Knowledge & Skill Progression - Science

	Biology	Chemistry	Physics	Working Scientifically
Nursery	**Plants** * Care for growing seeds and plants and describe observable features of different types of plants and trees. * Begin to talk about and draw plants with attention to their parts. **Animals, Including Humans** * Name a variety of domestic and wild animals. * Begin to talk about and name the body parts of common animals, including pets. * Describe what a familiar animal or pet eats.	**Everyday Materials** * Explore and talk about materials which are waterproof. *Make simple comparisons between objects and materials, such as bigger and smaller, and softer and harder. **Light** *Play with objects or their own body outside to create shadows.	**Seasonal Changes** *Talk about the weather as being warm or cold. * Talk about things they can do on winter evenings and things they can do on summer evenings and begin to notice the difference in day length. * Say what the daily weather is like. **Forces** * Talk about and play with objects that float and sink and describe different forces that they can feel.	**Explain** * Begin to offer simple explanations for why things happen. **Ask/Predict** * Ask or answer a simple scientific question. **Plan** * Find different ways to do things when playing and exploring and use all their senses in hands on exploration of natural materials.

	Living Things * Begin to talk about ways to care for a plant or animal. * Begin to observe and talk about living things in the local environment. * Say how a living thing has changed over time.			
Reception	**Plants** * Begin to name and group plants and trees according to their observable features. * Name and describe basic features of plants and trees. **Animals, Including Humans** *Draw pictures of the human body and name some of the different body parts. * Match animals to their young. * Identify common features for different groups of animals, including wild and domestic animals.	**Everyday Materials** * Identify that materials have different properties and explore and sort magnetic and non-magnetic materials through play and exploration. * Compare and group objects and materials according to simple given criteria. **Light** *Make a shadow bigger or smaller using toys, play equipment and a light source. * Name and describe natural phenomena, such as the size of shadows, the colours of a rainbow,	**Seasonal Changes** * Notice and begin to describe patterns of weather in summer and winter. * Notice and talk about the differences in day length between the seasons. * Describe simply how weather changes as the seasons change. **Forces** * Describe, predict and sort things that float and sink and talk about the forces that they can feel.	**Record** * Represent scientific observations by mark making, drawing or creating simple charts and tables. Offer explanations for why things happen, making use of vocabulary, such as, because, then and next. * Record data in simple tables and pictograms. **Ask/Predict** * Ask a relevant scientific question to find out more, explain how things work and why they might happen.

	* Match animals to the foods that they eat. **Living Things** * Describe some ways that plants or animals should be cared for in order for them to survive. * Observe and describe living things and their habitats within the local environment. * Explore the natural world around them and give simple descriptions, following observation, of changes.	the speed of clouds moving across the sky and the strength of a wave.		**Observe & Measure** * With support, use simple equipment, such as timers, rulers and containers, to measure length, height, capacity and time. * Observe how activities are going and adapt their ideas if necessary.
Year 1	**Animals, Including Humans** *Draw and label the main parts of the human body and say which body part is associated with which sense. * Identify, compare, group and sort a variety of common animals, including fish, amphibians, reptiles, birds, invertebrates and mammals, based on observable features. * Label and describe the basic structures of a variety of common	**Everyday Materials** * Investigate and describe the simple physical properties of some everyday materials, such as hard or soft; stretchy or stiff; rough or smooth; opaque or transparent; bendy or rigid and waterproof or not waterproof. *Compare and group materials in a variety of ways, such as based on their physical properties; being natural or man-made and being recyclable or non-recyclable.	**Seasonal Changes** * Observe changes across the four seasons. * Observe and describe how day length changes across the year. * Observe and describe different types of weather. * Investigate weather using toys, models or simple equipment.	**Explain** * Talk about what they have done and say, with help, what they think they have found out. Record * With support, gather and record simple data in a range of ways (data tables, diagrams, Venn diagrams).

	animals, including fish, amphibians, reptiles, birds and mammals. * Group and sort a variety of common animals based on the foods they eat. **Plants** * Identify, compare, group and sort a variety of common wild and garden plants, including deciduous and evergreen trees, based on observable features. * Label and describe the basic structure of a variety of common plants. **Living Things** * Describe how to care for plants and animals, including pets. * Observe the local environment throughout the year and ask and answer questions about living things and seasonal change. * Describe, following observation, how plants and animals change over time.	**Light** *Compare shadows made by different objects and materials.		**Ask/Predict** * Ask simple scientific questions. **Observe & Measure** * With support, use simple equipment to measure and make observations. **Set up & Test** * With support, follow instructions to perform simple tests and begin to talk about what they might do or what might happen.

