E13 identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.• E14 be introduced to the idea that characteristics are passed from parents to their offspring, i.e. different breeds of dogs, and what happens when, for example, labradors are crossed with poodles.• E15 appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes' necks got longer.• E16 find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.



Key Skills & Key Vocabulary

	Year R	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Key Skills	<p>ELG: The Natural World Children at the expected level of development will: -</p> <p>Explore the natural world around them, making observations and drawing pictures of animals and plants;</p> <p>Know some similarities and differences between the natural world around them and contrasting environments,</p> <p>drawing on their experiences and what has been read in class; -</p> <p>Understand some important</p>	<p>Pupils will be taught to use the following practical scientific methods, processes and skills:</p> <ul style="list-style-type: none"> • WS1 asking simple questions and recognising that they can be answered in different ways • WS2 observing closely, using simple equipment and measurement • WS3 performing simple tests • WS4 identifying and classifying • WS5 using their observations and ideas to suggest 	<p>WS1 asking simple questions and recognising that they can be answered in different ways</p> <ul style="list-style-type: none"> • WS2 observing closely, using simple equipment and measurement • WS3 performing simple tests • WS4 identifying and classifying • WS5 using their observations and ideas to suggest answers to questions • WS6 gathering, recording and communicating data and findings to 	<ul style="list-style-type: none"> • WS1 making decisions, asking relevant questions and using different types of scientific enquiries to answer them • WS2 setting up simple practical enquiries, comparative and fair tests • WS3 making systematic and careful observations using notes and simple tables • WS4 taking accurate measurements using standard units, using a range of equipment, including 	<ul style="list-style-type: none"> • WS1 making decisions, asking relevant questions and using different types of scientific enquiries to answer them • WS2 setting up simple practical enquiries, comparative and fair tests • WS3 making systematic and careful observations using notes and simple tables • WS4 taking accurate measurements using standard units, using a range of equipment, including 	<ul style="list-style-type: none"> • WS1 planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • WS2 taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • WS3 recording data and results of increasing complexity using scientific diagrams and labels, classification keys, 	<ul style="list-style-type: none"> • WS1 planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • WS2 taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • WS3 recording data and results of increasing complexity using scientific diagrams and labels, classification keys,



	<p>processes and changes in the natural world around them, including the seasons and changing states of matter.</p>	<p>answers to questions</p> <ul style="list-style-type: none"> • WS6 gathering, recording and communicating data and findings to help in answering questions. • WS7 use scientific language and read and spell age-appropriate scientific vocabulary • WS8 begin to notice patterns and relationships. 	<p>help in answering questions.</p> <ul style="list-style-type: none"> • WS7 use scientific language and read and spell age-appropriate scientific vocabulary • WS8 begin to notice patterns and relationships. 	<p>thermometers and data loggers</p> <ul style="list-style-type: none"> • WS5 gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • WS6 recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • WS7 reporting on findings from enquiries, using relevant scientific language, including oral and written explanations, displays or presentations of results and conclusions • WS8 using results to draw simple conclusions, make 	<p>thermometers and data loggers</p> <ul style="list-style-type: none"> • WS5 gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • WS6 recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • WS7 reporting on findings from enquiries, using relevant scientific language, including oral and written explanations, displays or presentations of results and conclusions • WS8 using results to draw simple conclusions, make 	<p>tables, scatter graphs, bar and line graphs</p> <ul style="list-style-type: none"> • WS4 using test results to make predictions to set up further comparative and fair tests • WS5 reporting and presenting 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 • WS6 identifying scientific evidence that has been used to support or refute ideas or arguments. • WS7 explore and talk about their ideas; asking their own questions about scientific 	<p>tables, scatter graphs, bar and line graphs</p> <ul style="list-style-type: none"> • WS4 using test results to make predictions to set up further comparative and fair tests • WS5 reporting and presenting 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 • WS6 identifying scientific evidence that has been used to support or refute ideas or arguments. • WS7 explore and talk about their ideas; asking their own questions about scientific
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				<p>predictions for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none">• WS9 identifying differences, patterns, similarities or changes related to simple scientific ideas and processes• WS10 using straightforward scientific evidence to answer questions or to support their findings.• WS11 begin to look for naturally occurring patterns and relationships• WS12 recognise when and how secondary sources might help them to answer questions that cannot be answered through	<p>predictions for new values, suggest improvements and raise further questions</p> <ul style="list-style-type: none">• WS9 identifying differences, patterns, similarities or changes related to simple scientific ideas and processes• WS10 using straightforward scientific evidence to answer questions or to support their findings.• WS11 begin to look for naturally occurring patterns and relationships• WS12 recognise when and how secondary sources might help them to answer questions that cannot be answered through	<p>phenomena; and analysing functions, relationships and interactions more systematically.</p> <ul style="list-style-type: none">• WS8 recognise that scientific ideas change and develop over time.• WS9 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.• WS10 Pupils should read, spell and pronounce scientific vocabulary correctly	<p>phenomena; and analysing functions, relationships and interactions more systematically.</p> <ul style="list-style-type: none">• WS8 recognise that scientific ideas change and develop over time.• WS9 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.• WS10 Pupils should read, spell and pronounce scientific vocabulary correctly
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				practical investigations.	practical investigations.		
Key Vocabulary		<p>Animals including Humans Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each) Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak</p> <p>Materials Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth</p> <p>Plants Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb,</p>	<p>Animals including humans Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene</p> <p>Plants Seeds, Bulbs, Water, Light, Temperature, Growth</p> <p>Living things and their habitats Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert</p> <p>Everyday materials and their uses Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy,</p>	<p>Animals including humans Movement, Muscles, Bones, Skull, Nutrition, Skeletons,</p> <p>Plants Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower</p> <p>Rocks Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent</p> <p>Light Light, Shadows, Mirror, Reflective, Dark, Reflection</p> <p>Forces and magnets</p>	<p>Animals including humans Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar</p> <p>Living things and their habitats Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats</p> <p>States of Matter Solid, Liquid, Gas, Evaporation, Condensation, Particles,</p>	<p>Animals including humans Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty</p> <p>Living things and their habitats Mammal, Reproduction, Insect, Amphibian, Bird, Offspring</p> <p>Properties and changes of materials Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing</p>	<p>Animals including humans Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration</p> <p>Living things and their habitats Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects</p> <p>Evolution and Inheritance Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics</p> <p>Light</p>



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		<p>Seed, Trunk, Branches, Stem</p> <p>Seasons Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark</p>	<p>Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil</p>	<p>Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull</p>	<p>Temperature, Freezing, Heating</p> <p>Sound Volume, Vibration, Wave, Pitch, Tone, Speaker</p> <p>Electricity Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators</p>	<p>Earth and Space Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation</p> <p>Forces Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys</p>	<p>Refraction, Reflection, Light, Spectrum, Rainbow, Colour,</p> <p>Electricity Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell</p>
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