

# STANBRIDGE LOWER SCHOOL SCIENCE

## WORKING SCIENTIFICALLY

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"</li> <li>Talk about what they see, using a wide vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>Ask questions to find out more and to check what has been said to them.</li> <li>Learn new vocabulary</li> </ul> <p><b><u>Communication and Language</u></b> <b><u>(Listening, Attention and Understanding)</u></b></p> <p><b><u>ELG:</u></b></p> <ul style="list-style-type: none"> <li>Make comments about what they have heard and ask questions to clarify their understanding</li> </ul>	<ul style="list-style-type: none"> <li>Ask simple questions and recognise that they can be answered in different ways</li> <li>Use simple equipment to observe closely</li> <li>Perform simple tests</li> <li>Identify and classify</li> <li>Use his/her observations and ideas to suggest answers to questions</li> <li>Gather and record data to help in answering questions</li> </ul>	<ul style="list-style-type: none"> <li>Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum</li> <li>Use simple equipment to observe closely including changes over time</li> <li>Perform simple comparative tests</li> <li>Identify, group and classify</li> <li>Use his/her observations and ideas to suggest answers to questions noticing similarities, differences and</li> </ul>	<ul style="list-style-type: none"> <li>Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>Set up simple practical enquiries, comparative and fair tests</li> <li>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>Gather, record,</li> </ul>	<ul style="list-style-type: none"> <li>Ask relevant questions and use different types of scientific enquiries to answer them</li> <li>Set up simple practical enquiries, comparative and fair tests</li> <li>Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</li> <li>Gather, record, classify and present data in a</li> </ul>	<ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and labels,</li> </ul>	<ul style="list-style-type: none"> <li>Plan different types of scientific enquiries to answer their own or others' questions, including recognising and controlling variables where necessary</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</li> <li>Record data and results of increasing complexity using scientific diagrams and</li> </ul>

			<p>patterns</p> <ul style="list-style-type: none"> <li>Gather and record data to help in answering questions including from secondary sources of information</li> </ul>	<p>classify and present data in a variety of ways to help in answering questions</p> <ul style="list-style-type: none"> <li>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>Identify</li> </ul>	<p>variety of ways to help in answering questions</p> <ul style="list-style-type: none"> <li>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</li> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</li> <li>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</li> <li>Identify differences, similarities or changes related to simple scientific ideas and processes</li> <li>Use</li> </ul>	<p>classification keys, tables, scatter graphs, bar and line graphs</p> <ul style="list-style-type: none"> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>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</li> <li>Identify scientific evidence that has been used to support or refute ideas or arguments</li> </ul>	<p>labels, classification keys, tables, scatter graphs, bar and line graphs</p> <ul style="list-style-type: none"> <li>Use test results to make predictions to set up further comparative and fair tests</li> <li>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</li> <li>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in</li> </ul>
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				<p>differences, similarities or changes related to simple scientific ideas and processes</p> <ul style="list-style-type: none"> <li>Use straightforward scientific evidence to answer questions or to support his/her findings</li> </ul>	<p>straightforward scientific evidence to answer questions or to support his/her findings</p>		<p>results, in oral and written forms such as displays and other presentations</p> <ul style="list-style-type: none"> <li>Describe and evaluate their own and other people's scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources</li> <li>Group and classify things and recognise patterns</li> </ul>
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## Animals including Humans

Pre-School	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>Make healthy choices about food, drink, activity and tooth brushing.</li> </ul>	<ul style="list-style-type: none"> <li>Learn new vocabulary.</li> <li>Know and talk about the different factors that support their overall health</li> </ul>	<ul style="list-style-type: none"> <li>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>Identify and</li> </ul>	<ul style="list-style-type: none"> <li>Understand that animals, including humans, have offspring which grow into adults</li> <li>Describe the basic needs of animals, including</li> </ul>	<ul style="list-style-type: none"> <li>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own</li> </ul>	<ul style="list-style-type: none"> <li>Describe the simple functions of the basic parts of the digestive system in humans</li> <li>Identify the different types of teeth in</li> </ul>	<ul style="list-style-type: none"> <li>Describe the changes as humans develop to old age</li> </ul>	<ul style="list-style-type: none"> <li>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood</li> </ul>

<ul style="list-style-type: none"> <li>• Talk about what they see, using a wide vocabulary.</li> <li>• Begin to make sense of their own life-story and family's history.</li> </ul>	<p>and wellbeing:</p> <ul style="list-style-type: none"> <li>- regular physical activity</li> <li>- healthy eating</li> <li>- tooth brushing</li> <li>- sensible amounts of 'screen time'</li> <li>- having a good sleep routine</li> <li>- being a safe pedestrian</li> </ul> <p><b><u>Personal, Social and Emotional Development (Managing Self)</u></b></p> <p><b><u>ELG:</u></b></p> <ul style="list-style-type: none"> <li>• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.</li> </ul>	<p>name a variety of common animals that are carnivores, herbivores and omnivores</p> <ul style="list-style-type: none"> <li>• Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)</li> <li>• Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</li> </ul>	<p>humans, for survival (water, food and air)</p> <ul style="list-style-type: none"> <li>• Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul>	<p>food; they get nutrition from what they eat</p> <ul style="list-style-type: none"> <li>• Identify that humans and some other animals have skeletons and muscles for support, protection and movement</li> </ul>	<p>humans and their simple functions</p> <ul style="list-style-type: none"> <li>• Construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul>		<p>vessels and blood</p> <ul style="list-style-type: none"> <li>• Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• Describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>
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## Living things and their Habitats