Year 2	**Plants** * Describe how plants need water, light and a suitable temperature to grow and stay healthy. * Observe and describe how seeds and bulbs change over time as they grow into mature plants. **Animals, Including Humans** * Describe the stages of human development (baby, toddler, child, teenager, adult and elderly). * Identify and name a variety of plants and animals in a range of habitats and microhabitats. * Describe the basic life cycles of some familiar animals (egg, caterpillar, pupa, butterfly; egg, chick, chicken; spawn, tadpole, froglet, frog). * Interpret and construct simple food chains to describe how living things depend on each other as a source of food. * Explain how animals, including humans, need water, food, air and shelter to survive.	**Everyday Materials** * Compare the suitability of a range of everyday materials for particular uses, including wood, metal, plastic, glass, brick, rock, paper and cardboard . * Describe how some objects and materials can be changed and how these changes can be desirable or undesirable	**Seasonal Changes** * Describe typical UK seasonal weather patterns. **Forces** * Sort and group objects that float and sink.	**Explain** * Begin to notice patterns and relationships in their data and explain what they have done and found out using simple scientific language. **Ask/Predict** * Ask and answer scientific questions about the world around them. **Observe & Measure** * Use simple equipment to measure and make observations. **Record** * Use a range of methods (tables, charts, diagrams and Venn diagrams) to gather and record simple data with some accuracy. **Set up & Test** * Follow a set of instructions to perform a range of simple tests, making simple predictions for

	* Describe a range of local habitats and habitats beyond their locality (beaches, rainforests, deserts, oceans and mountains) and what all habitats provide for the things that live there.			what might happen and suggesting ways to answer their questions.

Year 3	**Animals, Including Humans** *Describe how humans need the skeleton and muscles for support, protection and movement. * Identify and group animals that have no skeleton, an internal skeleton (endoskeleton) and an external skeleton (exoskeleton). * Compare and contrast the diets of different animals. **Plants** * Name and describe the functions of the different parts of flowering plants (roots, stem, leaves and flowers).	**Rocks** * Describe simply how fossils are formed, using words, pictures or a model. * Compare and group rocks based on their appearance, properties or uses. * Investigate soils from the local environment, making comparisons and identifying features.	**Forces** * Explain that an object will not move unless a push or pull force is applied, describing forces in action and whether the force requires direct contact or whether the force can act at a distance (magnetic force). **Forces and Magnets** * Compare and group materials based on their magnetic properties. *Compare how objects move over surfaces made from different materials. *Investigate and compare a range of magnets (bar, horseshoe and	**Explain/Report** * Use suitable vocabulary to talk or write about what they have done, what the purpose was and, with help, draw a simple conclusion based on evidence collected, beginning to identify next steps or improvements. **Record** * Gather and record findings in a variety of ways (diagrams, tables, charts and graphs) with increasing accuracy. **Ask/Predict**

	* Investigate how water is transported within plants. * Describe the requirements of plants for life and growth (air, light, water, nutrients and room to grow) and how they vary from plant to plant. * Draw and label the life cycle of a flowering plant.		floating) and explain that magnets have two poles (north and south) and that opposite poles attract each other, while like poles repel each other. **Light** * Find patterns in the way shadows change during the day. * Describe the differences between dark and light and how we need light to be able to see. * Explain, using words or diagrams, how shadows are formed when a light source is blocked by an opaque object.	* Ask questions about the world around them and explain that they can be answered in different ways. **Observe & Measure** * Take measurements in standard units, using a range of simple equipment. **Set up & Test** *Set up and carry out some simple, comparative and fair tests, making predictions for what might happen.
Year 4	**Animals, Including Humans** * Describe the purpose of the digestive system, its main parts and each of their functions. * Identify the four different types of teeth in humans and other animals, and describe their functions. * Construct and interpret a variety of food chains and webs	**States of Matter** * Describe the water cycle using words or diagrams and explain the part played by evaporation and condensation. * Observe and explain that some materials change state when they are heated or cooled and measure or research the temperature in degrees	**Electricity** * Describe materials as electrical conductors or insulators. *Compare common household equipment and appliances that are and are not powered by electricity. * Predict and describe whether a circuit will work based on whether	**Report** * Use scientific vocabulary to report and answer questions about their findings based on evidence collected, draw simple conclusions and identify next steps, improvements and further questions. **Record**

