

Science Route map

Subject	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Plants Key learning objectives Assessment Qs</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>Can you identify an evergreen tree?</p> <p>Can you name parts of a plant?</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>This plant is not growing well – can you think of reasons why?</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>A flower is growing in a field but no one planted it – how did it get there?</p>			

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<p>Living things and their habitats Key learning objectives Assessment</p>		<ul style="list-style-type: none"> • explore and compare the difference 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 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 micro-habitats • 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>A new road is being built through a woodland and a field. What animals may this affect and why?</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>Case study investigation: orangutan</p> <p>How can you classify this animal?</p> <p>They are losing their habitats – why?</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>How do the life cycles of mammals and insects differ?</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 micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics <p>Can animals be a mammal but have characteristics from other groups such as fish?</p>
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<p>Animals including humans Key learning objectives Assessment</p>	<p>Pupils should be taught to:</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>How do different varieties of animals differ? (fish, reptiles, birds etc.) Label parts of the body</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • notice that animals, including humans, have offspring which grow into adults • find out about and describe the 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 <p>What advice would you give your friends to stay healthy?</p>	<p>Pupils should be taught to:</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>Can you write a healthy day's menu and explain why it is healthy?</p>	<p>Pupils should be taught to:</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>Can you name and describe the functions and the main parts of the digestive system?</p> <p>Children to label and annotate a diagram</p>	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • describe the changes as humans develop to old age <p>What changes in humans as they get older?</p>	<p>Pupils should be taught to:</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 bodies function • describe the ways in which nutrients and water are transported within animals, including humans <p>Can you describe the effects that exercise on your body? (Including the names of the circulatory system in your description)</p>
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<p>Light Key learning objectives Assessment</p>			<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recognise that they need light in order to see things and that the 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 blocked by a solid object • find patterns in the way that the size of shadows changes <p>When the sun is shining and we are blocking the sun. Why do the size of our shadows change during the day?</p> <p>Please explain using words and a diagram.</p>			<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 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 <p>There is a lamp, a boy and a flower (give chn diagram).</p> <p>Explain in your own words (and use the diagram) how the boy can see the flower.</p>
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Sound Key learning objectives Assessment				<p>Pupils should be taught to:</p> <ul style="list-style-type: none">• identify how sounds are made, associating some of them with 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 distance from the sound source increases		

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				Describe what happens to sound when it is produced from a source. Explain why it is fainter the further you are away from the source. Use a diagram to help with your explanation.		
Seasonal Change Key learning objectives Assessment	Pupils should be taught to: <ul style="list-style-type: none">• observe changes across the four seasons• observe and describe weather associated with the seasons and how day length varies What will you find under a stone at different times of the year? How are the seasons different?					

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	Why do the days get longer in summer?					
Materials Key learning objectives Assessment	Everyday Materials <ul style="list-style-type: none"> • 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 • compare and group 	Uses of Everyday Materials <ul style="list-style-type: none"> • 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 	Rocks <ul style="list-style-type: none"> • 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 from rocks and organic matter 		<ul style="list-style-type: none"> • compare and group everyday materials on the basis of their properties, including 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 	

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	<p>together a variety of everyday materials on the basis of their simple physical properties</p> <p>What are the best words to describe the properties of: _____?</p> <p>Can you group objects by properties?</p>	<p>squashing, bending, twisting and stretching</p> <p>3 little pigs investigation – which is the best material for the job and why?</p>	<p>Can you describe in your own words (in a paragraph) how fossils are formed?</p>		<p>solution</p> <ul style="list-style-type: none"> • use knowledge of solids, liquids and gases to decide how mixtures might be separated, (filtering, sieving and evaporating) • give reasons, based on evidence, from comparative and fair tests, for particular uses of everyday materials, including metals, wood and plastic • demonstrate dissolving, mixing and 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 <p>Are changes of states in materials reversible?</p>	
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					Do you have any examples?	
<p>Forces and magnets Key learning objectives Assessment</p>			<ul style="list-style-type: none"> • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance • 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 on 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, 		<ul style="list-style-type: none"> • 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 friction, that act between moving surfaces • recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect <p>Investigation: Which surface provides the best friction for a shoe?</p> <p>Which liquid provides</p>	

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			<p>depending on which poles are facing</p> <p>Show children objects they have not tested before.</p> <p>Can they predict whether they will be magnetic or not?</p>		<p>the most friction?</p>	
<p>States of Matter Key learning objectives Assessment</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 research the temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature <p>After it rains will puddles disappear?</p>		

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Earth and Space Key learning objectives Assessment					<ul style="list-style-type: none">• describe the movement of the Earth, and other planets, relative to the Sun• 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 <p>Is this true?</p> <p>The earth rotates around the sun. The earth also rotates around the moon.</p> <p>Explain your answer.</p>	

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<p>Electricity Key learning objectives Assessment</p>				<ul style="list-style-type: none"> • identify common electrical appliances • construct a simple series electrical circuit, identifying and naming 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 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 		<ul style="list-style-type: none"> • 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 • use recognised symbols when representing a simple circuit in a diagram <p>What would you expect to happen to the brightness of a bulb if you added a</p>

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				<p>and insulators, and associate metals with being good conductors</p> <p>Look at these different materials. Can you sort them into insulators or conductors?</p>		<p>motor to the circuit?</p>
<p>Evolution and inheritance</p> <p>Key learning objectives</p> <p>Assessment</p>						<ul style="list-style-type: none"> • 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 <p>Show pictures of 2 very different dogs. (eg corgi and greyhound)</p>

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						What would we expect their offspring to look like and why?
Working Scientifically Key learning objectives Assessment	<ul style="list-style-type: none"> ask simple questions and recognise that they can be answered in different ways observe closely, using simple equipment perform simple tests gather and record data to help in answering questions identify and classify use their observations and ideas to suggest answers to questions <p>Evidence in books and observations (on-going)</p>	<ul style="list-style-type: none"> ask relevant questions and use 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, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables gather, record, classify and present data in a variety of ways to help in answering questions identify differences, similarities or changes related to simple scientific ideas and processes report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions 	<ul style="list-style-type: none"> 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 when appropriate record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs identify scientific evidence that has been used to support or refute ideas or arguments 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 use test results to make predictions to set up further comparative and fair tests 			

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		<ul style="list-style-type: none">• use straightforward scientific evidence to answer questions or to support their findings• use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions <p>Evidence in books and observations (on-going)</p>	<p>Evidence in books and observations (on-going)</p>
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