Working Scientifically

Disciplinary Knowledge

Progression in Science

This document outlines the disciplinary knowledge which children will develop through Science lessons. Learning disciplinary knowledge gives children the tools to unlock the significance of the carefully mapped substantive knowledge, outlined in the Knowledge Organisers.

Year	Plants	Animals Including Humans	Materials	Seasonal Changes	Living things and their Habitats	Working Scientifically	Rocks	Light	Forces	States of Matter	Electricity	Sound	Earth and Space	Evolution and Inheritance
EYFS	I can make observations of plants and explain why some things occur. I can talk about similarities and differences in plants. I can talk about the changes of plants. I can show care for plants.	I can make observations of animals and explain why some things occur. I can show care for animals. I can talk about similarities and differences in animals. I can talk about the changes of animals.	I can describe some materials and say what they are used for.	I can discuss the weather of that day and compare it to other days.		I can comment and ask questions about the natural world. I can talk about why things happen and how things work. I can experiment in my play with tests such as floating and sinking.								

I	I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.	I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	I can distinguish between an object and the material from which it is made I can identify and name a variety of	I can observe changes across the four seasons I can observe and describe weather associated with the seasons and		I can ask simple questions and recognise that they can be answered in different ways I can observe closely, using simple equipment I									

	I can identify and describe the basic structure of a variety of common flowering plants, including trees.	I can identify and name a variety of common animals that are carnivores, herbivores and omnivores I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	everyday materials, including wood, plastic, glass, metal, water, and rock I can describe the simple physical properties of a variety of everyday materials I can compare and group together a variety of everyday materials on the basis of their simple physical properties.	how day length varies.		can perform simple tests I can identify and classify I can use my observations and ideas to suggest answers to questions I can gather and record data to help in answering questions.								
2	I can observe and describe how seeds and	I can notice that animals, including humans, have	I can identify and compare the suitability of a variety of		I can explore and compare the differences	I can ask simple questions and recognise that they can be								

	bulbs grow into mature plants I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	offspring which grow into adults I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air) I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		between things that are living, dead, and things that have never been alive I can 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 I can identify and name a variety of plants and animals in their habitats, including micro-habitats	answered in different ways I can observe closely, using simple equipment I can perform simple tests I can identify and classify I can use my observations and ideas to suggest answers to questions I can gather and record data to help in answering questions.								

					I can 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.										
3	I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers I can explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room	I can 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 I can identify that humans and some other animals have skeletons and muscles				I can ask relevant questions and use different types of scientific enquiries to answer them I can set up simple practical enquiries, comparative and fair tests I can make systematic and careful observations and, where	I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties I can describe in simple terms how fossils are formed when things that have lived are trapped within rock	I can recognise that they need light in order to see things and that dark is the absence of light I can notice that light is reflected from surfaces I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes	I can compare how things move on different surfaces I can notice that some forces need contact between two objects, but magnetic forces can act at a distance I can observe how magnets attract or repel each other and attract some					

	to grow) and how they vary from plant to plant I can investigate the way in which water is transported within plants I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	for support, protection and movement.				appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers I can gather, record, classify and present data in a variety of ways to help in answering questions I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	I can recognise that soils are made from rocks and organic matter.	I can recognise that shadows are formed when the light from a light source is blocked by a solid object I can find patterns in the way that the size of a shadow changes.	materials and not others describe magnets as having two poles I can predict whether two magnets will attract or repel each other, depending on which poles are facing. I can 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					
4		I can describe the simple functions of the basic parts of the digestive			I can recognise that living things can be grouped in a variety of ways	I can report on findings from enquiries, including oral and written				I can compare and group materials together, according to whether they	I can identify common appliances that run on electricity	I can identify how sounds are made, associating some of them with		

		system in humans I can identify the different types of teeth in humans and their simple functions I can construct and interpret a variety of food chains, identifying producers, predators and prey.			I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment I can recognise that environments can change and that this can sometimes pose dangers to living things.	explanations, displays or presentations of results and conclusions I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions I can identify differences, similarities or changes related to simple scientific ideas and processes I can use straightforward scientific evidence to answer questions or to support findings.				are solids, liquids or gases I can 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) I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers I can 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 I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit	something vibrating I can recognise that vibrations from sounds travel through a medium to the ear I can find patterns between the pitch of a sound and features of the object that produced it I can find patterns between the volume of a sound and the strength of the vibrations that produced it I can recognise that sounds get fainter as the distance from the sound source increases.		

											I can recognise some common conductors and insulators, and associate metals with being good conductors.			
5		I can describe the changes as humans develop to old age.	I can 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 I know that some materials will dissolve in liquid to form a solution, and describe how to recover a		I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals.	I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate I can record data and			I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces I can recognise that some mechanisms, including levers, pulleys				I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system I can describe the movement of the Moon relative to the Earth I can describe the Sun, Earth and Moon as approximately spherical bodies I can use the idea of the Earth's rotation to explain day and night and the apparent	

			substance from a solution I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic I can demonstrate that dissolving, mixing and changes of state are			results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I can use test results to make predictions to set up further comparative and fair tests I can report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and			and gears, allow a smaller force to have a greater effect.				movement of the sun across the sky.	

			reversible changes I can 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.			other presentations I can identify scientific evidence that has been used to support or refute ideas or arguments.								
6		I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood I can recognise the impact of		I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including		I can plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary		I can 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 I can explain that we see things because			I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit I can compare and give reasons for variations in			I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago

		diet, exercise, drugs and lifestyle on the way their bodies function I can describe the ways in which nutrients and water are transported within animals, including humans.		microorganisms, plants and animals I can give reasons for classifying plants and animals based on specific characteristics.		I can take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate I can record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I can use test results to make predictions to set up further comparative and fair tests I can report and present findings from		light travels from light sources to our eyes or from light sources to objects and then to our eyes I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.			how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches I can use recognised symbols when representing a simple circuit in a diagram.			I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

						enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations I can identify scientific evidence that has been used to support or refute ideas or arguments.								