

RFS- Knowledge Milestones & Skill Progression:

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world’s future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Knowledge Milestones						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<u>Plants</u>	<u>Plants</u>	<u>Plants</u>	<u>Living things and their Habitats</u>	<u>Living things and their Habitats</u>	<u>Living things and their Habitats</u>
Identify, compare, classify and group a variety of places, objects, materials and living things.	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.	Observe and describe how seeds and bulbs grow into mature plants.	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	Recognise that living things (including those in the locality) can be grouped in a variety of ways	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.	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.
Talk about changes, including the seasons.	Identify and describe the basic structure of a variety of common flowering plants, including trees.	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	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.	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.	Describe the life process of reproduction in some plants and animals.	Give reasons for classifying plants and animals based on specific characteristics.
Talk about their immediate environment and compare it to other environments.	<u>Animals, including Humans</u>	<u>Living things and their Habitats</u>	Investigate the way in which water is transported within plants.	Recognise that environments can change and that this can sometimes pose dangers to living things.	Raise questions about their local environment throughout the year.	Know that broad groupings, such as micro-organisms, plants and animals can be subdivided.
	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.	Explore and compare the differences between things that are living, dead, and things that have never been alive.	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	<u>Animals, including Humans</u>	Find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall.	Should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals).
	Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	Identify that most living things live in habitats to which they are suited.	Know that plants make their own food.	Describe the simple functions of the basic parts of the digestive system in humans.	Find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.	Find out about significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.
	Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).	Describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.	<u>Animals, including Humans</u>	Identify the different types of teeth in humans and their simple functions.	<u>Animals, including Humans</u>	
	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Identify and name a variety of plants and animals in their habitats, including micro-habitats.	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.	Construct and interpret a variety of food chains, identifying producers, predators and prey.	Describe the changes as humans develop to old age.	<u>Animals, including Humans</u>
	<u>Everyday Materials</u>	Describe how animals obtain their food from plants and other animals	Identify that humans and some animals have skeletons and muscles for support, protection and movement.	<u>Electricity</u>	Draw a timeline to indicate stages in the growth and development of humans.	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.
	Distinguish between an object and the material from which it is made.	Understand a simple food chain, and identify and name different sources of food.	<u>Rocks</u>	Identify common appliances that run on electricity.	Learn about the changes experienced in puberty.	Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.
	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.	<u>Animals, including Humans</u>	Compare and group together different kinds of rocks (including those in the locality) on the basis of appearance and simple physical properties.	Construct a simple series circuit, identifying/naming its basic parts, including cell, wire, bulb, switch and buzzer.	<u>Properties and changes of materials</u>	Describe the ways in which nutrients and water are transported within animals, including humans.
	Describe the simple physical	Notice that animals, including humans, have offspring which grow into adults.		Use their circuits to create simple devices.	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.	Explore questions to
				Draw the circuit as a pictorial representation (not necessarily		

<p>properties of a variety of everyday materials.</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties.</p> <p style="text-align: center;"><u>Seasonal Changes</u></p> <p>Observe changes across the four seasons.</p> <p>Observe and describe weather associated with the seasons and how day length varies.</p>	<p>Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p style="text-align: center;"><u>Uses of everyday Materials</u></p> <p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.</p> <p>Recognise that soils are made from rocks and organic matter.</p> <p style="text-align: center;"><u>Light</u></p> <p>Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces.</p> <p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>Find patterns in the way that the size of shadows change.</p> <p style="text-align: center;"><u>Forces and Magnets</u></p> <p>Compare how things move on different surfaces.</p> <p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance.</p> <p>Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>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</p> <p>Describe magnets as having two poles. Predict whether two magnets will attract or repel each other,</p>	<p>using conventional circuit symbols).</p> <p>About precautions for working safely with electricity.</p> <p>Identify whether or not a lamp will light in a simple series circuit.</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p> <p style="text-align: center;"><u>Sound</u></p> <p>Identify how sounds are made, associating some of them with something vibrating, by identifying and explaining sound sources around school.</p> <p>Describe and explain sound sources and how sound sources vibrate to make sounds.</p> <p>Explain how vibrations change when the loudness of a sound changes.</p> <p>Explain how sounds travel to reach our ears.</p> <p>Describe patterns between the pitch of a sound and the features of the object that made the sound.</p> <p>Explain how sound travels through a string telephone.</p> <p>Identify the best material for absorbing sound.</p> <p>Create a musical instrument that can play high, low, loud and quiet sounds. Make observations and conclusions and answer</p>	<p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>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.</p> <p>Explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes.</p> <p>Explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda.</p> <p style="text-align: center;"><u>Forces</u></p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effects of air resistance, water resistance and friction that act between moving surfaces.</p>	<p>understand how the circulatory system enables the body to function.</p> <p>Learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body.</p> <p>Explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.</p> <p style="text-align: center;"><u>Electricity</u></p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>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.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p> <p>Construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors.</p> <p>Learn how to represent a simple circuit in a diagram using recognised symbols.</p> <p style="text-align: center;"><u>Evolution and Inheritance</u></p> <p>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</p>
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Skills Progression						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

