UNIVERSITY OF CAMBRIDGE PRIMARY SCHOOL

# Science Progression Mapping 2023-24

## EYFS – Nursery

| Project | Substantive Knowledge | Vocabulary | Disciplinary Knowledge - Working Scientifically |
|---|---|---|---|
| Autumn 1<br><br>People - Me and my family<br><br>Body parts, senses and emotions | Exploring senses and emotions<br><br>Understanding different body parts and care for myself and my needs, including teeth<br><br>Beginning to question how a mirror works | cheeks, ears, eyes, feelings, head, hear, knees, mirror, mouth, see, shoulders, smell, taste, teeth, toes, touch. | Science is covered in the **Understanding the World (The Natural World)** part of nursery's curriculum. We follow the Development Matters framework.<br><br>Through play and exploration, children in EYFS will:<br><br>**PLAN**<br><br>Show curiosity and ask questions.<br><br>Predict<br><br>**DO**<br><br>Use equipment and their senses to measure and make observations<br><br>Observe closely<br><br>Make direct comparisons<br><br>**REVIEW**<br><br>Record their observations by drawing, taking photographs, using sorting rings or boxes<br><br>Identify, sort and group their findings.<br><br>Use their observations to help them to answer their questions<br><br>Talk about what they have found out |
| Autumn 2<br><br>Places: Our community<br><br>Me, my environment and my home | Looking and listening to our community<br><br>Exploring the forest and our near environment<br><br>Talking about camping, making pretend fires and tents | animals, environment, explore, fire, forest, hear, listen, loud, noise, poo, quiet, see, trees. | |
| Autumn: Understanding the World - The Natural World<br>- Begin to understand the need to respect and care for the natural environment and all living things.<br>- Explore natural materials using all of their senses<br>- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class<br>- Talk about what they notice using a wide range of vocabulary | | | |
| Spring 1<br><br>The Past, Weather and Seasons | Explore and understand different seasons and exploring with all senses<br><br>Beginning to connect different seasons with their weather and observing patterns | cloud, cold, curious, hot, ice, rain, seasons, snow, sun, temperature, thermometer. | |
| Spring 2<br><br>Diversity: All Creatures Great and Small | Begin to understand how life begins for animals and their life cycle.<br><br>Using senses to understand where mini-beasts live and which we find in our outside space. | born, bug hotel, butterflies, care, change, egg, farm, hatch, insects, life cycle, mini-beasts, senses. | |

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| Animals, including pets and mini-beasts<br><br>Life cycles<br><br>Farm visit | Observing birds and insects and their life cycles.<br><br>Observing and understanding different animals, their characteristics and how care for them. | | |
| Spring: Understanding the World - The Natural World<br>- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.<br>- Explore natural materials using all of their senses<br>- Understand the key features of the life cycle of plants and an animal<br>- Explore collections of materials with similar and/or different properties<br>- Talk about what they notice using a wide range of vocabulary | | | |
| Summer 1<br><br>On the Move<br><br>How do I move around? The classroom, playground, town, country and world?<br><br>Transport – how objects move | Exploring how things work and how objects move, including observing floating boats and different modes of transport<br><br>Exploring and discussing forces and how these feel, using magnets and investigations connected to these. | fast, floating, move, rotate, sinking, slow, transport, turn. | |
| Summer 2<br><br>Traditional and un-traditional tales<br><br>Plants and growth<br><br>Changes in state | Beginning to understand plant growth through observation (connection to *Jack and the Beanstalk*) and exploring the natural environment with orienteering activities (connected to *We're Going on a Bear Hunt*)<br><br>Talk about what they notice, including with changes (such as with the use of dissolving when exploring *The Gingerbread Man* and cooking porridge and its connection to *Goldilocks and the Three Bears*) | compare, dissolve, grow, observe, plant, root, seed, soil, stalk, sun, water. | |
| Summer: Understanding the World - The Natural World<br>- Talk about what they notice using a wide range of vocabulary<br>- Explore the differences between materials and changes they notice<br>- Explore how things work<br>- Explore and talk about forces they can feel<br>- Talk about the differences between materials and changes they notice | | | |

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## EYFS – Reception

| Project | Substantive Knowledge | Vocabulary | Disciplinary Knowledge - Working Scientifically |
|---|---|---|---|
| Autumn 1<br><br>People - Me and my family<br><br>Body parts, senses and emotions<br><br>Weather and environments around the world | Exploring senses and emotions<br><br>Understanding different body parts and care for myself and my needs, including teeth<br><br>Comparing the experiences my family and I have had around the world. Beginning to understand weather and environments. | *cheeks, ears, eyes, feelings, head, hear, knees, mirror, mouth, see, shoulders, smell, taste, teeth, toes, touch.*<br><br>ankles, arms, brain, elbows, eyebrows, eyelashes, eyes, face, fingers, hair, head, heart, knees, legs, mouth, nails, neck, nose, teeth, toes.<br><br>cold, hot, rain, snow, sun, tropical. | Science is covered in the **Understanding the World (The Natural World)** part of nursery's curriculum. We follow the Development Matters framework.<br><br>Through play and exploration, children in EYFS will:<br><br>**PLAN**<br><br>Show curiosity and ask questions.<br><br>Predict<br><br>**DO**<br><br>Use equipment and their senses to measure and make observations<br><br>Observe closely<br><br>Make direct comparisons<br><br>**REVIEW**<br><br>Record their observations by drawing, taking photographs, using sorting rings or boxes<br><br>Identify, sort and group their findings.<br><br>Use their observations to help them to answer their questions |
| Autumn 2<br><br>Places: Our community<br><br>Me and my home | Looking and listening to our community<br><br>Exploring the forest and our near environment<br><br>Exploring our homes and local communities making comparisons with peers. | *animals, environment, explore, fire, forest, hear, listen, loud, noise, poo, quiet, see, trees.*<br><br>birds, garden, homes, journey, maps, wildlife. | |
| Autumn: Understanding the World - The Natural World<br>- Begin to understand the need to respect and care for the natural environment and all living things.<br>- Explore natural materials using all of their senses<br>- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class<br>- Draw information from a simple map<br>- Explore the natural world around them | | | |
| Spring 1<br><br>The Past | Explore and understand different seasons<br><br>Beginning to connect different seasons with their weather and observing patterns | *rain, sun, snow, cloud, ice, hot, cold, seasons, curious, temperature, thermometer* | |

