



Kingsholm C of E Primary School and Nursery – Science Progression Ladder

	EYFS	End Goals	Year 1	Year 2	End Goals	Year 3	Year 4	End Goals	Year 5	Year 6	End Goals
Working Scientifically			To ask simple questions and recognising that they can be answered in different ways To observe closely, using simple equipment To perform simple tests To identify and classifying To use their observations and ideas to suggest answers to questions To gather and record data to help in answering questions.	To ask simple questions and recognising that they can be answered in different ways To observe closely, using simple equipment To perform simple tests To identify and classifying To use their observations and ideas to suggest answers to questions To gather and record data to help in answering questions.		To ask relevant questions and using different types of scientific enquiries to answer them To set up simple practical enquiries, comparative and fair tests To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers To gather, record, classify and present data in a variety of ways to help in answering questions To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables To report on findings from enquiries, including oral and written explanations, displays or presentations of	To ask relevant questions and using different types of scientific enquiries to answer them To set up simple practical enquiries, comparative and fair tests To make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers To gather, record, classify and present data in a variety of ways to help in answering questions To record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables To report on findings from enquiries, including oral and written explanations, displays or presentations of		To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs To use test results to make predictions to set up further comparative and fair tests To report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and	To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate To record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs To use test results to make predictions to set up further comparative and fair tests To report and present findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and	



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						results and conclusions To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions To identify differences, similarities or changes related to simple scientific ideas and processes To use straightforward scientific evidence to answer questions or to support their findings	results and conclusions To use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions To identify differences, similarities or changes related to simple scientific ideas and processes To use straightforward scientific evidence to answer questions or to support their findings		other presentations To identify scientific evidence that has been used to support or refute ideas or arguments	other presentations To identify scientific evidence that has been used to support or refute ideas or arguments	
Vocabulary			question answer observe observing equipment identify classify sort group record – diagram, chart, map data compare, contrast describe	question answer observe observing equipment identify classify sort group record – diagram, chart, map data compare, contrast describe		plan variables measurements accuracy precision repeat readings record data – scientific diagrams, labels, classification keys, tables, bar graph and line graphs predications further comparative and fair test report and present – conclusions, explanations, oral and written display and presentation. evidence – support,	plan variables measurements accuracy precision repeat readings record data – scientific diagrams, labels, classification keys, tables, bar graph and line graphs predications further comparative and fair test report and present – conclusions, explanations, oral and written display and presentation. evidence – support,		plan variables measurements accuracy precision repeat readings record data – scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs predications further comparative and fair test report and present – conclusions, casual relationships, explanations, degree of trust, oral and written	plan variables measurements accuracy precision repeat readings record data – scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs predications further comparative and fair test report and present – conclusions, casual relationships, explanations, degree of trust, oral and written	



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						identify, classify and describe	identify, classify and describe		display and presentation. evidence – support, refute ideas or arguments	display and presentation. evidence – support, refute ideas or arguments	
						patterns	patterns		identify, classify and describe	identify, classify and describe	
						systematic	systematic		patterns	patterns	
									systematic	systematic	
BIOLOGY Plants	The Natural World Explore the natural world around them, making observations and drawing pictures of animals and plants. Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.		To identify and name a variety of common wild and garden plants, including deciduous and evergreen trees To identify and describe the basic structure of a variety of common flowering plants, including trees.	To observe and describe how seeds and bulbs grow into mature plants To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	To identify some garden plants that they see in photographs. To name some garden plants from memory. To identify some common plants in the wild. To label the parts of a plant.	To identify and describe the functions of different parts of flowering plants (i.e roots, stem/trunk, leaves and flowers). To 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. To investigate the way in which water is transported within plants. To explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.		To explain the function of plants and why they are required for life and growth.	To describe the life process of reproduction in some plants.	To give reasons for classifying plants based on specific characteristics. 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 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 adaptation may lead to evolution	To explain how plants reproduce and attain specific characteristics
Vocabulary			Names of common plants and trees such as grass, daisy, dandelion, daffodil, rose, oak tree, willow	bulb seed shoot root germination		petals sepals stamen pollen stigma ovary pollination			sexual reproduction asexual reproduction cells male female		