	to show interdependence and how energy is passed on over time. **Living Things and their Habitats** * Compare, sort and group living things from a range of environments, in a variety of ways, based on observable features and behaviour. * Describe how environments can change due to human and natural influences and the impact this can have on living things. * Explain how unfamiliar habitats, such as a mountain or ocean, can change over time and what influences these changes.	Celsius (˚C) at which materials change state.	or not the circuit is a complete loop and has a battery or cell. **Sound** *Compare how the volume of a sound changes at different distances from the source. * Compare and find patterns in the pitch of a sound, using a range of equipment, such as musical instruments. * Compare and find patterns in the volume of a sound * Explain how sounds are made and heard using diagrams, models, written methods or verbally.	* Gather, record, classify and present observations and measurements in a variety of ways (pictorial representations, timelines, diagrams, keys, tables, charts and graphs). **Ask/Predict** * Ask relevant scientific questions, independently, about the world around them and begin to identify how they can answer them. **Observe & Measure** * Take accurate measurements in standard units, using a range of equipment. **Set up & Test** * Begin to independently plan, set up and carry out a range of comparative and fair tests, making predictions and following a method accurately.
Year 5	**Animals, Including Humans** *Describe the process of human reproduction.	**Properties and changes of materials** * Separate mixtures by filtering, sieving and evaporating.	**Earth and Space** * Use the idea of Earth's rotation to explain day and night, and the Sun's apparent movement across the sky.	**Report** * Use relevant scientific vocabulary to report on their findings, answer questions and justify their conclusions

	* Describe the changes as humans develop from birth to old age. **Living Things and their Habitats** * Describe, using their knowledge of food chains and webs, what could happen if a habitat had a living thing removed or introduced. * Describe the life process of reproduction in some plants and animals. * Research and describe different farming practices in the UK and how these can have positive and negative effects on natural habitats. **Plants** * Group and sort plants by how they reproduce. * Label and draw the parts of a flower involved in sexual reproduction in plants (stamen, filament, anther, pollen, carpel,	* Describe, using evidence from comparative or fair tests, why a material has been chosen for a specific use, including metals, wood and glass. * Identify, demonstrate and compare reversible and irreversible changes.	* Describe or model the movement of the planets in our Solar System, including Earth, relative to the Sun. * Describe or model the movement of the Moon relative to Earth. * Describe the Sun, Earth and Moon as approximately spherical bodies and use this knowledge to understand the phases of the Moon and eclipses. * Explain that objects fall to Earth due to the force of gravity. **Forces** *Compare and describe, using a range of toys, models and natural objects, the effects of water resistance, air resistance and friction.	based on evidence collected, identify improvements, further questions and predictions. **Record** * Gather and record data and results of increasing complexity, selecting from a range of methods (scientific diagrams, labels, classification keys, tables, graphs and models). **Ask/Predict** * Ask a wide range of relevant scientific questions that broaden their understanding of the world around them and identify how they can answer them. **Observe & Measure** * Take increasingly accurate measurements in standard units, using a range of chosen equipment. **Set up & test** * Plan and carry out a range of enquiries, including writing methods, identifying variables and making

	stigma, style, ovary, ovule and sepal).			predictions based on prior knowledge and understanding.
Year 6	**Animals, Including Humans** * Name and describe the purpose of the circulatory system and the functions of the heart, blood vessels and blood. * Explain that the circulatory system in animals transports oxygen, water and nutrients around the body. **Living Things and their Habitats** * Use and construct classification systems to identify animals and plants from a range of habitats. * Classify living things, including microorganisms, animals and plants, into groups according to common observable characteristics and based on similarities and differences. * Identify that living things produce offspring of the same kind, although the offspring are not identical to either parent.		**Light** * Explain, using words, diagrams or a model, why shadows have the same shape as the objects that cast them and how shadows can be changed * Identify that light travels in straight lines. * Explain that, due to how light travels, we can see things because they give out or reflect light into the eye. * Describe, using scientific language, phenomena associated with refraction of light. * Describe, using diagrams, how light behaves when reflected off a mirror (plane, convex or concave) and when passing through a lens (concave or convex). **Electricity** * Explain how the brightness of a lamp or volume of a buzzer is	**Report** * Report on and validate their findings, answer questions and justify their methods, opinions and conclusions, and use their results to suggest improvements to their methodology, separate facts from opinions, pose further questions and make predictions for what they might observe. **Record** * Choose an appropriate approach to recording accurate results, including scientific diagrams, labels, timelines, classification keys, tables, models and graphs (bar, line and scatter), linking to mathematical knowledge. **Ask/Predict** * Ask and answer deeper and broader scientific questions about the local and wider world that build on and extend their own and others' experiences and knowledge.

	* Describe how animals and plants can be bred to produce offspring with specific and desired characteristics (selective breeding). * Research unfamiliar animals and plants from a range of habitats, deciding upon and explaining where they belong in the classification system. **Evolution and Inheritance** * Identify how animals and plants are adapted to suit their environment, such as giraffes having long necks for feeding, and that adaptations may lead to evolution. * Explain that living things have changed over time, using specific examples and evidence.		affected by the number and voltage of cells used in a circuit. *Compare and give reasons for variations in how components in electrical circuits function (brightness of lamps; volume of buzzers and function of on or off switches).	**Observe & Measure** * Take accurate, precise and repeated measurements in standard units, using a range of chosen equipment. **Set up & Test** * Plan and carry out a range of enquiries, including writing methods, identifying and controlling variables, deciding on equipment and data to collect and making predictions based on prior knowledge and understanding.