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| | Think about key figures from throughout History, including explorers, musicians and artists, who have developed ideas and inventions and begin to challenge ourselves as we explore scientifically.<br><br>Explore how we have changed throughout our lives. | after, before, change, now, then (Linked to our History as well as exploring the natural world)<br><br>ideas, invention, space<br><br>adult, baby, birth, change, child, grow, pregnant | Talk about what they have found out |
| Spring 2<br><br>Diversity: All Creatures Great and Small<br><br>Animals in the UK and beyond. | Move between the land and the oceans, finding out about different creatures found on our planet.<br><br>Learn key facts that they are inspired by and develop their own thoughts and opinions about each animal. | *born, bug hotel, butterflies, care, change, egg, insects, life cycle, mini-beasts, senses.*<br><br>big, bigger, biggest Feathers, fur, land, nocturnal, ocean, pattern, scales, skin, small, smaller, smallest | |
| Spring: Understanding the World - The Natural World<br>- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.<br>- Explore natural materials using all of their senses<br>- Understand the key features of the life cycle of plants and an animal<br>- Explore collections of materials with similar and/or different properties<br>- Describe what they see, hear and feel whilst outside<br>- Recognise some environments that are different to the one in which they live<br>- Understand the effect of changing seasons on the natural world around them | | | |
| Summer 1<br><br>Building the World | Explore buildings and construction from around the world. Compare physical features of famous landmarks and create miniature versions of these.<br><br>Explore materials used to create real buildings and develop an understanding of materials used during creative play. | *fast, floating, move, rotate, sinking, slow, turn.*<br><br>attach, hard, soft, squash, stretch, strong, weak.<br><br>design, plan, review. | |
| Summer 2<br><br>Traditional and un-traditional tales<br><br>Plants and growth<br><br>Changes in state | Beginning to understand plant growth through observation (connection to *The Enormous Turnip*) and exploring the natural environment with orienteering activities (connected to *Little Red Riding Hood)* and exploring materials and their properties (*The Three Little Pigs)* | *compare, dissolve, grow, observe, plant, root, seed, soil, stalk, sun, water.*<br><br>build, connect, materials, predict, strong, weak. | |

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| | Talk about what they notice, including with changes (such as with the use of dissolving when exploring *The Gingerbread Man* and cooking porridge and its connection to *Goldilocks and the Three Bears*) | | |
| Summer: Understanding the World - The Natural World<br>- Explore the natural world around them, making observations and drawing pictures of animals and plants;<br>- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class<br>- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.<br>- Talk about what they notice using a wide range of vocabulary<br>- Explore the differences between materials and changes they notice<br>- Explore how things work<br>- Explore and talk about forces they can feel<br>- Talk about the differences between materials and changes they notice | | | |

## Year 1

| | Substantive Knowledge | Vocabulary | Working Scientifically Assessment | Disciplinary Knowledge – Working Scientifically |
|---|---|---|---|---|
| Autumn 1<br><br>Seasons | Focus on four seasons, including weather variations and day length fluctuations.<br><br>Understand that different weather occurs in different seasons e.g. snow in winter.<br><br>Explore the weather of their own area through experiments with a making a rainfall gauge and wind sock. | autumn, clothing, cold, data, day, direction, earth, forecast, gauge, cold, lightning, light, night, patterns, precipitation, rainfall, rain, seasons, shadow, snow, spin, spring, storm, summer, sun, temperature, thermometer, thunder, warm, weather, wind, winter. | Do: Observe over time and record data to help in answering questions | **PLAN**<br><br>Ask simple questions and recognise that they can be answered in different ways<br><br>Predict what they think will happen<br><br>**DO**<br><br>Observe closely, using simple equipment |
| 1.4a Observe changes across the four seasons.<br>1.4b Observe and describe weather associated with the seasons and how day length varies. | | | | |
| EYFS: (ELG: Understanding the World - The Natural World):<br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. | | | | |

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| Autumn 2<br><br>Animals<br><br>Animal groups<br><br>Carnivores/ herbivores | Understand there are key differences between birds, fish, amphibians, reptiles, mammals and invertebrates.<br><br>Understand that there are certain habitats and conditions where animals to choose to live and why. Explore this through a woodlouse study.<br><br>Consider what is involved to keep a pet happy and healthy.<br><br>Foster a simple understanding of biodiversity, including connecting it to the local area. | amphibians, backbone, behaviour, birds, care, cats, classify, compare, damp, differences, dogs, dry, explore, fish, habitat, happy, health, healthy, insects, invertebrates, investigate, living things, mammals, notice, observe, observations, patterns, pets, prediction, reptiles, shady, similarities, vertebrate. | Review: Identify and classify | Perform simple tests<br><br>Identify and classify<br><br>Gather and record data to help in answering questions<br><br>REVIEW<br><br>Use their observations and ideas to suggest answers to questions |
| 1.2a• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.<br>1.2b• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.<br>1.2c • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). | | | | |
| EYFS: (ELG: Understanding the World - The Natural World):<br>- Explore the natural world around them, making observations and drawing pictures of animals and plants | | | | |
| Spring 1<br><br>Materials<br><br>Everyday materials | Identity and compare everyday materials.<br><br>Distinguish between the object and the material it's made from.<br><br>Understand properties of these materials, such as texture and absorbency.<br><br>Explore what a magnet is and understand that not all metals are magnetic. | blunt, flat, glass, magnetic, metal, non-magnetic, plastic, properties, rock, rough, sharp, smooth, useful, wood. | Plan: Ask simple questions and recognise that they can be answered in different ways | |

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| 1.3a• Distinguish between an object and the material from which it is made.<br>1.3b• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. | | | | |
| EYFS: (ELG: Understanding the World - The Natural World):<br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.<br>Autumn 2: Materials: Buildings, materials and properties<br>Summer 1: Building the World – building and construction | | | | |
| Spring 2<br><br>Plants<br><br>Wild/ garden plants<br><br>Parts of a plant | Identify, describe and compare different garden plants (including trees) and their properties.<br><br>Be able to name a variety of common wild and garden plants, including deciduous and evergreen trees.<br><br>Understand the basic structure of a flowering plant and the basic function of the main parts. | bark, change, chitting, deciduous, different from, evergreen, flower, garden centre, grow, healthy, leaf, leaves, living, pollen, plant, potato, roots, seeds, similar to, stem, trunk, water, weed. | Do: Observing closely | |
| 1.1a• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.<br>1.1b• Identify and describe the basic structure of a variety of common flowering plants, including trees. | | | | |
| EYFS: (ELG: Understanding the World - The Natural World):<br>Explore the natural world around them, making observations and drawing pictures of animals and plants<br>Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class | | | | |
| Summer 1<br><br>Materials<br><br>Describing properties<br><br>Comparing materials | Building upon skills from Materials in Spring 1, describe the properties of materials, including shape, colour and how they behave.<br><br>Be able to compare and contrast everyday materials and their properties. | blunt, bumpy, flat, glass, magnetic, metal, materials, non-magnetic, plastic, properties, rock, rough/smooth, sharp, useful, wood. | Do: record findings in a results table | |
| 1.3c• Describe the simple physical properties of a variety of everyday materials.<br>1.3d• Compare and group together a variety of everyday materials on the basis of their simple physical properties. | | | | |
| EYFS: (ELG: Understanding the World - The Natural World):<br>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.<br>Autumn 2: Materials: Buildings, materials and properties | | | | |

