



Poringland Primary School and Nursery

Science Key Skills and Knowledge Progression

Working scientifically							
	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Testing	<ul style="list-style-type: none"> Show curiosity about objects, events and people <i>Playing & Exploring</i> Questions why things happen <i>Speaking: 30-50 months</i> Engage in open-ended activity and learn by trial and error <i>Playing & Exploring</i> Find ways to solve problems / find new ways to do things / test their ideas <i>Creating & Thinking Critically</i> Develop ideas of grouping, sequences, cause and effect <i>Creating & Thinking Critically</i> Know about similarities and differences in relation to places, objects, materials and living things <i>ELG: The World</i> 	<p>Perform simple tests eg. Which materials keep things warmest? Know whether the test has been successful and can say what has been learned</p>	<p>Perform simple comparative and fair tests eg. Finding out how seeds grow best</p>	<p>Set up simple practical enquiries, comparative and fair tests eg.</p> <ul style="list-style-type: none"> To see which type of soil is most suitable when growing two similar plants? To see if their right hand is as efficient as their left. <p>Set up a fair test with different variables e.g. the best conditions for a plant to grow.</p> <p>Can explain to a partner why a test is a fair one.</p>	<p>Set up simple practical enquiries, comparative and fair tests eg.</p> <ul style="list-style-type: none"> Which of two instruments make the highest or lowest sound and does a glass of ice weigh more than a glass of water. <p>Set up a fair test with more than one variable e.g. using different materials to cut out sound.</p> <p>Can explain to others why a test is fair e.g. discover how fast ice melts in different temps.</p>	<p>Set up an investigation when it is appropriate e.g. finding out which materials dissolve or not.</p> <p>Set up a fair test when needed eg.</p> <ul style="list-style-type: none"> Which surfaces create most friction? <p>Set up an enquiry based investigation eg.</p> <ul style="list-style-type: none"> Find out what adults/ children can do now that they couldn't do when they were a baby. <p>Know what variables are in a given enquiry and can isolate each one when investigating. eg.</p> <ul style="list-style-type: none"> Finding out 	<p>Know which type of investigation is needed to suit a particular scientific enquiry eg.</p> <ul style="list-style-type: none"> Looking at the relationship between pulse and exercise. <p>Set up a fair test when needed eg.</p> <ul style="list-style-type: none"> Does light travel in straight lines? <p>Know how to set up an enquiry based investigation eg.</p> <ul style="list-style-type: none"> What is the relationship between oxygen and blood?



Poringland Primary School and Nursery



	<ul style="list-style-type: none"> Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world <i>The World: 30-50 months</i> 					<p>how effective parachutes are when made with different materials.</p> <p>Plan different types of scientific enquires to answer given questions.</p>	
Scientific questioning	<ul style="list-style-type: none"> Use senses to explore the world around them <i>Playing & Exploring</i> Make links and notice patterns in their experience <i>Creating & Thinking Critically</i> Choose the resources they need for their chosen activities <i>ELG: Self Confidence & Self Awareness</i> Handle equipment and tools effectively <i>ELG: Moving & Handling</i> Create simple representations of events, people and objects <i>Being Imaginative: 40-60+ months</i> 	<p>Ask simple questions and recognise that they can be answered in different ways eg.</p> <ul style="list-style-type: none"> Why are flowers different colours? Why do some animals eat meat and others do not? 	<p>Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum eg.</p> <ul style="list-style-type: none"> Why do some trees lose their leaves in autumn and others do not? How long are the roots of tall trees? Why do some animals have underground habitats? 	<p>Ask relevant questions and use different types of scientific enquiries to answer them eg.</p> <ul style="list-style-type: none"> Why does the moon appear as different shapes in the night sky? Why do shadows change during the day? Where does a fossil come from? 	<p>Ask relevant questions and use different types of scientific enquiries to answer them eg.</p> <ul style="list-style-type: none"> Why are steam and ice the same thing? Why is the liver important in the digestive system? What do we mean by pitch when it comes to sound? 		
Measuring	<ul style="list-style-type: none"> Answer how and why questions about their experiences <i>ELG: Understanding</i> 	Use simple equipment to observe closely	Use simple equipment such as thermometers and rain gauges to observe closely changes over time	Make systematic and careful observations and, where appropriate, take accurate	Make systematic and careful observations and, where appropriate, take accurate measurements using	Take measurements using a range of scientific equipment, with increasing	Take measurements using a range of scientific equipment, with increasing



Poringland Primary School and Nursery



	<ul style="list-style-type: none"> Make observations of animals and plants and explain why some things occur, and talk about changes <i>ELG: The World</i> Develop their own narratives and explanations by connecting ideas or events <i>ELG: Speaking</i> <p>Builds up vocabulary that reflects the breadth of their experience <i>Understanding: 30-50 months</i></p>			measurements using standard units, using a range of equipment, including thermometers and data loggers	standard units, using a range of equipment, including thermometers and data loggers	accuracy and precision, taking repeat readings when appropriate	accuracy and precision, taking repeat readings when appropriate
Gathering and recording		Gather and record data to help in answering questions.	Gather and record data to help in answering questions including from secondary sources of information using drawings, labelled diagrams, block graphs or tables.	Gather, record, classify and present data in a variety of ways to help in answering questions drawings, labelled diagrams, keys and child constructed bar charts and tables.	Gather, record, classify and present data in a variety of ways to help in answering questions, drawings, labelled diagrams, keys and child constructed bar charts and tables.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
Communicating findings		Make a simple written explanation about what has been learned from an investigation or what conclusions have been found.	Communicate his/her Ideas, what he/she does and what he/she finds out In a variety of ways eg. simple written reports or write ups.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	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 other presentations	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 other presentations
Classifying		Identify and classify eg. Mammals and birds	Identify, group and classify according to a given criteria eg. Deciduous and coniferous tree eg. using a Venn Diagram	Group information according to common factors eg. plants that grow in woodlands/plants that grow in gardens. eg. Venn Diagrams with bisecting sets or Carroll Diagrams	Group information according to common factors e.g. materials that make good conductors or insulators, e.g. Venn Diagrams with bisecting sets or Carroll Diagrams	Group and classify things and recognise patterns using appropriate ways of presenting eg. classification keys.	Group and classify things and recognise patterns using appropriate ways of presenting eg. classification keys.



