



**ALEXANDER HOSEA PRIMARY SCHOOL**

*'Roots to grow, wings to fly'*

### Key science skills

- Subject specific vocabulary
- Knowledge and understanding
- Working scientifically

## Science Non-negotiables

*Science skills should be taught through projects where possible to ensure real world application.*

	Foundation	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Plants</b>	Identify and name a variety of common wild and garden plants.  Identify and describe the basic structure of a plant.	Identify and name common plants.  Describe the basic structure of a plant.	Describe how seeds and bulbs grow.  Describe how plants need water, light and a suitable temperature to grow.	Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers  Explore the requirements of plants for life and growth (air, light, water, nutrients from	<b>All Living Things</b>  Identify and name a variety of living things (plants and animals) in the local and wider environment, using classification keys to assign them to groups	<b>All Living Things</b>  Explain 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	<b>All Living Things</b>  Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences,

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				<p>soil, and room to grow) and how they vary from plant to plant</p> <p>Investigate the way in which water is transported within plants</p> <p>Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>and animals.</p>	<p>including micro-organisms, plants and animals</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p>
<b>Life processes</b>	<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>Identify and</p>	<p>Identify and name a variety of animals that are birds, fish, amphibians, reptiles, mammals and invertebrates.</p>	<p>Explain the difference between things that are living and things that have never been alive.</p> <p>Explain that</p>	<p>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food;</p>	<p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify the different types</p>	<p>Describe the changes as humans develop from birth to old age.</p>	<p>Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels</p>

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	<p>name a variety of common animals that are carnivores, herbivores and omnivores.</p> <p>Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets).</p> <p>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>	<p>Identify carnivores, herbivores and omnivores.</p> <p>Describe and compare the structures of common animals.</p> <p>Identify, name and draw basic parts of the human body and relate to senses.</p>	<p>animals have offspring and these grow into adults.</p> <p>Explain the basic needs of animals and humans to survive.</p> <p>Describe the importance of exercise and eating the right amounts and types of food.</p>	<p>they get nutrition from what they eat</p> <p>Identify that humans and some animals have skeletons and muscles for support, protection and movement.</p>	<p>of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey.</p>		<p>and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>

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<b>Habitats</b>	<p>Observe changes across the four seasons.</p> <p>Observe and describe weather associated with the seasons and how day length varies.</p>	N/A	<p>Understand why living things live in habitats to which they are particularly suited and how these provide for their basic needs.</p> <p>Identify and name a variety of plants and animals in a variety of habitats.</p> <p>Describe simple food chains</p>			<p><b>Earth and Space</b></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.</p>	<p><b>Evolution and Inheritance</b></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</p>

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							environment in different ways and that adaptation may lead to evolution.
<b>Materials</b>	<p>Distinguish between an object and the materials from which it is made.</p> <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</p>	<p>Distinguish between an object and the material from which it is made</p> <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</p>	<p>Identify and name a variety of everyday materials and describe their properties.</p> <p>Compare and group materials based on their properties.</p> <p>Find out how the shapes of solid objects can be changed by squashing, bending, twisting and stretching.</p> <p>Identify and compare the</p>	<p>Rocks</p> <p>Compare and group 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>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>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)</p> <p>Identify the part played by evaporation and</p>	<p>Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Understand that some materials will dissolve in liquid to form a solution, and</p>	

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	group together a variety of everyday materials on the basis of their simple physical properties.	group together a variety of everyday materials on the basis of their simple physical properties.	uses of everyday materials.		condensation in the water cycle and associate the rate of evaporation with temperature.	describe how to recover a substance from a solution  Use 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	

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						<p>and plastic</p> <p>Demonstrate that dissolving, mixing and changes of state 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>	
<b>Light and sound</b>	N/A	Identify and name sources		Notice that light is reflected from	Identify how sounds are made,		Understand that light appears to

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		<p>of light.</p> <p>Explain what darkness is.</p> <p>Compare the variety of sources of light.</p> <p>Describe the features of day and night.</p> <p>Describe the movement of the sun across the sky.</p>		<p>surfaces</p> <p>Find patterns that determine the size of shadows.</p>	<p>associating some of them with something vibrating</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>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</p>



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							the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.
<b>Forces &amp; Magnets</b>	N/A	N/A	Describe how things move at different speeds, speed up and slow down.	<p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials and not others</p> <p>Compare and group together a variety of everyday materials on the</p>	<p><b>Electricity</b></p> <p>Identify common appliances that run on electricity</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>Identify whether or not a lamp will light</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><b>Electricity</b></p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of</p>

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				<p>basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>Describe magnets as having two poles</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p>in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<p>Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs.</p>	<p>buzzers and the on/off position of switches</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>
<b>Seasonal changes</b>		Observe changes across the					

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		<p>four seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies.</p>					
<b>Working scientifically</b>	<p>Ask simple questions and recognise that they can be answered in different ways.</p> <p>Observe closely, using simple equipment.</p> <p>Perform simple tests.</p> <p>Identify and classify.</p> <p>Use observations and ideas to</p>	<p>Observe closely using simple equipment.</p> <p>Perform simple tests.</p> <p>Identify and classify.</p> <p>Record findings: drawings, diagrams, photographs and simple prepared formats, such as tables, charts, tally charts and</p>	<p>Observe closely using simple equipment.</p> <p>Perform simple tests.</p> <p>Identify and classify.</p> <p>Record findings: drawings, diagrams, photographs and simple prepared formats, such as tables, charts, tally charts and</p>	<p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Making systematic and careful observations and, where appropriate, taking accurate</p>	<p>Asking relevant questions and using different types of scientific enquiries to answer them</p> <p>Setting up simple practical enquiries, comparative and fair tests</p> <p>Making systematic and careful observations and, where appropriate, taking accurate</p>	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision</p>	<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision</p>

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	<p>suggest answers to questions.</p> <p>Gather and record data to help in answering questions.</p>	displays.	displays.	<p>measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Reporting on findings from</p>	<p>measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Gathering, recording, classifying and presenting data in</p> <p>to help in answering questions</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>Reporting on</p>	<p>accuracy and precision</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Using simple models to describe scientific ideas</p> <p>Using simple models to describe scientific ideas</p> <p>Reporting and</p>	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs</p> <p>Using test results to make predictions to set up further comparative and fair tests</p> <p>Using simple models to describe scientific ideas</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships</p>

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				<p>enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Using straightforward scientific</p>	<p>findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Using straightforward</p>	<p>presenting findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p>	<p>and explanations of results, in oral and written forms such as displays and other presentations</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p>

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				evidence to answer questions or to support their findings.	scientific evidence to answer questions or to support their findings.		