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| Summer 2<br><br>Human Body<br><br>Parts of the body<br><br>The senses | Recognize, label, and illustrate key components of the human body, associating each part with its corresponding sense.<br><br>Recognise some of the ways people change over time, using key scientific words to discuss these.<br><br>Understand that we need our senses to help us explore the world and that often our senses work together to make that possible. | adult, baby, changes, centimeter, classify, compare, data, describe, different, ears, gather, growing, hearing, identify, measure, millimeter, patterns, predict, record, senses, sensory, similar, sight, smell, taste, test, tongue, touch. | Review: Evaluating | |
| 1.2d• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. | | | | |
| EYFS: (ELG: Understanding the World - The Natural World):<br>Explore the natural world around them, making observations and drawing pictures of animals and plants<br><br>Autumn 1: Me and My Family | | | | |

## Year 2

| | Substantive Knowledge | Vocabulary | Disciplinary Knowledge - Working scientifically assessment | Disciplinary Knowledge - Working scientifically |
|---|---|---|---|---|
| Autumn 1<br><br>Materials<br><br>Materials and their uses | Examine and assess the appropriateness of various common materials in diverse applications.<br><br>Identify and sort objects with different material properties.<br><br>Compare and contrast their suitability for specific purposes, such as the bounciness and stretch of some materials. | bar chart, bend/bending, changed, flexible, grams, hard, material, properties, results, rip, rigid, shape, soft, squash/squashing, stiff, stretch/stretching, stretchy, strong, tear, twist/twisting, weak, weight | Do: Perform simple tests to answer questions | **PLAN**<br><br>Ask simple questions and recognise that they can be answered in different ways<br><br>Predict what they think will happen |

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| 2.4a• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses | | | | |
| 1.3a• Distinguish between an object and the material from which it is made.<br>1.3b• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.<br>1.3c• Describe the simple physical properties of a variety of everyday materials.<br>1.3d• Compare and group together a variety of everyday materials on the basis of their simple physical properties. | | | | **DO**<br><br>Observe closely, using simple equipment<br><br>Perform simple tests<br><br>Identify and classify<br><br>Gather and record data to help in answering questions<br><br>**REVIEW**<br><br>Use their observations and ideas to suggest answers to questions |
| Autumn 2<br><br>Habitats<br><br>Living/ non-living<br><br>Habitats | Understand the difference between living and non-living things, as well as ones that have not been alive, explaining which properties distinguish them.<br><br>Recognize that living things thrive in habitats suited to their characteristics. Study how diverse habitats meet the basic needs of different animals and plants, highlighting their interdependence.<br><br>Identify and name a variety of animals and plants, emphasising the need to preserve ecosystems for the wellbeing of all living things.<br><br>Understand that habitats can be small and local but also very extensive | air, categories, classification, dark, damp, dead, dependence, dry, features, feeds, food chain, gets rid of waste, grows, habitat, habitats, sense, living, microhabitat, needs, never been alive, predator, rainforest, reproduces, savannah, seasons, shady, sun, tundra, wet. | Review: Use appropriate scientific language to communicate ideas and findings | |
| 2.1a• Explore and compare the differences between things that are living, dead, and things that have never been alive<br>2.1b • 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.<br>2.1c • Identify and name a variety of plants and animals in their habitats, including microhabitats. | | | | |
| 1.1a• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.<br>1.1b• Identify and describe the basic structure of a variety of common flowering plants, including trees<br>1.2a• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.<br>1.2b• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.<br>1.2c • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). | | | | |
| **Spring 1**<br><br>**Materials**<br><br>Changing shape | Investigate and identify how shapes can be changed by squashing, bending, twisting and stretching.<br><br>Explore how these manipulations affect the overall form of the materials and investigate what this tells us about the materials' properties and adaptability. | bar chart, bend/bending, changed, flexible, grams, hard, material, properties, results, rip, rigid, shape, squash/squashing, stiff, stretch/stretching, stretchy, strong, tear, twist/twisting, weak, weight | Plan: ask simple questions and recognising that they can be answered in different ways | |

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| | Explore a selection of materials and discuss how they might be tested for their rigidity (identical lengths of wood, plastic, metal, card). | | | |
| 2.4b• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. | | | | |
| 1.3a• Distinguish between an object and the material from which it is made.<br>1.3b• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. | | | | |
| **Spring 2**<br><br>**Plants**<br><br>What plants need to grow | Examine and articulate the process by which seeds and bulbs undergo growth to develop into fully mature plants.<br><br>Investigate the essential factors contributing to plant growth and wellbeing, including the crucial roles of water, light, and an optimal temperature.<br><br>Understand why it is important for a plant to spread its seeds and how this happens. | bark, change, chitting, deciduous, different from, evergreen, flower, garden centre, grow, healthy, leaf, leaves, living, plant, pollen, potato, roots, seeds, similar to, stem, trunk, water, weed. | Do: Observe closely, using simple equipment | |
| 2.2a• Observe and describe how seeds and bulbs grow into mature plants<br>2.2b• Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. | | | | |
| 1.1a• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.<br>1.1b• Identify and describe the basic structure of a variety of common flowering plants, including trees | | | | |
| Summer 1<br><br>Living Things<br><br>Simple food chains | Understand how a food chain shows that living things need other living things to survive.<br><br>Be able to name different sources of food and understand the connection between plants, herbivores and carnivores in the food chain.<br><br>Look more closely at what happens in a food chain. Understand that the sun's energy travels through a food chain and then back into the ground. | categories, carnivore, classification, dead, depend, dependence, food chain, food sources, habitats, herbivore, life processes, living, never been alive, offspring, omnivore, predator, predators, transfer, energy | Do: Identifying and classifying | |
| 2.1d • 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. | | | | |
| 1.1a• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.<br>1.1b• Identify and describe the basic structure of a variety of common flowering plants, including trees<br>1.2a• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. | | | | |