	<u>To work Scientifically</u>	<u>To work Scientifically</u>	<u>To work Scientifically</u>	<u>To work Scientifically</u>	<u>To work Scientifically</u>	<u>To work Scientifically</u>
Ask questions	Ask simple questions.	Ask questions.	Ask relevant questions.	Ask relevant questions to help understand.	Plan enquiries, and know how to control variables where necessary.	Plan enquiries, including recognising and controlling variables where necessary.
Demonstrate curiosity about the world around them.	Know how to use simple equipment.	Know how to select and use equipment from a limited range.	Begin to set up simple practical enquiries and comparative and fair tests guided by an adult.	Suggest how to set up simple practical enquiries and comparative and fair tests.	Know how to use the correct apparatus, and materials during fieldwork and laboratory work.	Know how to use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.
Make predictions with support or prompting, talk about what they think might happen based on their own experiences.	Begin to understand how to perform simple tests directed by an adult.	Develop an understanding in how to perform simple tests.				
	<u>Planning and Communication and Sources</u>	<u>Planning and Communication and Sources</u>	<u>Planning and Communication and Sources</u>	<u>Planning and Communication and Sources</u>	<u>Planning and Communication and Sources</u>	<u>Planning and Communication and Sources</u>
Decide how to carry out an enquiry.	Draw simple pictures.	Describe their observations using some scientific vocabulary.	Use pictures, writing, diagrams and tables as directed by their teacher.	Record observations, comparisons and measurements using tables and bar charts.	Record observations systematically.	Choose scales for graphs which show data and features effectively.
Respond to prompts to say what happened to objects, living things or events.	Talk about what they see and do.	Use a range of simple texts to find information.	Use simple texts, directed by the teacher, to find information.	Begin to plot points to form a simple graphs. Use graphs to point out and interpret patterns in their data.	Use appropriate scientific language and conventions to communicate quantitative and qualitative data.	Identify measurements and observations which do not fit into the main pattern.
Take measurements.	Use simple charts to communicate findings.	Suggest how to find things out.	Record their observations in written, pictorial and diagrammatic forms.	Select information from a range of sources provided for them.	Select a range of appropriate sources of information including books, internet and CD Rom.	Begin to explain anomalous data.
Use senses and simple equipment to explore the world around them, e.g. binoculars and magnifying glasses.	Identify key features.	Identify and begin to classify key features.	Select the appropriate format to record their observations.			Use appropriate ways to communicate quantitative data using.
	<u>Enquiring and Testing and Obtaining and Presenting Evidence</u>	<u>Enquiring and Testing and Obtaining and Presenting Evidence</u>	<u>Enquiring and Testing and Obtaining and Presenting Evidence</u>	<u>Enquiring and Testing and Obtaining and Presenting Evidence</u>	<u>Enquiring and Testing and Obtaining and Presenting Evidence</u>	<u>Enquiring and Testing and Obtaining and Presenting Evidence</u>
Record data, talk to an adult about what has been found/found out.	Test ideas suggested to them say what they think will happen.	Use simple equipment provided to aid observation compare objects, living things or events.	Put forward, own ideas about how to find the answers to questions.	With help, pupils begin to realise that scientific ideas are based on evidence.	Use previous knowledge and experience combined with experimental evidence to provide scientific explanations.	Describe evidence for a scientific idea.
Present data, talk to an adult about what has been found/found out.	Use first hand experiences and observations to answer questions.	Make observations relevant to their task.	Recognise the need to collect data to answer questions.	Pupils show in the way they perform their tasks how to vary one factor while keeping others the same.	Recognise the key factors to be considered in carrying out a fair test	Use scientific knowledge to identify an approach for an investigation.
Answer questions using data	Begin to compare some living things.	Begin to recognise when a test or comparison is unfair.	Recognise and explain why it is a fair test with help.	Decide on an appropriate approach in their own investigations to answer questions.		Explain how the interpretation leads to new ideas.
		Use first hand experiences to answer questions.	Pupils begin to realise that scientific ideas are based on evidence.	Describe which factors they are varying and which will remain the same and say why.		
	<u>Observing and Recording</u>	<u>Observing and Recording</u>	<u>Observing and Recording</u>	<u>Observing and Recording</u>	<u>Observing and Recording</u>	<u>Observing and Recording</u>
	Make simple observations, respond to questions asked by the teacher.	Make simple observations. using appropriate senses, (Teachers may prompt ideas through questioning).	Make relevant observations and measurements adequate for the task.	Make a series of relevant observations, comparisons and measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.	Make a series of observations, comparisons and measurements with increasing precision, using standard units, using a range of equipment, e.g. thermometers and data loggers.	Independently, measure quantities with precision using fine – scale divisions.
	Record observations with help.	Begin to collect and record data (supported by the teacher), to answer	Begin to suggest, own ideas on how to collect data to answer relevant questions.	Make relevant suggestions on how to gather, record, classify and present		Select and use information effectively.

