

Science Curriculum Key Skills and Knowledge



Concepts	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
A: working scientifically	<p>Communication and language: Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts.</p> <p>ELG: Listening, attention and understanding: Make comments about what they have heard and ask questions to clarify their understanding.</p>	<p>I know what a question is A1 I can ask simple questions about the world around me A1 I know what an observation is A2 I can observe, using simple equipment A2 I know how to predict A3 I can perform simple tests A3 I know how to report findings orally I know how to draw a conclusion based on aims I can identify and classify I can use my observations and ideas to suggest answers to a question.</p>	<p>I know what an appropriate question is A1 I can gather and record data to help me answer questions A1 I know what to observe and measure in a simple test A2 I can observe closely, using simple equipment A2 I know how to predict using scientific language A3 I can carry out simple tests methodically A3 I know how to use scientific language to explain and describe my findings I know how to draw a conclusion based on aims I can organise things into groups and classify I can discuss similarities and differences I can give reasons for my answers and explain</p>	<p>I know what an enquiry is I know what to observe and measure in a fair test I know how to control variable to conduct a fair test I know how to use measuring cylinders and a data logger I know how to record and present data in a table, diagram or bar chart I know how to predict I know how to report findings in written and oral form I know how to use scientific language to describe I know how to draw a conclusion based on aims I know how to begin to question results I know how to form a hypothesis I can ask questions. I can set up simple practical enquiries. I can measure using standard units, using a range of equipment, for example thermometers and data loggers. I can gather, record, classify and present data to help in answering questions. I can report on findings from enquiries I can use results to draw simple conclusions</p>	<p>I know how to control variable to conduct a fair test I know how to use thermometers and data loggers I know how to use a variety of classification keys I know how to record and present data in a table, diagram, venn diagram or bar chart I know how to relate scientific knowledge to findings I know how to begin to question results I know how to form a hypothesis I know how to evaluate the success of an investigation I know how to suggest improvements I can ask relevant questions. I can set up simple practical enquiries, comparative and fair tests. I can measure accurately using standard units, using a range of equipment, for example thermometers and data loggers. I can gather, record, classify and present data in a variety of ways to</p>	<p>I know what a scientific enquiry is I know how to control variables for a fair test I know how to use different equipment to take measurements I know how to take repeat readings I know how to record data and results I know how to draw conclusions I know how to identify scientific evidence used to support or refute ideas. I know how to evaluate the success of an investigation I can plan different types of scientific enquiries to answer questions. I can recognise control variables where necessary and with prompting. I can select and use appropriate equipment to take readings. I can take precise measurements using standard units. I can begin to understand the need to take repeated readings. I can record data and results I can record data using labelled diagrams, keys,</p>	<p>I know different types of scientific enquiry I know how to control variables for a fair test I know how to use a range of different scientific equipment to take repeat readings. I know why I need to take repeat readings I know how to record data and results using scientific diagrams, labels, classification keys, tables, scatter graphs and charts I know how to relate scientific knowledge to findings and conclusions I know how to use scientific knowledge to support or refute ideas I know how to evaluate the success of an investigation and suggest improvements. I can plan different types of scientific enquirers to answer questions. I can recognise and control variables where necessary. I can use a range of scientific equipment to take measurements independently. I can take measurements with increasing accuracy and precision. I can take repeat readings where appropriate</p>