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| 1.2b• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.<br>1.2c • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). | | | | |
| Summer 2<br><br>Animals<br><br>Basic needs<br><br>Exercise, food, hygiene | Consider the difference between what animals want and what they need to survive.<br><br>Understand that humans are animals and that we produce offspring.<br><br>Understand that exercise makes the heart work harder and is an essential part of a healthy lifestyle.<br><br>Discuss types of food and which categories these go into, as well as how to have good food hygiene. | adult, air, answers, baby, basic needs, beating, bread, breathe, breathing, change, change and adults, chick, dairy, egg, exercise, feathers, fish, food, food high in fat, fruit, gather, grow, hatch, healthy, heart, meat, milk, observe, old, pasta, potatoes, questions, record, rice, survival, vegetables, water, young. | Plan and review:<br><br>Ask simple questions and recognising that they can be answered in different ways<br><br>Use their observations and ideas to suggest answers to questions | |
| 2.3a• Notice that animals, including humans, have offspring which grow into adults<br>2.3b• Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).<br>2.3c• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. | | | | |
| 1.2a• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.<br>1.2b• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.<br>1.2c • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). | | | | |

## Year 3

| | Substantive Knowledge | Vocabulary | Working scientifically assessment | Disciplinary Knowledge - Working scientifically |
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| Autumn 1<br><br>Rocks<br><br>Compare and group fossil formation<br><br>Soil | Understand the features and properties of different types of rocks. Observe rocks carefully and group them together according to their features.<br><br>Understand how rocks and formed.<br><br>Explore the findings of Mary Anning and explore what fossils are. | acid, ammonite, brick, cast, chalk, classification, compare, concrete, deposit, dinosaur, erosion, fair test, fossil, granite, hardness, heat, ichthyosaur, identification key, igneous, limestone, magma, man-made rocks, marble, metamorphic, micro-organisms, minerals, mould, observe, organic matter, particles, permeable, petrologist, plesiosaur, predict, pressure, react, rock, rock cycle, sand, sandstone, sediment, sedimentary, shale, silt, slate, soil, sort, test, tile, volcano | Review: Reporting on findings from enquiries | **PLAN**<br><br>Ask relevant questions and use different types of scientific enquiries to answer them<br><br>Suggest a hypothesis<br><br>**DO** |

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| 3.3a• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.<br>3.3b• Describe in simple terms how fossils are formed when things that have lived are trapped within rock.<br>3.3c• Recognise that soils are made from rocks and organic matter. | | | | Set up simple practical enquiries, including deciding which equipment to use and how to use it<br><br>Begin to consider how to make an experiment a fair test<br><br>Make systematic and careful observations and take accurate measurements using a range of equipment<br><br>Record findings using simple scientific language and with drawings, labelled diagrams, keys, bar charts, and tables<br><br>**REVIEW**<br><br>Use straightforward scientific evidence to answer questions or support findings<br><br>Identifying differences, similarities or changes related to simple scientific ideas and processes<br><br>Using results to draw simple conclusions, make predictions for new |
| 1.3a• Distinguish between an object and the material from which it is made.<br>1.3c• Describe the simple physical properties of a variety of everyday materials.<br>1.3d• Compare and group together a variety of everyday materials on the basis of their simple physical properties.<br>2.4a• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses | | | | |
| Autumn 2<br><br>Plants<br><br>Functions of plants<br><br>Transport of water<br><br>Flowering plant life cycle | Understand the parts of a flowering plant and their functions.<br><br>Understand what plants need to grow and learn about the edible parts of a plant.<br><br>Investigate the way in which water is transported within plants. | flower, grow, leaves, life cycle, nutrient, plant, pollination, root, seed dispersal, soil, stem, transpiration, transport, trunk, water. | Review: Use scientific evidence to answer questions or to support their findings | |
| 3.1a• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.<br>3.1b• 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.<br>3.1c• Investigate the way in which water is transported within plants.<br>3.1d• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal | | | | |
| 1.1a• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.<br>1.1b• Identify and describe the basic structure of a variety of common flowering plants, including trees.<br>2.2a• Observe and describe how seeds and bulbs grow into mature plants<br>2.2b• Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. | | | | |
| Spring 1<br><br>Forces<br><br>Friction<br><br>Magnetism | Understand that forces are pushes and pulls which can make things move, stop or change shape.<br><br>Explore forces and discover that gravity and magnetism can act without contact<br><br>Understand how magnets work and test different objects and | attract, attraction, contact, fair test, force, gravity, investigate, magnet, magnetism, measure, non-magnetic, north, poles, pull, pulls, push, pushes, record, repulsion, results, south, table, theory, time. | Do: Gather, record and present data (in a table or bar chart) to help in answering questions | |

UNIVERSITY OF CAMBRIDGE PRIMARY SCHOOL

# Science Progression Mapping 2023-24

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| | sort them into whether they are magnetic or non-magnetic. Explore how magnets have two poles, that opposite poles attract and like poles repel. | | | values, suggest improvements and raise further questions<br><br>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions |
| 3.5a• Compare how things move on different surfaces.<br>3.5b• Notice that some forces need contact between two objects, but magnetic forces can act at a distance<br>3.5c• Observe how magnets attract or repel each other and attract some materials and not others.<br>3.5d• 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.<br>3.5e • Describe magnets as having two poles.<br>3.5f • Predict whether two magnets will attract or repel each other, depending on which poles are facing. | | | | |
| 2.4b• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. | | | | |
| Spring 2<br><br>Animals<br><br>Nutrition<br><br>Skeleton | Understand that animals (including humans) require certain types of food in order to get the right nutrition. Be able to group animals according to what they eat, using the terms, carnivores, herbivores and omnivores.<br><br>Explore what makes a healthy diet using the Eatwell Plate, discussing how different types of food are needed for a balanced diet.<br><br>Explore why animals have skeletons and others do not, and understand how bones and muscles are used in animals to | bar chart, biceps, bone, carnivore, carbohydrates, compare, contract, data, data, dairy, diet, diaphragm, energy, fats, femur, fibre, food chain, growth, health, herbivore, invertebrate, investigate, joints, lungs, lung capacity, measure, minerals, muscles, nutrition, omnivore, pelvis, proteins, repair, ribcage, skull, skeleton, sugars, table, tendons, triceps, vertebrate, vitamins. | Review: reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.<br><br>Identifying differences, similarities or changes related to simple scientific ideas and processes. | |

