



SCIENCE PROGRESSION GRID

Intent: At Parsloes Primary School we believe that a high-quality science curriculum provides the foundations for understanding the world. Science encompasses the acquisition of new knowledge, concepts and skills; encouraging pupils to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural wonders that occur on our planet. During active and engaging lessons, pupils will learn and discuss scientific theories and processes, which will enable them to answer scientific questions about the world. They will develop scientific enquiry skills and use scientific language to explain concepts confidently.

LEARN:	RUPA:	SMSC:
L – language acquisition E – empowering experiences A – active and hands-on learning R – relevant to our diverse community N – new knowledge and skills	R – respectful U – understanding P – positive A – aspirational	S – spiritual M – moral S – social C – cultural

	NURSERY	RECEPTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
KEY VOCABULARY	animal material plastic wood plant seed grow caterpillar butterfly float sink	body legs chest back bones melting freezing sound hard soft leaves stem roots flower light shadow weather	season temperature deciduous evergreen fruit bulb trunk fish amphibian reptile mammal bird carnivore herbivore omnivore absorbent flexible opaque transparent waterproof	habitat microhabitat food chain predator prey producer climate minerals germination extinct life cycle offspring hygiene exercise disease suitability conductor insulator	pollination seed dispersal ovary stigma style stamen pollen nutrition muscles ligaments skull spine sternum pelvis tibia fibula igneous metamorphic sedimentary light source light ray force friction magnetic	vertebrates invertebrates species digestion oesophagus small intestine large intestine canines molars incisors solids liquids gases molecules particles evaporation condensation precipitation vibrations sound wave pitch amplitude series circuit cells conductors insulators	reproduction anther fertilisation gestation hormone nerves organ puberty soluble insoluble solute solvent galaxy solar system planet orbit gravity element air resistance water resistance mechanisms Newton acceleration static friction sliding friction force meter weight	microorganism monera protista fungi circulatory system artery vein evolution inheritance adaptation variation natural selection artificial selection refraction spectrum atom component electron negative terminal positive terminal series circuit parallel circuit resistance terminal voltage current

NURSERY	RECEPTION	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Asking questions and recognising that they can be answered in different ways							
Ask simple questions recognising that they can be answered in different ways Children are encouraged to explore the natural world to foster curiosity. They begin to develop the ability to ask questions about what is happening and how things change. Through guided discussion with adults, children answer questions about what they can see in the natural world around them. After observing and interacting with natural processes, such as ice melting, children can answer simple questions about what happened and why.	Asking simple questions and recognising that they can be answered in different ways 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. 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 relevant questions and using different types of scientific enquiries to answer them The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. The children answer questions posed by the teacher. 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.	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 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. 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.				
Making observations and taking measurements							
Observe closely the natural world around them, using their senses and some appropriate equipment such as magnifying glasses. Draw pictures of the natural world based on observations. Measure through comparisons.	Observing closely, using simple equipment 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. They begin to take measurements, initially by comparisons, then using non-standard units.	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers The children make systematic and careful observations. They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate 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).				
Engaging in practical enquiry to answer questions							
Performing simple tests Interact with natural processes, such as ice melting, sound causing a vibration, objects	Performing simple tests The children use practical resources provided to gather evidence to answer	Setting up simple practical enquiries, comparative and fair tests	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary				