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				<p>I can identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>I can record findings</p>	<p>help in answering questions.</p> <p>I can report on findings from enquiries, including oral and written explanations displays or presentations of results and conclusions.</p> <p>I can use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests</p> <p>I can identify differences, similarities or changes related to simple scientific ideas and processes.</p> <p>I can record findings using simple scientific language, drawings, labelled diagrams, bars and tables.</p>	<p>tables and charts and line graphs.</p> <p>I can report and present findings from enquirers including conclusions and suggest causal relationships.</p> <p>I can present findings orally and in writing.</p> <p>I can suggest further comparative or fair tests</p>	<p>I can record data and results of increasing complexity using scientific diagrams, labels, classification keys, charts and graphs.</p> <p>I can report and present findings from enquirers including conclusions and causal relationships.</p> <p>I can report and present findings including explanations of and degree of trust in results in oral and written forms [displays, presentations]</p> <p>I can identify scientific evidence that has been used to support or refute ideas</p> <p>I can test results to make predictions and set up further comparative and fair tests.</p>
B: Plants	<p>Understanding the world: Explore the natural world around them.</p> <p>Describe what they see, hear and feel while they are outside.</p> <p>Recognise some environments that are different to the one in which they live.</p> <p>Understand the effect of changing seasons on the natural world around them.</p> <p>ELG: The natural world: Explore the natural world around them, making observations and drawing pictures of animals and plants.</p>	<p>I know parts of a plant B1</p> <p>I can identify and name a variety of common wild and garden plants including deciduous and evergreen trees. B1</p> <p>I know that plants need light, water and space to survive</p> <p>I know what a deciduous plant is</p> <p>I know what an evergreen tree is</p> <p>I can identify and describe basic structure of a variety of common flowering plants, including trees.</p>	<p>I know parts of a plant and their functions</p> <p>I know how plants grow and stay healthy</p> <p>I know different types of trees</p> <p>I know how a plant dies.</p> <p>I can observe and describe how seeds and bulbs grow into mature plants. B1</p> <p>I can describe and investigate using secondary research how plants need water, light and a suitable temperature to grow and stay healthy</p>	<p>I know the parts of a plant and their functions</p> <p>I know that plants need light, water and space to grow</p> <p>I know that plants have adaptations in order for them to survive in different environments</p> <p>I know that plants take water in through their roots and this is transpired through their leaves</p> <p>I know that plants reproduce through sexual reproduction involving flowers to produce seeds, which are dispersed using different methods (wind, insect, etc.)</p>			

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	<p>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.</p> <p>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>			<p>I can identify and describe functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <p>I can 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</p> <p>I can investigate how water is transported within plants</p> <p>I can explore the role flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p>			
C: Animals including humans	<p>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 sensible amounts of 'screen time' having a good sleep routine being a safe pedestrian</p> <p>ELG: Managing Self: Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</p>	<p>I know properties of common animals and fish including amphibians, reptiles, birds and mammals</p> <p>I know what makes a carnivore, herbivore or omnivore</p> <p>I know parts of the human body</p> <p>I know the parts of the body associated with the 5 senses.</p> <p>I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (c1)</p> <p>I can identify and name a variety of animals that are carnivores, herbivores and omnivores.</p>	<p>I know what it means to have offspring</p> <p>I know the basic needs of animals including water, food and air (oxygen)</p> <p>I know how humans can stay healthy</p> <p>I know a variety of foods that help humans maintain a healthy diet</p> <p>I know how to maintain health and cleanliness</p> <p>I know a variety of movements to keep the body healthy</p> <p>I know what happens to the body when we exercise</p> <p>I can describe animals and their offspring</p> <p>I can investigate using secondary research and explain basic needs of</p>	<p>I know that all animals require nutrition from different sources to survive</p> <p>I know the different food groups</p> <p>I know the importance of a balanced diet</p> <p>I know different types of skeletons including an exo-skeleton and endo-skeleton.</p> <p>I know the functions of skeletons</p> <p>I know the functions of muscles</p> <p>I can identify that animals, including humans, need the right types and amount of nutrition</p> <p>I can investigate using secondary research, how animals including</p>	<p>I know the simple functions of the basic parts of the digestive system in humans</p> <p>I know the parts of the digestive system (mouth, tongue, teeth, oesophagus, stomach, intestine)</p> <p>I know the functions of teeth</p> <p>I know how to keep teeth healthy</p> <p>I can identify, compare and explore the different types of teeth in humans and their functions</p> <p>I can construct and interpret different food chains, identifying producers, predators and prey.</p>	<p>I know how humans experience different stages in their life</p> <p>I know how the body changes during puberty</p> <p>I know how gestation periods of different animals vary</p> <p>I can describe the changes humans go through with age</p>	<p>I know the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>I know the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>I know the ways in which nutrients and water are transported within animals, including humans.</p> <p>I can identify and name the main parts of the circulatory system and describe the functions of the heart, blood vessels and blood.</p> <p>I can recognise the impact of diet, exercise, drugs and lifestyle on the way the body functions.</p>

