Subject Non- Negotiables – Science

Skills and knowledge components:

Progression document building from previous year's learning

Science

	Foundation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically	**Communication and language- Understanding** **Early Learning Goal** **Children follow instructions involving several ideas or actions. They answer 'how' and 'why' questions about their experiences and in response to events.**	Ask simple questions when prompted Make relevant observations Perform simple tests, with support Identify and classify Use observations and ideas to suggest answers to questions With prompting, suggest how	Ask simple questions and recognise that they can be answered in different ways Observe closely, using simple equipment Perfrom simple tests Identify and Clasify Use their observations and ideas to suggest	Ask relevant questions when prompted Set up simple practical enquiries, comparative and fair tests Make systematic observations using simple equipment With prompting, use various ways of recording, grouping and	Ask relevant questions and using different types of scientific enquiries to answer them Set up simple practical enquiries, comparative and fair tests Make systematic and careful observations and, where appropriate, taking accurate measurements	With prompting, plan different types of scientific enquiries to answer questions With prompting, recognise and control variables where necessary Select, with prompting, and use appropriate equipment to take readings Take precise measurements	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings

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		findings could be recorded	answers to questions Gather and record data to help in answering questions	displaying evidence Suggest how findings could be reported With prompting, suggest conclusions from enquiries Identify differences, similarities or changes related to simple scientific ideas and processes Use straightforward scientific evidence to answer questions or to	using standard units, using a range of equipment, including thermometers and data loggers Gather, record, classify and present data in a variety of ways to help in answering questions Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Report on findings from	using standard units Take and process repeat readings Record data and results Record data using labelled diagrams, keys, tables and charts Use line graphs to record data Report and present findings from enquiries, including conclusions and, with prompting, suggest causal relationships With support, present findings	when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use test results to make predictions to set up further comparative and fair tests Reportg and present findings from enquiries, including conclusions,

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				support their findings. Suggest possible improvements or further questions to investigate	enquiries, including oral and written explanations, displays or presentations of results and conclusions Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identify differences, similarities or changes related to simple scientific ideas and processes	from enquiries orally and in writing With prompting, identify that not all results may be trustworthy Suggest how evidence can support conclusions Suggest further comparative or fair tests	causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations Identify scientific evidence that has been used to support or refute ideas or arguments

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					Use straightforward scientific evidence to answer questions or to support their findings.		
Plants	**See boxes below in living thins**	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees	Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	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			

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				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 formation and seed dispersal			
Animals including humans.	**Physical development- health and self-care** **40-60** **Eats a healthy range of foodstuffs and understands**	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	Notice that animals, including humans, have offspring which grow into adults Find out about and describe the	Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own	Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of	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

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	need for variety in food. **•Shows some understanding that good practices with regard to exercise, eating, sleeping and hygiene can contribute to good health.** **•Shows understanding of the need for safety when tackling new challenges, and considers and manages some risks.** **Early Learning Goal** **Children follow instructions involving several**	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	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	food; they get nutrition from what they eat Identify that humans and some other animals have skeletons and muscles for support, protection and movement	teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey		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

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	ideas or actions. They answer 'how' and 'why' questions about their experiences						
Everyday Materials	**See box below in living things**	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 Describe the simple physical properties of a variety of everyday materials	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing,				

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		Compare and group together a variety of everyday materials on the basis of their simple physical properties	bending, twisting and stretching				
Seasonal Changes		Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies					
Living things and their habitats	**Understanding the world- The World** **30-50 months** **•Comments and asks questions**		Explore and compare the differences between things that are living, dead, and things		Recognise that living things can be grouped in a variety of ways	Describe the differences in the life cycles of a mammal, an	Describe how living things are classified into broad groups according to common

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	about aspects of their familiar world such as the place where they live or the natural world. **•Can talk about some of the things they have observed such as plants, animals, natural and found objects.** **•Talks about why things happen and how things work.** **•Developing an understanding of growth, decay and changes over time.** **•Shows care and concern for living things and the environment**		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 Identify and name a variety of plants and animals in their habitats, including microhabitats		Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Recognise that environments can change and that this can sometimes pose dangers to living things	amphibian, an insect and a bird Describe the life process of reproduction in some plants and animals.	observable characteristics and based on similarities and differences, including micro-organisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics

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	40-60 months **•Looks closely at similarities, differences, patterns and change.** **Early Learning Goal** **Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make**		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				

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	observations of animals and plants and explain why some things occur, and talk about changes.						
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 Recognise that soils are made			

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				from rocks and organic matter			
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 there are ways to protect their eyes Recognise that shadows are formed when the light from a light source is			Recognise that light appears to travel in straight lines Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye Explain that we see things because light travels from light sources to our eyes or from light sources to

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				blocked by an opaque object Find patterns in the way that the size of shadows change			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 and Magnets				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		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	

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				or repel each other and attract some materials and not others Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials Describe magnets as having 2 poles Predict whether 2 magnets will attract or repel each other, depending on		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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				which poles are facing			
Properties and changes of materials					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	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 Know that some materials will dissolve in liquid to form a solution, and describe how to recover a	

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					evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	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 Demonstrate that dissolving, mixing and	

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						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	
Sound					Identify how sounds are made, associating some of them with		

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					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		

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					distance from the sound source increases		
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		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

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					loop with a battery Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators, and associate metals with being good conductors		Use recognised symbols when representing a simple circuit in a diagram
Earth and Space						Describe the movement of the Earth and other planets relative to the	

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						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	
Evolution and Inheritance							Recognise that living things have changed over

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							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

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							adaptation may lead to evolution