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| | help with movement, support and protection. | | | |
| 3.2a• 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.<br>3.2b• Identify that humans and some other animals have skeletons and muscles for support, protection and movement. | | | | |
| 1.2d• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.<br>2.3b• Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).<br>2.3c• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. | | | | |
| Summer 1 and 2<br><br>Electricity<br><br>Simple circuits, switches, conductors/ insulators, electrical safety | Explore everyday appliances that use electricity and be able to categorise these into using mains or battery electricity.<br><br>Identify the dangers of electricity and how to be safe when around electrical items.<br><br>Explore which materials are conductors and insulators, including which are good conductors for electricity to flow through.<br><br>Construct a simple circuit and be able to identify and name the basic parts, including cells, wires, bulbs, switches, buzzers and motors.<br><br>Explore the role of a switch within a circuit.<br><br>Recognise the dangers of electricity. | appliance, battery, bulb, buzzer, cell, circuit, connection, conductor, crocodile clip, current, danger, device, electricity, electrocute, energy, flow, insulator, mains, plug, power, safety, socket, switch, wire. | Review: Report on findings from enquires, including oral and written explanations, displays or presentations of results and conclusions.<br><br>Plan: The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. | |
| 4.5a• Identify common appliances that run on electricity<br>4.5b• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. | | | | |

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| 4.5c• 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.<br>4.5d• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.<br>4.5e • Recognise some common conductors and insulators, and associate metals with being good conductors. | | |
| Nursery:<br>Explore collections of materials with similar and/or different properties<br>Talk about what they notice using a wide range of vocabulary<br>Explore how things work<br>Talk about the differences between materials and changes they notice | | |

## Year 4

| | Substantive Knowledge | Vocabulary | Working scientifically assessment | Disciplinary Knowledge - Working Scientifically |
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| Autumn 1<br><br>Animals<br><br>Digestion<br><br>Teeth | Explore methods for maintaining healthy teeth, understanding the varied shapes and functions of our teeth, applying knowledge of animal diets to identify specific teeth, and examining the differences between herbivore and carnivore teeth.<br><br>Understand the basic parts of the digestive system and what might happen if we are unwell.<br><br>Explore how the different diets of carnivores, herbivores and omnivores impact their poo. | anus, canines, carnivore, chew, diet, digestion, digestive system, evidence, faeces (poo), herbivore, incisors, jaw, large intestine, molars, mouth, nutrition, oesophagus (gullet), omnivore, question, rectum, saliva, small intestine, stomach, teeth. | Review: Use results to draw simple conclusions, suggest improvements and raise further questions. | **PLAN**<br><br>Ask relevant questions and use different types of scientific enquiries to answer them<br><br>Suggest a hypothesis<br><br>**DO**<br><br>Set up simple practical enquiries, including deciding which equipment to use and how to use it<br><br>Begin to consider how to make an experiment a fair test<br><br>Make systematic and careful observations and take accurate |
| 4.2a• Describe the simple functions of the basic parts of the digestive system in humans.<br>4.2b• Identify the different types of teeth in humans and their simple functions. | | | | |
| 1.2d• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.<br>2.3a• Notice that animals, including humans, have offspring which grow into adults<br>2.3b• Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).<br>2.3c• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.<br>3.2a• 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. | | | | |
| **Autumn 2**<br><br>**Animals**<br><br>Food chains | This is closely linked to the focus on animals in Autumn 1.<br><br>Distinguish between predator, prey and producer and place these in a food chain. | carnivore, consumer, decomposers, breakdown, energy, food chain, food web, herbivore, impact, omnivore, predator, prey, producer, recycle, scavengers | Do: Making systematic and careful observations<br><br>Review: Reporting on findings from enquiries, | |

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| Food webs | Understand, reason and discuss the interconnectivity between living things in a food web. | | including oral and written explanations, displays or presentations of results and conclusions | measurements using a range of equipment<br><br>Record findings using simple scientific language and with drawings, labelled diagrams, keys, bar charts, and tables |
| 4.2c• Construct and interpret a variety of food chains, identifying producers, predators and prey. | | | | |
| 1.2a• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.<br>1.2b• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.<br>3.2a• 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. | | | | |
| Spring 1<br><br>Sound<br><br>Vibrations<br><br>Pitch/volume<br><br>Sources and distance | Learn about the variety of sounds and how they are produced through vibrations, discover how sound travels through various mediums, and understand the relationship between sound volume and distance.<br><br>Recognize sound as a form of energy, explore the connection between sound pitch and the object producing it, and identify patterns between pitch, volume, and wave shapes.<br><br>Gain insights into the workings of the human ear, explore ways to reduce sounds, and understand the physics behind why we see lightning before hearing thunder. | air, amplitude, conclusion, ears, evidence, fair-test, factor (variable), frequency, hear, investigation, listen, loud, loudness, medium, muffle, noise, noise pollution, particles, pitch, planning, prediction, quiet, results, resources, sign language, silent, solid, sound, sound waves, soundwave, source, transmit, travel, vibrations, volume. | Plan: Ask relevant questions and use different types of scientific enquiries to answer them | **REVIEW**<br><br>Use straightforward scientific evidence to answer questions or support findings<br><br>Identifying differences, similarities or changes related to simple scientific ideas and processes<br><br>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions<br><br>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions |
| 4.4a• Identify how sounds are made, associating some of them with something vibrating.<br>4.4b• Recognise that vibrations from sounds travel through a medium to the ear.<br>4.4c• Find patterns between the pitch of a sound and features of the object that produced it<br>4.4d • Find patterns between the volume of a sound and the strength of the vibrations that produced it.<br>4.4e • Recognise that sounds get fainter as the distance from the sound source increases. | | | | |
| 1.2d• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. | | | | |

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# Science Progression Mapping 2023-24