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			tree, fir tree (choose appropriately for our grounds) deciduous conifer flower petals stem/stalk leaf roots trunk branch twig Just the structure not the functions	Not Year 3 content of plant reproduction. Limit to parts needed for growth.		dispersal absorb evaporation					
Depth of Learning			Describe the difference between deciduous and evergreen. Use information they have gathered to answer a question. Suggest a way to answer a question using the equipment that has been provided.	Explain that different plants have different needs. Compare the growth of different plants. Give reasons for their answers. Use observations to suggest conditions that food crops need to grow well		To explain the importance of plants on life. What do they provide? How does this help all life?				Through observations, group different plants according to characteristics. Understand that they can fit into more than one category.	
BIOLOGY Animals, including humans	Personal, Social and Emotional Development Know and talk about the different factors that support their overall health and wellbeing: - regular physical activity - healthy eating - toothbrushing - having a good sleep routine Managing Self Manage their own basic hygiene and personal needs, including dressing, going to the toilet and		To identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals To identify and name a variety of common animals that are carnivores, herbivores and omnivores To describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and	To notice that animals, including humans, have offspring which grow into adults To find out about and describe the basic needs of animals, including humans, for survival (water, food and air) To describe the importance for humans of exercise, eating the right amounts of different types	To identify and match several animal offspring and their adult forms. They can describe the main characteristics of the offspring found in different animal groups To describe the main stages of at least two different animal life cycles. They start to compare these life cycles. To identify several ways that humans grow	To 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. To Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	To identify the different types of teeth in humans and their simple functions. To describe the simple functions of the basic parts of the digestive system in humans. To construct and interpret a variety of food chains, identifying producers, predators and prey.	To have a basic understanding of the human body and its functions. To understand the different food groups and why they are essential.	To describe the changes as humans develop to old age.	To identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. To describe the ways in which nutrients and water are	To understand the circulatory system and its functions. To develop and build on the understanding of food groups and how nutrients are used by animals.



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	understanding the importance of healthy food choices.		mammals, including pets) To identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	of food, and hygiene.	and develop through each life cycle stage To identify several foods according to the basic food groups; can talk about the importance of a balanced diet. They can explain how to be hygienic and why this is important.					transported within animals, including humans.	
Vocabulary			Common examples such as frog, toad, rabbit, fox, blackbird, robin, bluetit, snake, shark, trout. Dog, cat, goldfish, parrot etc carnivore omnivore herbivore fur, scales, skin, claws, teeth, legs, paws, gills, smell sight touch hearing taste head, neck, shoulders, arms, elbows, knees, face, ears, eyes, hair, mouth, teeth Teach <u>the names of a mix of different vertebrates</u> but don't teach classifying with formal names such as amphibian etc. The aim is that the children can NAME a wide	pairs of animals such as cow – calf sheep – lamb pig – piglet survival hygiene		nutrition protein fat carbohydrate vitamins minerals fibre skeleton skull cranium jaw spine pelvis femur humerus radius ulna tibia fibia phalanges ribs	incisor canine premolar molar tongue enzyme oesophagus stomach small intestine large intestine rectum anus producer predator prey		breasts hormones period pubic hair fertile ovary	heart vein artery capillary aorta vena cava pulmonary artery pulmonary vein atrium ventricle lungs alveoli platelets white blood cells red blood cells	



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			variety of common animals and describe them but not <u>classify</u> according to characteristics								
Depth of Learning			To describe and compare the observable features of animals from a range of groups and apply this knowledge to unfamiliar animals from different groups, explaining the features they would expect to see. To name and identify animals that are herbivore, carnivore or omnivore and explain what they eat.	To identify and match a wide range of animal offspring and their adult forms. They can describe, in detail, the key characteristics of the offspring found in different animal groups To name the three basic needs of all animals to survive. They can describe the specific needs of a given animal and compare this to humans.		To identify the importance of the skeleton and all of its functions. Can a link be made as to why some animal don't have skeletons? Is there a reason for this?	To observe and compare the human teeth to other predatory animals. Are there similarities and differences? Can they explain why.			To describe the impact of lifestyle on the body. They can describe the negative and positive impacts of a variety of factors.	
BIOLOGY Living things and their habitats				To explore and compare the differences between things that are living, dead, and things that have never been alive To 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 To identify and name a variety of plants and	To ask questions to decide if a thing is living, dead or has never been alive. To identify some plants and animals in habitats. To identify and name minibeasts in microhabitats. To suggest how an animal is able to survive in their habitat. To draw a simple food chain.		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		To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. To describe the life process of reproduction in some plants and animals.	To 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. To give reasons for classifying plants and animals based on specific characteristics.	To understand how things are classified due to observation of characteristics. To understand the life cycle of plants and animals.



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				animals in their habitats, including microhabitats To 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.							
Vocabulary				alive dead never living extinct habitat suited/suitable food energy names of habitats such as garden, wood, forest, seashore, river, ocean, town microhabitats – soil, logs, pond Not the terms producer predator prey					pregnancy gestation embryo metamorphosis chrysalis	kingdoms fungi protozoa / Protoctista Monera (bacteria) aerobic anaerobic Linnaeus	
Depth of Learning				To identify a variety of plants and animals in a range of habitats. To use information, they have gathered to suggest an answer to a question. To suggest why the plants in a habitat need the animals.					To identify the life cycle of a variety of mammals and amphibians, To be able to classify these animals as mammals and amphibians.	To be able to identify a wide variety of characteristics and how these can vary which group living things are put into.	
CHEMISTRY			Uses of everyday materials	Uses of everyday materials		Rocks To compare and group together	States of matter To compare and group materials		Properties and changes of materials		