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			<p>animals including humans for survival I can test and explain the importance of exercise, good and hygiene.</p>	<p>humans, cannot make their own food and that they get nutrition from what they eat. I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>			<p>I can describe ways in which nutrients and water are transported within animals including humans.</p>
D: Everyday materials	<p>Understanding the world: Explore the natural world around them. Describe what they see, hear and feel when they are outside.</p> <p>ELG The natural world: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>	<p>I know a variety of everyday materials including wood, plastic, metal, water and rock I know how to identify an object based upon what is made from I know basic physical properties of materials. I can investigate and describe simple physical properties of a variety of everyday materials. I can compare and group together a variety of everyday materials on the basis of their simple physical properties.</p>	<p>I know a variety of everyday materials including wood, plastic, glass, metal, water, and rock I know the physical properties of materials I know the suitability of materials based upon their properties I know that some solid objects' forms can be changed by squashing, bending, twisting and stretching</p>				
E: Seasonal changes	<p>Understanding the world: Understand the effect of changing seasons on the natural world around them.</p> <p>ELG The natural world: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>	<p>I know the four seasons I know how the weather changes according to season I know that the season affects day length I can research and observe changes across the four seasons E1 I can observe and describe weather associated with the seasons and how day length varies.</p>					
F: Living things and their habitats	<p>Understanding the world: Explore the natural world around them.</p>		<p>I know a variety of plants and animals in their</p>		<p>I know habitats change throughout the year I know groups of animals</p>	<p>I know the local environment changes during the year (life</p>	<p>I know groups of animals (microorganisms, invertebrates,</p>

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	<p>Describe what they see, hear and feel while they are outside. Recognise some environments that are different to the one in which they live</p> <p>ELG: 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. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>		<p>habitats, including microhabitats I know a simple food chain I know a variety of different food sources I know how to use classification keys</p>		<p>I know human can have positive or negatives impacts on the environment I know changes to the environment can impact living things within it I can classify, group and compare animals and plants in a variety of ways I can explore and use classification keys I can recognise and investigate environmental changes and that this can sometimes pose dangers to living things</p>	<p>cycles in a variety of different things e.g. flower boarder) I know how the work of scientists such as David Attenborough or Jane Goodall has influenced scientific thinking I know the different types of reproduction in plants (sexual and asexual – growing seeds, cuttings, tubers, bulbs I know how the life cycles of different animals have different stages I know that animals develop over time How different animals reproduce and grow I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals.</p>	<p>vertebrates, etc.) and their common features I know groups of plants I know the work of Carl Linnaeus and where different animals belong in the classification systems I know a range of habitats. I can 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] I can give reasons for classifying plants and animals based on specific characteristics.</p>
<p>G: Rocks</p>	<p>Understanding the world: Explore the natural world around them. Describe what they see, hear and feel while they are outside.</p> <p>ELG: 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</p>			<p>I know different types of rocks (sedimentary, igneous or metamorphic) I know how rocks are formed and their properties and characteristics I know that fossils are formed when things that have lived are trapped within rock I know that soils are made from rocks and organic matter and have different characteristics and properties</p>			

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	<p>them and contrasting environments, drawing on their experiences and what has been read in class.</p>			<p>I can compare and group together different kinds of rocks based on their appearance and simple physical properties I can describe in simple terms that fossils are formed when things that have lived are trapped within rock I can recognise that soils are made from rocks and organic matter</p>			
<p>H: Light</p>	<p>Communication and language: Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts</p>			<p>I know that light is reflected from surfaces I know that darkness is the absence of light I know that shadows are formed when the light from a light source are blocked from a solid object I know that shadows change according to the position of the light source I know that light from the sun can be dangerous I know how to protect from the sun.</p>			<p>I know that light appears to travel in straight lines I know light is reflected from surfaces I know darkness is the absence of light I know shadows are formed when the light from a light source is blocked from a solid object because it appears to travel in a straight line I know shadows have the same shape as the objects that cast them I know light creates different phenomena (e.g. rainbows, periscopes, colour filters and refraction) I can recognise that light appears to travel in straight lines. I can use the idea that light travels in straight lines to explain that objects can be seen because they give out or reflect light into the eye. I can explain how we see things [light travels from the source to our eye or</p>

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							from the light source to objects and then our eye] I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
I: Forces and magnets	<p>ELG Communication and language: Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts.</p>			<p>I know different surfaces create different amounts of friction. I know magnetic fields affect objects. I know magnetic forces work from a distance. I know magnets attract and repel. I know some materials are not magnetic. I can compare how things move on different surfaces I can identify that forces need contact between two objects, but magnetic forces can act at a distance I can observe how magnets attract or repel each other and attract some materials and not others I can describe magnets as having two poles.</p>		<p>I know some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. I know gravity pulls objects toward Earth I know the difference between mass and weight I know how the movement of objects is affected by air resistance, water resistance and friction I know how to use timing devices effectively and accurately I know about the work of Isaac Newton and Galileo I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving objects. I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.</p>	