<table>
<tr><td>Spring 2<br><br>Materials<br><br>Solids, liquids and gases<br><br>Changing state<br><br>Water cycle</td><td>Discuss and explore the properties that make a solid, liquid or gas, and use these features to classify different materials.<br><br>Understand how a substance can change from one state to another and explore these changes in states.<br><br>Understand the elements of the water cycle, investigating evaporation and condensation.<br><br>Learn how to use a thermometer accurately.</td><td>celsius, change, classify, clouds, condensation, condensing, degrees, discuss, evidence, evaporating, evaporation, explain, Fahrenheit, freezing, gas, grain, group, ice, liquid, matter, melting, particle, particles, precipitation, proof, question, rain, solid, solidifying, state, state, temperature, temperature, thermometer, transpiration, vapour.</td><td>Do: Take accurate measurements using standard units, using a range of equipment including thermometers</td><td></td></tr>
<tr><td colspan="3">4.3a• Compare and group materials together, according to whether they are solids, liquids or gases.<br>4.3b• 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).<br>4.3c• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</td><td></td><td></td></tr>
<tr><td colspan="3">1.3a• Distinguish between an object and the material from which it is made.<br>1.3b• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.<br>1.3c• Describe the simple physical properties of a variety of everyday materials.<br>1.3d• Compare and group together a variety of everyday materials on the basis of their simple physical properties.<br>2.4a• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses<br>2.4b• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</td><td></td><td></td></tr>
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| **Summer 1**<br><br>**Light**<br><br>Absence of dark<br><br>Reflection<br><br>Sun safety<br><br>Shadow formation | Explore how white light is composed of a spectrum of coloured light through investigation.<br><br>Investigate the properties of mirrors and reflections, as well as discovering how using two differ mirros can help us to see round corners using a periscope.<br><br>Understand opaque, transparent and translucent and the shadows these objects cast. | colour, concave, convex, energy, image, investigate, light, light source, measure, mirror, opaque, predict, reflection, reflect, reflector, refraction, shadow, spectrum, transparent, translucent, visible light, white light. | Do: Gather and record data to answer questions. | |
| 3.4a• Recognise that they need light in order to see things and that dark is the absence of light.<br>3.4b• Notice that light is reflected from surfaces.<br>3.4c• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.<br>3.4d• Recognise that shadows are formed when the light from a light source is blocked by an opaque object.<br>3.4e• Find patterns in the way that the size of shadows change. | | | | |
| 1.2d• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. | | | | |
| **Summer 2**<br><br>**Habitats**<br><br>Classification keys<br><br>Changing environments<br><br>Impact on wildlife | Explain the seven characteristics of a living thing.<br><br>Understand why it is useful to classify living things and how they can be classified and grouped, including using a branching database/dichotomous classification key.<br><br>Be able to explain which living things would be found in the local environment and why. | alive, arachnid, branching database, classify, dead, details, different, excretion, explore, growth, habitat, identify, invertebrate, local, man-made, movement, natural, never been alive, nutrition, observation, question, record, reproduction, respiration, sensitivity, similar, sort, teach, variety, vertebrate. | Do: Gather, record and classify data | |

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| 4.1a• Recognise that living things can be grouped in a variety of ways.<br>4.1b• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.<br>4.1c • Recognise that environments can change and that this can sometimes pose dangers to living things. | | |
| 1.1a• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.<br>1.1b• Identify and describe the basic structure of a variety of common flowering plants, including trees.<br>1.2a• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.<br>1.2b• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.<br>1.2c • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).<br>2.1a• Explore and compare the differences between things that are living, dead, and things that have never been alive<br>2.1b • 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.<br>2.1c • Identify and name a variety of plants and animals in their habitats, including microhabitats.<br>2.1d • 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.<br>2.3a• Notice that animals, including humans, have offspring which grow into adults<br>3.1d• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal | | |

## Year 5

| | Substantive Knowledge | Vocabulary | Working scientifically assessment | Disciplinary Knowledge - Working scientifically |
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| Autumn 1<br><br>Materials<br><br>Solutions<br><br>Separating mixtures<br><br>Reversible/ irreversible<br><br>New materials | Understand the properties of everyday materials through investigation, including solubility, transparency, conductivity (electrical and thermal), and response to magnets.<br><br>Investigate how materials can be separated through methods such as evaporation and sieving, as well as how they can be changed through oxidisation.<br><br>Understand what makes something a soluble material and the difference between a solution and a mixture. | accuracy, degree of trust, dissolve, enquiry, evaporation, filter, gas, gas given off, insoluble, line graph, liquid, magnet/ism, material names, new material, not usually reversible, opinion/fact, oxidization, precision, property names, scatter graphs, sieve, soluble, solute, solution, solid, variable/s. | Do: Gather and record data of increasing complexity using tables | **PLAN**<br><br>Ask relevant questions and use different types of scientific enquiries to answer them<br><br>Suggest a hypothesis<br><br>Recognise how to make it a fair test and decide what the independent variable and controlled variables will be.<br><br>**DO**<br><br>Plan different types of practical enquiries to answer |

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| 5.3a• 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.<br>5.3b• Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.<br>5.3c• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.<br>5.3d• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.<br>5.3e• Demonstrate that dissolving, mixing and changes of state are reversible changes.<br>5.3f • 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. | | | | questions, including deciding which equipment to use and how to use it<br><br>Consider how to make the experiment a fair test, including recognising and controlling variables during enquiries.<br><br>Take accurate measurements using a range of equipment, with increasing accuracy and precision. Take repeat readings where appropriate.<br><br>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs |
| KS1:<br>1.3a• Distinguish between an object and the material from which it is made.<br>1.3b• Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.<br>1.3c• Describe the simple physical properties of a variety of everyday materials.<br>1.3d• Compare and group together a variety of everyday materials on the basis of their simple physical properties.<br>2.4a• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses<br>2.4b• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.<br>LKS2<br>3.3a• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.<br>3.3b• Describe in simple terms how fossils are formed when things that have lived are trapped within rock.<br>3.3c• Recognise that soils are made from rocks and organic matter.<br>3.5b• Notice that some forces need contact between two objects, but magnetic forces can act at a distance<br>4.3a• Compare and group materials together, according to whether they are solids, liquids or gases.<br>4.3b• 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).<br>4.3c• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. | | | | |
| Autumn 2<br><br>Sus Ed<br><br>Sustainability Education (external) | Understand the importance of the energy transition, including: (i) switching from high-carbon-emission energy resources to low-carbon natural resources; (ii) electrifying transportation; (iii) designing highly efficient homes<br><br>Explore and compare different types of energy and power and how these can be measured.<br><br>Look ahead to how energy is transforming to low-carbon natural resources and how inventions are facilitating this. | biodiversity, carbon, coal, conservation, efficiency, electricity, emissions, energy, gas, hydroelectric, natural, renewable, resources, solar, sustainability, unrenewable, wind, power | Plan: Children independently ask scientific questions. | REVIEW<br><br>Identify scientific evidence that has been used to support or refute ideas or arguments<br><br>Report and present findings from enquiries, including conclusions, causal relationships and degree of trust in results, in oral and |