<p>casting a shadow, a magnet attracting an object and a boat floating on water.</p> <p>Explore scientific phenomena with practical resources to gather evidence to answer a question e.g. what is attracted to a magnet?</p> <p>Children can compare and sort materials and living things.</p> <p>Children observe the changes in the natural world over time, particularly related to the changing seasons.</p>	<p>questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.</p> <p>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.</p> <p>They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics they used to identify a living thing.</p>	<p>The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher.</p> <p>They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.</p>	<p>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.</p> <p>They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample.</p>
Recording and presenting evidence			
<p>Gather data to help answer questions</p> <p>Children record their observations of the natural world through drawing and labelling</p> <p>Children classify and sort using sorting rings and practical resources</p>	<p>Gathering and recording data to help in answering questions</p> <p>The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing.</p> <p>They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs.</p> <p>They classify using simple prepared tables and sorting rings.</p>	<p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>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.</p> <p>Children are supported to present the same data in different ways in order to help with answering the question.</p>	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p>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. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys.</p> <p>Children present the same data in different ways in order to help with answering the question.</p>
Answering questions and concluding			
<p>Using their observations and ideas to suggest answers to questions</p> <p>Children explore the natural world to find answers to questions. They develop their answers through discussion with adults.</p> <p>Children recognise 'biggest and smallest', 'best and worst' etc through exploration.</p>	<p>Using their observations and ideas to suggest answers to questions</p> <p>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.</p>	<p>Using straightforward scientific evidence to answer questions or to support their findings</p> <p>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.</p>	<p>Identifying scientific evidence that has been used to support or refute ideas or arguments</p> <p>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</p>

	The children recognise 'biggest and smallest', 'best and worst' etc. from their data.		<p>scientific understanding, supports or refutes their answer.</p> <p>They talk about how their scientific ideas change due to new evidence that they have gathered.</p> <p>They talk about how new discoveries change scientific understanding.</p>
		Identifying differences, similarities or changes related to simple scientific ideas and processes <p>Children interpret their data to generate simple comparative statements based on their evidence. They begin to identify naturally occurring patterns and causal relationships.</p>	Reporting and presenting 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 other presentations <p>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.</p>
		Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions <p>They draw conclusions based on their evidence and current subject knowledge.</p>	
		Evaluating and raising further questions and predictions	
	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions <p>They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.</p>	Reporting and presenting 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 other presentations <p>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.</p> <p>They identify any limitations that reduce the trust they have in their data.</p>	

		<p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>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.</p> <p>Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.</p>	<p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests.</p>
	Communicating their findings		
		<p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.</p>	<p>Reporting and presenting 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 other presentations</p> <p>They communicate their findings to an audience using relevant scientific language and illustrations.</p>

ASSESSMENT

(using the skills above to assess the knowledge)

KEY ENQUIRY BIG QUESTIONS

Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Understanding the World Can we name animals? What materials can we see? How do plants grow? What does a caterpillar turn into? What floats and what sinks?	Understanding the World What are the different parts of my body? How are animals different to each other? How can we make ice change into water? What sounds can we hear? How can we describe different materials? What do we notice about different plants? How can we create shadows?	Animals inc. Humans How can we identify different animals? Plants How can we identify different plants? Everyday Materials How can we classify materials? Animals inc. Humans How do humans use their senses?	Living Things/Habitats How do animals survive in different habitats? Animals inc. Humans What do animals and humans need to survive Animals inc. Humans Why is exercise and diet important? Plants How do plants grow and survive? Materials Which materials are best to use for particular uses?	Plants What are the functions of the different parts of plants Rocks How can we compare and group different rocks and soils? Animals inc. Humans Why do animals and humans have skeletons and muscles? Light Where does light come from? How are shadows formed? Forces and Magnets What is a magnet? Which materials are magnetic?	Animals inc. Humans What is the digestive system and what part do teeth play? Sound What are vibrations, pitch and volume? Electricity What do you need to create a series circuit? Living Things/Habitats How do food chains work? How can you classify animals? States of Matter What are the changes in state for solids, liquids and gases?	Materials and Properties What are the reversible and irreversible changes of solids, liquids and gases? Earth and Space/Forces How do the bodies of the solar system move and what effect is created? Living Things/Habitats How do life cycles of different animal groups compare? Forces What are the effects of water resistance and friction?	Living Things/Habitats How do we classify animals based on specific characteristics? How are water and nutrients transported around the body? Electricity How do we create and compare circuits with a variety of components? Animals inc. Humans What is the circulatory system? Light How does light travel and reflect? Evolution and Inheritance How have living things changed over the years?