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<p>J: States of matter</p>	<p>ELG The natural world: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</p>				<p>I know the characteristics of different states of matter (particles within solids, liquids, gases) I know how water changes state I know how to classify common materials I know some materials change states (at different temperatures e.g. from a solid to a liquid) I know how to measure temperature using a thermometer I know the different stages in the water cycle I know how evaporation is useful I can compare and group materials together, according to whether they are solids, liquids or gases I can observe and investigate how materials change state when they are heated or cooled I can measure and research temperature at which this happens in degrees Celsius I can investigate and explain how evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>		
<p>K: Sound</p>	<p>ELG Communication and language Learn new vocabulary. Ask questions to find out more and to check what has been said to them.</p>				<p>I know how sounds are made, associating some of them with something vibrating I know vibrations from sounds travel through a medium to the ear</p>		

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	<p>Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts</p>				<p>I know how the pitch and volume of sound can be changed in variety of ways I know how different materials can have different sound-proofing qualities</p>		
<p>L: Electricity</p>	<p>ELG Communication and language: Learn new vocabulary. Ask questions to find out more and to check what has been said to them. Articulate their ideas and thoughts in well-formed sentences. Describe events in some detail. Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. Use new vocabulary in different contexts</p>				<p>I know common appliances that run on electricity I know how to draw a simple circuit, using recognised symbols I know a switch opens and closes a circuit I know that some materials are conductors and some are insulators I know some metals are good conductors I can construct and evaluate electrical circuits, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers I can predict and 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 I can observe whether or not a lamp lights in a simple series circuit dependent on the switch position</p>		<p>I know the symbols when representing a simple circuit in a diagram. I know the number and voltage of cells affects the performance of components within a circuit I can associate the brightness of a lamp or the volume of a buzzer to the number of voltage of cells used in a circuit. I can compare and give reasons for variations in how components function [brightness of a bulb, loudness of a buzzer, on/off position of a switch] I can use recognised symbols when representing a simple circuit in a diagram.</p>

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					I can test and classify some common conductors and insulators, and associate metals with being good conductors		
<p>M: Properties and changes of materials</p>						<p>I know that materials have different properties that can be tested (hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets) I know materials can be grouped by their properties. I know materials can be changed by different processes I know changes can be reversible and can be used to separate mixtures (evaporating, filtering, sieving, melting and dissolving) I know changes can be irreversible and result in the formation of a new material (burning, chemical) I know that melting and dissolving are different processes I know that different materials are used for different uses based on their properties I can compare and group every day materials based on their properties including; hardness, solubility, transparency, conductivity and response to magnets.</p>	

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						<p>I know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.</p> <p>I can use knowledge of solids, liquids and gases to describe how mixtures might be separated [filtering, sieving and evaporating]</p> <p>I can give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials [metals, wood and plastic]</p> <p>I can demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>I can explain that some changes result in the formation of new materials [this can include changes associated with burning and the action of acid on bicarbonate soda]</p>	
N: Earth and Space	<p>ELG Communication and Language</p> <p>Learn new vocabulary.</p> <p>Ask questions to find out more and to check what has been said to them.</p> <p>Articulate their ideas and thoughts in well-formed sentences.</p> <p>Describe events in some detail.</p> <p>Use talk to help work out problems and organise thinking and activities, and to explain how things</p>					<p>I know the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>I know the movement of the Moon relative to the Earth</p> <p>I know the Sun, Earth and Moon as approximately spherical bodies</p> <p>I know how to use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	

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	<p>work and why they might happen. Use new vocabulary in different contexts</p>					<p>I know how to use models to represent the concept of space and movement of spherical bodies I can describe the movement of Earth and other planets relative to the sun and Solar System. I can describe the movement of the moon in relation to the Earth. I can describe the sun, Earth and moon as approximately spherical bodies. I can 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>O: Evolution and Inheritance</p>							<p>I know that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago I know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents I know that variation in offspring over time can make animals more or less able to survive in particular environments I know that adaptation may lead to evolution I know that plants and animals adapt to suit their environment I know the works of: Charles Darwin, Mary Anning and Alfred Wallace.</p>

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							<p>I can recognise that living things have changed over time and that fossils provide information about living things that inhabited on Earth millions of years ago.</p> <p>I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p> <p>I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>
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