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| This unit is offered **in addition** to the national curriculum for science. It was designed by the University of Cambridge alongside UCPS as a pioneering unit for sustainable education to be taught in primary schools. | | | | written forms such as displays and other presentations<br><br>Use test results to make predictions to set up further comparative and fair tests |
| 4.3a• Compare and group materials together, according to whether they are solids, liquids or gases.<br>4.3b• 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).<br>4.5a• Identify common appliances that run on electricity | | | | |
| Spring 1<br><br>Forces<br><br>Gravity<br><br>Water/air resistance<br><br>Pulleys/ levers | Understand what gravity and resistance are, and identify balanced and unbalanced forces. Explore Isaac Newton's discovery of gravity and how this has impacted us today.<br><br>Knowledge of how levers, gears and pulleys work, including exploring how the position of fulcrum, load and effort impacts on use.<br><br>Understanding the effects of air resistance, water resistance and friction through various investigations. | acceleration, accuracy, air resistance, balancing force, causal relationships, data, deceleration, drag, Earth, evidence, fall, force, friction, gears, gravity, levers, mechanisms, motion, moving surfaces, newtons, precision, pulleys, resistance force, support, transfers, variables, water resistance, weight. | Review: Explain the degree of trust in the results | |
| 5.5a• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.<br>5.5b• Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.<br>5.5c• Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. | | | | |
| KS1:<br>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.<br>LKS2:<br>3.5a• Compare how things move on different surfaces.<br>3.5b• Notice that some forces need contact between two objects, but magnetic forces can act at a distance<br>3.5c• Observe how magnets attract or repel each other and attract some materials and not others.<br>3.5d• 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.<br>3.5e • Describe magnets as having two poles.<br>3.5f • Predict whether two magnets will attract or repel each other, depending on which poles are facing. | | | | |
| Spring 2<br><br>Living Things<br><br>Life cycles | Understand the parts of a flowering plant, including male and female structures, and its life cycle and reproduction.<br><br>Be able to differentiate between asexual and sexual reproduction | adult, amphibian, anther, artificial, asexual, asexual & sexual reproduction, baby, bird, botanical illustration, bulb, carpel, corm, cutting, dissection, egg, fern, flowering, foetus, gamete, gestation, germination, insect, life cycle, liverwort, mammal, metamorphosis, moss, natural life cycle, non-flowering, ovary, pistil, plant propagation, pollen, pollination, reproduction, | Review: Report and present findings from enquiries, in oral and written forms such as displays and other presentations, using | |

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| Reproduction in plants and animals | and understand the processes of natural and artificial asexual reproduction in plants.<br><br>Understand the life cycle of living things, including the unusual life cycle of some living things. | seed, sexual reproduction, spores, sperm, spore, stigma, style, stamen, tubers, uterus. | appropriate scientific language. | |
| 5.1a• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.<br>5.1b• Describe the life process of reproduction in some plants and animals. | | | | |
| 4.1a• Recognise that living things can be grouped in a variety of ways.<br>4.1b• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.<br>4.1c • Recognise that environments can change and that this can sometimes pose dangers to living things. | | | | |
| Summer 1<br><br>Earth<br><br>Earth in space<br><br>Earth, moon and sun | Be able to explain the Earth's positioning in space alongside other planets, as well as the moon's movement and positon relative to the Earth.<br><br>Understand the Earth's rotation and how this creates day and night and timezones, as well as the how we view the sun in the sky.<br><br>Understand how the solar system works and recognise the difference between geo and heliocentric solar system and how views have evolved over time. | accuracy, axis, astronomical clocks, celestial body, dwarf planet, Earth, eclipse, gnomon, gravity, Greenwich Meantime, Jupiter, light, line graphs, Mars, mass, Mercury, Moon, Neptune, night and day, opinion/fact, orbit, planets, Pluto, precision, reflection, rotate/rotation, Saturn, scatter graphs, shadow clocks, solar system, sphere/spherical, spin, star, satellite, Sun, support/refute, telescope, time-zone, tide, Uranus, variables, Venus. | Review: Report and present findings from enquiries using appropriate scientific language | |
| 5.4a• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.<br>5.4b• Describe the movement of the Moon relative to the Earth.<br>5.4c• Describe the Sun, Earth and Moon as approximately spherical bodies.<br>5.4d• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky | | | | |
| Summer 2<br><br>Living Things<br><br>Microbes | Children will learn about the different types of microbes – bacteria, viruses and fungi. They will learn that microbes have different shapes and that they are found everywhere, and that some are useful and some are harmful. | antibiotic, antigen, bacteria, best before, foodborne illness, immune system, self care, tooth brushing, use by, antibody, culture, disease, enamel, fermentation, fluoride, fungi, hygiene, immunize, infection, medicine, microbes, microscope, pathogens, pets, plaque, refrigeration, sneeze, soap, transmission, vaccination, viruses, white blood cell, yeast. | Do: Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary | |

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| Infection and prevention<br><br>Treatment | Understand how microbes are spread by touch, respiratory droplets, and surface contamination.<br><br>Recognise how the spread of microbes can be prevented through the body's natural defences and vaccinations.<br><br>Understand how some microbial infections can be treated by antibiotic and an appreciation of antibiotic resistance.<br>. | | | |
| This unit is offered **in addition** to the national curriculum for science, corresponding to the recent global pandemic. | | | | |
| 2.1a• Explore and compare the differences between things that are living, dead, and things that have never been alive<br>2.1b • 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.<br>2.1c • Identify and name a variety of plants and animals in their habitats, including microhabitats.<br>4.1a• Recognise that living things can be grouped in a variety of ways.<br>4.1b• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.<br>4.1c • Recognise that environments can change and that this can sometimes pose dangers to living things. | | | | |

## Year 6

| | Substantive knowledge | Vocabulary | Working Scientifically assessment | Disciplinary knowledge – Working scientifically |
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| Autumn 1<br><br>Human Body<br><br>Circulation<br><br>Nutrients and water transport | Understand the human circulatory system, including the heart, blood vessels, and blood functions.<br><br>Recognise how diet, exercise, drugs, and lifestyle affect the body.<br><br>Knowing four different categories of drugs. Studying a famous | alcohol, addiction, analgesic, arteries, blood, blood vessels, capillaries, carbon dioxide, cigarettes, circulatory system, diabetes, depressant, diet, disease, exercise, health, heart, hallucinogen, lifestyle, lungs, medicine, nutrients, oxygen, pumps, stimulant, veins, water. | Do: Take measurements using a range of equipment | **PLAN**<br><br>Ask relevant questions and use different types of scientific enquiries to answer them<br><br>Suggest a hypothesis<br><br>Recognise how to make it a fair test and decide what the |