<p>Communicate observations orally, in drawing, labelling, simple writing and using ICT</p> <p><u>Considering Evidence and Evaluating</u></p> <p>Test ideas suggested to them.</p> <p>Say what they think will happen.</p> <p>Use first hand experiences to answer questions guided by the teacher..</p> <p>Begin to compare some living things.</p>	<p>questions.</p> <p><u>Considering Evidence and Evaluating</u></p> <p>Use simple equipment provided to aid observation.</p> <p>Make observations relevant to their task.</p> <p>Begin to recognise when a test or comparison is unfair.</p> <p>Use first hand experiences to answer questions.</p> <p>Compare objects, living things or events.</p>	<p><u>Considering Evidence and Evaluating</u></p> <p>Put forward, own ideas about how to find the answers to questions.</p> <p>Know how to use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</p> <p>Recognise and explain why it is a fair test with help.</p> <p>Understands how to use straight forward, scientific evidence to answer questions or to support their findings.</p>	<p>data in a variety of ways to help in answering questions.</p> <p><u>Considering Evidence and Evaluating</u></p> <p>With help, pupils begin to realise that scientific ideas are based on evidence.</p> <p>Show in the way they perform their tasks how to vary one factor while keeping others the same.</p> <p>Decide on an appropriate approach in their own investigations to answer questions.</p> <p>Describe which factors they are varying and which will remain the same and say why.</p>	<p>Begin to make repeat observations and measurements. Present data accurately in a variety of ways to answer questions.</p> <p>Present findings in written form, displays and other presentations.</p> <p><u>Considering Evidence and Evaluating</u></p> <p>Recognise the key factors to be considered in carrying out a fair test.</p> <p>Use test results to make predictions to set up further comparative and fair tests.</p> <p>Know how to use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions</p> <p>Make enough repeat measurements and observations for the required task range systematically.</p> <p><u>Considering Evidence and Evaluating</u></p> <p>Describe evidence for a scientific idea.</p> <p>Use scientific knowledge to identify an approach for an investigation.Explain how the interpretation leads to new ideas.</p>
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