Progression of Science topics throughout school 2023 -2024

Unit	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals inc. Humans	• Discuss and observe what they can see outside using all of their senses	• To name and sort different animals	• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	• Notice that animals, including humans, have offspring which grow into adults • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	• Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • Identify that humans and some other animals have skeletons and muscles for support, protection and movement	• Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions • Construct and interpret a variety of food chains, identifying producers, predators and prey	• Describe the changes as humans develop to old age	• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans
Living Things and their Habitats				• Explore and compare the differences between things that are living, dead, and things that have never been alive • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other		• Recognise that living things can be grouped in a variety of ways • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Recognise that environments can	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • Describe the life process of reproduction in some plants and animals	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals

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				Identify and name a variety of plants and animals in their habitats, including microhabitats • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.		change and that this can sometimes pose dangers to living things.		• Give reasons for classifying plants and animals based on specific characteristics
Plants		• Talk about changes within the natural world e.g. seed growing • To observe the growth of a variety of plants and name some of them e.g. fruits and vegetables	• Identify and name a variety of common and wild and garden plants, including deciduous and evergreen trees • Identify and describe the basic structure of a variety of common flowering plants, including trees	• Observe and describe how seeds and bulbs into mature plants • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • Investigate the way in which water is transported within plants • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed			

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					formation and seed dispersal			
Evolution and Inheritance								• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
Materials	• Explore materials with different properties	• Explore collections of materials with similar and/or different properties	• Distinguish between an object and the material from which it is made • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Find out how the shapes of solid objects made			• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility,	

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			• Describe the simple physical properties of a variety of everyday materials • Compare and group together a variety of everyday materials on the basis of their simple physical properties	from some materials can be changed by squashing, bending, twisting and stretching			transparency, conductivity (electrical and thermal), and response to magnets • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	

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							• Demonstrate that dissolving, mixing and changes of state are reversible changes • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	
Seasonal changes	• **Discuss and observe what they can see outside**	• To know about and recognise the signs of Autumn, Winter, Spring, Summer • To name and distinguish between seasons	• Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies					

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Rocks					• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • Describe in simple terms how fossils are formed when things that have lived are trapped within rock			
States of matter		• To know about some important changes and processes in the natural world, including states of matter				• Compare and group materials together, according to whether they are solids, liquids or gases • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature		

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Earth and Space							• Describe the movement of the Earth and other planets relative to the sun in the solar system • Describe the movement of the moon relative to the Earth • Describe the sun, Earth and moon as approximately spherical bodies • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	
Light					• Recognise that they need light in order to see things and that dark is the absence of light Notice that light is reflected from surfaces • Recognise that light from the sun can be dangerous and that			• Recognise that light appears to travel in straight lines • Use the idea that light travels in straight lines to explain that objects are seen because they give

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					there are ways to protect their eyes • Recognise that shadows are formed when the light from a light source is blocked by an opaque object Find patterns in the way that the size of shadows change			out or reflect light into the eye • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
Forces		• Explore how things work			• Compare how things move on different surfaces • Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance • Observe how magnets attract or repel each other and attract some materials and not others • Compare and group together a variety of everyday materials on the basis of	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect		

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					whether they are attracted to a magnet, and identify some magnetic materials • Describe magnets as having 2 poles Predict whether 2 magnets will attract or repel each other, depending on which poles are facing			
Electricity						• Identify common appliances that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • Recognise that a switch opens and closes a circuit and associate this with whether or not a		• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram

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						• lamp lights in a simple series circuit • Recognise some common conductors and insulators, and associate metals with being good conductor		
Sound					• Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases			

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	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically							
Asking questions	**Asking questions**.	**Asking questions**. While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. -The children answer questions developed with the teacher often through a scenario.	**Asking questions**. -The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways in which questions can be answered.	**Asking questions**. •The children consider their prior knowledge when asking questions. •The children answer questions posed by the teacher. • They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question.	**Asking questions**. .The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. •Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question.	**Asking questions**. •Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry.	**Asking questions**. • Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry.

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Observation		**Observation** •Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations.	**Observation** •They begin to take measurements, initially by comparisons, then using non-standard units.	**Observation** •The children make systematic and careful observations.	**Observation** •They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.	•The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale**.**	During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order to get accurate data (closer to the true value).

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Testing **Explanatory note** **A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome.** **A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship.**		Testing The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.	**Testing** The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.	**Testing** •The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. •They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.	**Testing** •The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. •They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.	**Testing** •Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests. •Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work.	**Testing** The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.

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Identifying and Classifying.		**Identifying and Classifying.** •Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting.	**Identifying and Classifying** •They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.	**Identifying and Classifying** Compare and contrast diets and features of living things. Use this information to group living things	**Identifying and Classifying** Use and make simple keys to identify plants and animals**.**		They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys**.**

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Gathering, recording and presenting Data.		**Gathering and recording Data.** •The children record their observations e.g. using photographs, videos, drawings, labelled diagrams •They record their measurements e.g. using prepared tables, pictograms, tally charts. •They classify using simple prepared tables and sorting rings.	**Gathering and recording Data.** •The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. •They record their measurements e.g. using prepared tables, pictograms, tally charts and bar charts.	•Children are supported to present the same data in different ways in order to help with answering the question. They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary •Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. The answers are consistent with the evidence.	The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary •Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships.	•The children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter graphs**.**	**All of Y5 and:-** •Children present the same data in different ways in order to help with answering the question**.**

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Using their observations to answer questions.		**Using their observations to answer questions.** •Children use their experiences of the world around them to suggest appropriate answers to questions.. •The children recognise 'biggest and smallest', 'best and worst' etc. from their data.	**. observations to answer questions.** •Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources**.**	•They draw conclusions based on their evidence and current subject knowledge. •They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.	Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. •Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.	•Children answer their own and others' questions based on observations they have made, measurements they have taken or information they have gained from secondary sources. When doing this, they discuss whether other evidence e.g. from other groups, secondary sources and their scientific understanding, supports or refutes their answer. •They talk about how their scientific ideas change due to new evidence that they have gathered. •They talk about how new discoveries change scientific understanding. •They communicate their findings to an audience using relevant scientific language and	•In their conclusions, children: identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge. •They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. •They identify any limitations that reduce the trust they have in their data. •They communicate their findings to an audience using relevant scientific language and illustrations.

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						illustrations	