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| | example of drug use in sport: Lance Armstrong.<br><br>In-depth study about diabetes and its impact on humans. | | | independent variable and controlled variables will be.<br><br>DO<br><br>Plan different types of practical enquiries to answer questions, including deciding which equipment to use and how to use it |
| 6.2a• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.<br>6.2b • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.<br>6.2c• Describe the ways in which nutrients and water are transported within animals, including humans | | | | |
| 1.2d• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.<br>2.3b• Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).<br>2.3c• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.<br>3.2a• 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.<br>4.2a• Describe the simple functions of the basic parts of the digestive system in humans.<br>4.2b• Identify the different types of teeth in humans and their simple functions. | | | | |
| Autumn 2<br><br>Evolution and Inheritance<br><br>Fossil record<br><br>Adaptation | Understand the concept of evolution by recognising that living things have changed over time, with fossils offering insights into ancient life forms.<br><br>Use the example of Darwin's finches to understand biodiversity and environmental factors in evolution.<br><br>Acknowledge that offspring of living things typically vary and are not identical to their parents.<br><br>Identify and appreciate how animals and plants adapt to their environments, recognising that adaptation can contribute to the process of evolution.<br><br>Understand the role of DNA in genes; examine how gene editing and CRISPR can impact both medicine and agriculture | adaptation, adapted, characteristics, cladogram, DNA, environment, environmental variation, evolution, fossils, gene, inherit, inheritance, natural selection, opinion, offspring, suited, suitable, theory, variation, vary. | Review: Explain degree of trust in results | Consider how to make the experiment a fair test, including recognising and controlling variables during enquiries.<br><br>Take accurate measurements using a range of equipment, with increasing accuracy and precision. Take repeat readings where appropriate.<br><br>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs<br><br>REVIEW<br><br>Identify scientific evidence that has been used to support or refute ideas or arguments |

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| 6.3a• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.<br>6.3b• Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.<br>6.3c• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. | | | | Report and present findings from enquiries, including conclusions, causal relationships and degree of trust in results, in oral and written forms such as displays and other presentations<br><br>Use test results to make predictions to set up further comparative and fair tests |
| 2.1b • 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.<br>3.3b• Describe in simple terms how fossils are formed when things that have lived are trapped within rock.<br>4.1c • Recognise that environments can change and that this can sometimes pose dangers to living things. | | | | |
| **Spring 1**<br><br>**Living Things**<br><br>Classification | Understand biological classification by describing how living things are grouped according to observable characteristics, encompassing microorganisms, plants, and animals.<br><br>Provide reasons for classifying plants and animals based on specific characteristics, emphasizing the importance of recognising similarities and differences in the classification process. | classification, classification key, class, differences, family, genus, group, kingdom, Linnaeus, observations, opinion, order, phylum, refute, similarities, species, support, taxonomy. | Plan: Ask questions that can be investigated scientifically and decide how to find answers. | |
| 6.1a• 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.<br>6.1b• Give reasons for classifying plants and animals based on specific characteristics. | | | | |
| 2.1a• Explore and compare the differences between things that are living, dead, and things that have never been alive<br>2.1b • 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.<br>2.1c • Identify and name a variety of plants and animals in their habitats, including microhabitats.<br>4.1a• Recognise that living things can be grouped in a variety of ways.<br>4.1b• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.<br>5.1a• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.<br>5.1b• Describe the life process of reproduction in some plants and animals. | | | | |
| **Spring 2**<br><br>**Space** | Spotting and understanding differences between other planets and stars.<br><br>Recognising the features that make our sun a star, other stars in our galaxy, constellations.<br>Identifying various types of space rock: meteors, meteoroids, meteorites, asteroids and comets. | accuracy, astronomical clocks, axis, celestial body, dwarf planet, Earth, eclipse, gnomon, gravity, Greenwich Meantime, Jupiter, light, line graphs, Mars, mass, Mercury, Moon, Neptune, night & day, orbit, opinion/fact, orbit, planets, Pluto, precision, reflection, rotate/rotation, scatter graphs, shadow clocks, solar system, sphere/spherical, spin, star, satellite, support/refute, Sundials, Sun, telescope, time-zone, tide, Uranus, variables, Venus. | Review: using simple models to describe scientific ideas (to present results) | |

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| | Investigating space junk, satellites and the Kessler syndrome.<br><br>Understanding theories regarding the history of the universe, the Big Bang | | | |
| Key Stage 3: Space Physics<br>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)<br>our sun as a star, other stars in our galaxy, other galaxies<br>The seasons and the Earth's tilt, day length at different times of year, in different hemispheres | | | | |
| 5.4a• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.<br>5.4b• Describe the movement of the Moon relative to the Earth.<br>5.4c• Describe the Sun, Earth and Moon as approximately spherical bodies.<br>5.4d• Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky | | | | |
| **Summer 1**<br><br>**Light**<br><br>Travels in straight lines<br><br>How we see<br><br>Shadow shape and size | Be able to demonstrate and conclude that light travels in a straight line and explain why this happens.<br><br>Know that a light source is needed in order to see.<br><br>Explore reflectiveness and be able to demonstrate and describe the movement of light off mirrors.<br><br>Explore shadow size and its connection to the position of a light source and be able to explain that a human shadow has the same shape as the person casting it. | absorb, bend, block, colours, dark, dark/darkness, direct/direction, light, light source, magnifying glass, mirror, names of light sources, opaque, rainbow, reflect, reflective, refraction, shadow, straight, translucent, transparent. | Do: Take accurate measurements and records data on a graph | |
| 6.4a• Recognise that light appears to travel in straight lines.<br>6.4b• 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.<br>6.4c• 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.<br>6.4d• Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. | | | | |
| 3.4a• Recognise that they need light in order to see things and that dark is the absence of light.<br>3.4b• Notice that light is reflected from surfaces.<br>3.4c• Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. | | | | |

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| 3.4d• Recognise that shadows are formed when the light from a light source is blocked by an opaque object.<br>3.4e• Find patterns in the way that the size of shadows change. | | | | |
| **Summer 2**<br><br>**Electricity**<br><br>Variations in circuits | Gain a strong understanding of an electrical circuit, including how to create one from a diagram and how to complete and repair a circuit.<br><br>Explore the differences between series and parallel circuits and how the length and thickness of wire affects the resistance and therefore the brightness of the bulb. | appliance, battery, bulb, buzzer, cell, circuit, conductor, connection, crocodile clip, current, danger, device, electricity, electrocute, energy, flow, insulator, mains, plug, power, safety, socket, switch, wire. | Do: Make a fair test or comparison by changing one factor and observing or measuring the effect while keeping other factors the same. | |
| 6.5a• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.<br>6.5b• 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.<br>6.5c• Use recognised symbols when representing a simple circuit in a diagram. | | | | |
| 4.5a• Identify common appliances that run on electricity<br>4.5b• Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.<br>4.5c• 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.<br>4.5d• Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.<br>4.5e • Recognise some common conductors and insulators, and associate metals with being good conductors. | | | | |