Poringland Primary School and Nursery



Scientific research			Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and patterns	Use research to find out a range of things eg. <ul style="list-style-type: none"> How reflection can help us see things that are around the corner? What are the main differences between sedimentary and igneous rocks? 	Use research to find out a range of things eg. <ul style="list-style-type: none"> Which materials make effective conductors and insulators of electricity? How much time it takes to digest our food? 	Find things out using a wide range of secondary sources of information	Find things out using a wide range of secondary sources of information
Concluding and questioning				Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Use results to draw conclusions. Is evaluative when explaining findings from scientific enquiries and is clear about what has happened in recent enquiries and can relate this to other enquiries where appropriate	Use results to draw conclusions. Is evaluative when explaining findings from scientific enquiries and is clear about what has happened in recent enquiries and can relate this to other enquiries where appropriate
Using scientific evidence				Use straightforward scientific evidence to answer questions or to support his/her findings	Use straight forward scientific evidence to answer questions or to support his/her findings	Identify scientific evidence that has been used to support or refute ideas or arguments	Identify scientific evidence that has been used to support or refute ideas or arguments



Poringland Primary School and Nursery

Children are taught to:

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p><u>Plants</u></p> <ul style="list-style-type: none"> - 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 <p><u>Animals, including humans</u></p> <ul style="list-style-type: none"> - 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. <p><u>Everyday Materials</u></p> <ul style="list-style-type: none"> - distinguish between an object and the material from which it is made 	<p><u>Living things and their habitats</u></p> <ul style="list-style-type: none"> - 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 - 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. <p><u>Plants</u></p> <ul style="list-style-type: none"> - 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. <p><u>Animals, including humans</u></p>	<p><u>Plants</u></p> <ul style="list-style-type: none"> - 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 formation and seed dispersal. <p><u>Animals, including humans</u></p> <ul style="list-style-type: none"> - 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. <p><u>Rocks</u></p> <ul style="list-style-type: none"> - compare and group 	<p><u>Living things and their habitats</u></p> <ul style="list-style-type: none"> - 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 change and that this can sometimes pose dangers to living things. <p><u>Animals, including humans</u></p> <ul style="list-style-type: none"> - 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. <p><u>States of matter</u></p> <ul style="list-style-type: none"> - 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 	<p><u>Living things and their habitat</u></p> <ul style="list-style-type: none"> - 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. <p><u>Animals, including humans</u></p> <ul style="list-style-type: none"> - describe the changes as humans develop to old age. <p><u>Properties and changes of materials</u></p> <ul style="list-style-type: none"> - 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 substance from a solution using 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 changes of state 	<p><u>Living things and their habitats</u></p> <ul style="list-style-type: none"> - describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals - give reasons for classifying plants and animals based on specific characteristics. <p><u>Animals including humans</u></p> <ul style="list-style-type: none"> - 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 body functions - describe the ways in which nutrients and water are transported within animals, including humans. <p><u>Evolution and inheritance</u></p>



Poringland Primary School and Nursery

	<p>- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</p> <p>- describe the simple physical 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><u>Seasonal Change</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>- notice that animals, including humans, have offspring which grow into adults</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><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>together different kinds of rocks on the basis of their appearance and simple physical properties</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><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 an opaque object</p> <p>- find patterns in the way that the size of shadows change.</p> <p><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>research the temperature at which this happens in degrees Celsius (°C)</p> <p>- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p><u>Sound</u></p> <p>- identify how sounds are made, associating some of them with something vibrating</p> <p>- recognise that vibrations from sounds travel through a medium to the ear</p> <p>- find patterns between the pitch of a sound and features of the object that produced it</p> <p>- find patterns between the volume of a sound and the strength of the vibrations that produced it</p> <p>- recognise that sounds get fainter as the distance from the sound source increases.</p> <p>-</p> <p><u>Electricity</u></p> <p>- identify common appliances that run on electricity</p> <p>- construct a simple series electrical circuit, identifying and naming its</p>	<p>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><u>Earth and space</u></p> <p>- describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>- describe the movement of the Moon relative to the Earth</p> <p>- describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p><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>- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p> <p><u>Light</u></p> <p>- recognise that light appears to travel in straight lines</p> <p>- 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</p> <p>- 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</p> <p>- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p><u>Electricity</u></p> <p>- associate the</p>
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Poringland Primary School and Nursery



			<ul style="list-style-type: none">- 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 whether they are attracted to a magnet, and identify some magnetic materials- describe magnets as having two poles- predict whether two magnets will attract or repel each other depending on which poles are facing.	<p>basic parts, including cells, wires, bulbs, switches and buzzers</p> <ul style="list-style-type: none">- 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 lamp lights in a simple series circuit- recognise some common conductors and insulators, and associate metals with being good conductors.		<p>brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <ul style="list-style-type: none">- 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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