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			To distinguish between an object and the material from which it is made To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock To describe the simple physical properties of a variety of everyday materials To compare and group together a variety of everyday materials on the basis of their simple physical properties.	To identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		different kinds of rocks on the basis of their appearance and simple physical properties. To describe in simple terms how fossils are formed when things that have lived are trapped within rock. To recognise that soils are made from rocks and organic matter.	together, according to whether they are solids, liquids or gases. To 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). To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		To 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. To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. To demonstrate that dissolving, mixing and changes of state are reversible changes. To explain that some changes result in the		
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									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.		
Vocabulary			flexible waterproof absorb hard transparent	squash bend twist stretch suitable Remind children of materials encountered in year 1 and the vocab used to describe the properties. The focus in Year 2 is suitability for purpose and changing a material		igneous metamorphic sedimentary magma cast mould fossil deposit mineral soil humus clay loam	evaporation condensation melting freezing state Celsius		soluble insoluble dissolve conductivity reversible		
Depth of Learning			Describe and compare the properties of everyday materials. Make a prediction and suggest a reason. Suggest how a simple test could be made fair. Explain an outcome and suggest reasons for it.	Use their observations, ideas and experiences to ask and answer simple questions.			To explain what the differences are between solid, liquid and gases. They can use this knowledge to describe what happens to the particles when a substance changes state.				
PHYSICS	<u>The Natural World</u> Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter		To observe changes across the four seasons To observe and describe weather associated with the seasons and how day length varies						To describe the movement of the Earth, and other planets, relative to the Sun in the solar system. To describe the movement of the Moon relative to the Earth. To describe the Sun, Earth and Moon as		



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									approximately spherical bodies. To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.		
Vocabulary			Autumn Winter Spring Summer season weather						sun moon solar stellar lunar gibbous crescent satellite planet names of planets cycle dawn dusk perpendicular eclipse impact crater gravity		
Depth of Learning			To interpret and identify patterns in simple data and begin to suggest explanations for this To explain seasonal changes across the four seasons To describe how day length varies across the four seasons To make comparison across the four seasons								
PHYSICS Light						To recognise that they need light in order to see things and that dark is the absence of light.		To describe how light is important to see things in the dark.		To recognise that light appears to travel in straight lines.	To be able to describe that light travels in a straight line and how this is reflected from an



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						To notice that light is reflected from surfaces. To recognise that light from the sun can be dangerous and that there are ways to protect their eyes. To recognise that shadows are formed when the light from a light source is blocked by an opaque object. To find patterns in the way that the size of shadows change.		To understand that light is reflected off some surfaces. To understand how shadows are formed and how their size can change.		To 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. To 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. To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	object to the eye. To be able to describe how the shape of shadows occurs.
Vocabulary						reflection opaque transparent translucent				cornea retina iris pupil	
Depth of Learning						To start to make observations about how light is travelling when it is reflected. To observe how the power of the light source impacts the shadow.				To clearly describe the functions of the eye when light enters. To explain the difference between light being reflected and refracted.	
PHYSICS Forces and magnets						To compare how things move on different surfaces. To notice that some forces need contact between two objects, but magnetic forces can act at a distance. To observe how magnets attract		To understand how a magnet attracts and repels materials. To describe what would happen if two magnets were facing each other.	To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. To identify the effects of air resistance, water resistance and friction that act	To understand gravity and the effect it has on objects. To understand how that force can be manipulated by substance or mechanisms.	



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						or repel each other and attract some materials and not others. To 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. To describe magnets as having two poles. To predict whether two magnets will attract or repel each other, depending on which poles are facing.			between moving surfaces. To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.		
Vocabulary						pole attract repel			gravity air resistance friction water resistance mechanism		
Depth of Learning						To relate their knowledge of how magnets attract or repel to a wide variety of materials. They can make predictions as to whether they will attract or repel.					
PHYSICS Sound							To identify how sounds are made, associating some of them with something vibrating. To recognise that vibrations from sounds travel through a	To describe how a sound is made by vibrations. To understand how sound travels and how this dictates the volume of the sound.			



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							medium to the ear. To find patterns between the pitch of a sound and features of the object that produced it. To find patterns between the volume of a sound and the strength of the vibrations that produced it. To recognise that sounds get fainter as the distance from the sound source increases.			
Vocabulary							frequency pitch volume vibration amplitude wave longitudinal vacuum oscillation volume			
Depth of Learning							To make links between sound and light and which one travels faster. Light in a straight line or sound on a curvature.			
PHYSICS Electricity									To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. To compare and give reasons for variations in how components	To be able to create a working circuit with a buzzer and light. To be able to draw a circuit and all of its components.



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										function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. To use recognised symbols when representing a simple circuit in a diagram.	
Vocabulary										voltage current resistance	
Depth of Learning										To create a functional circuit with more than one light or buzzer. To understand that a greater power source will be needed.	