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>• Begin to understand</li> </ul>	<ul style="list-style-type: none"> <li>• Learn new vocabulary</li> </ul>		<ul style="list-style-type: none"> <li>• Explore and compare the</li> </ul>		<ul style="list-style-type: none"> <li>• Recognise that living things can</li> </ul>	<ul style="list-style-type: none"> <li>• Describe the differences in</li> </ul>	<ul style="list-style-type: none"> <li>• Describe how living things are</li> </ul>

<p>the need to respect and care for the natural environment and all living things.</p> <ul style="list-style-type: none"> <li>• Talk about what they see, using a wide vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>• Explore the natural world around them.</li> <li>• Recognise some environments that are different to the one in which they live.</li> </ul> <p><b><u>Understanding the World (The Natural World)</u></b></p> <p><b><u>ELG:</u></b></p> <ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> <li>• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in</li> </ul>		<p>differences between things that are living, dead, and things that have never been alive</p> <ul style="list-style-type: none"> <li>• 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</li> <li>• Identify and name a variety of plants and animals in their habitats, including micro-habitats</li> <li>• 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</li> </ul>		<p>be grouped in a variety of ways</p> <ul style="list-style-type: none"> <li>• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>• Recognise that environments can change and that this can sometimes pose dangers and have an impact on living things</li> </ul>	<p>the life cycles of a mammal, an amphibian, an insect and a bird</p> <ul style="list-style-type: none"> <li>• Describe the life process of reproduction in some plants and animals</li> </ul>	<p>classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <ul style="list-style-type: none"> <li>• Give reasons for classifying plants and animals based on specific characteristics</li> </ul>
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	<p>class.</p> <ul style="list-style-type: none"> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>						
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## Plants

Preschool	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>• Use all their senses in hands-on exploration of natural materials.</li> <li>• Explore collections of materials with similar and/or different properties.</li> <li>• Talk about what they see, using a wide vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>• Learn new vocabulary</li> <li>• Explore the natural world around them.</li> </ul> <p><b><u>Understanding the World (The Natural World)</u></b></p> <p><b><u>ELG:</u></b></p> <ul style="list-style-type: none"> <li>• Explore the natural world around them, making observations and drawing pictures of animals and plants.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>• Identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul>	<ul style="list-style-type: none"> <li>• Observe and describe how seeds and bulbs grow into mature plants</li> <li>• Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy</li> </ul>	<ul style="list-style-type: none"> <li>• Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li> <li>• 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</li> <li>• Investigate the</li> </ul>			<ul style="list-style-type: none"> <li>• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>

	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>			<p>way in which water is transported within plants</p> <ul style="list-style-type: none"> <li>• Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</li> </ul>			
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**Evolution and Inheritance**

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
							<ul style="list-style-type: none"> <li>• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of</li> </ul>

							years ago <ul style="list-style-type: none"> <li>• Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>• Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>
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**Seasonal changes**

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>• Talk about what they see, using a wide vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>• Learn new vocabulary</li> <li>• Understand the effect of changing seasons on the natural world around them.</li> <li>• Explore the natural world around them.</li> </ul>	<ul style="list-style-type: none"> <li>• Observe changes across the four seasons</li> <li>• Observe and describe weather associated with the seasons and how day length varies</li> </ul>					



	<p><b><u>Understanding the World (The Natural World)</u></b></p> <p><b><u>ELG:</u></b></p> <ul style="list-style-type: none"> <li>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.</li> </ul>						
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## Materials and States of Matter

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>Use all their senses in hands-on exploration of natural materials.</li> <li>Explore collections of materials with similar and/or different properties.</li> <li>Talk about</li> </ul>	<ul style="list-style-type: none"> <li>Learn new vocabulary</li> <li>Describe what they see, hear and feel while they are outside.</li> </ul> <p><b><u>Understanding the World (The Natural World)</u></b></p> <p><b><u>ELG:</u></b></p> <ul style="list-style-type: none"> <li>Understand some important processes and</li> </ul>	<ul style="list-style-type: none"> <li>Distinguish between an object and the material from which it is made</li> <li>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>Describe the simple physical properties of a</li> </ul>	<ul style="list-style-type: none"> <li>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>Describe how the shapes of solid objects made from some materials can be</li> </ul>		<ul style="list-style-type: none"> <li>Compare and group materials together, according to whether they are solids, liquids or gases</li> <li>Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in</li> </ul>	<ul style="list-style-type: none"> <li>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</li> <li>Recognise that some materials</li> </ul>	

<p>the differences between materials and changes they notice.</p> <ul style="list-style-type: none"> <li>• Talk about what they see, using a wide vocabulary.</li> </ul>	<p>changes in the natural world around them, including the seasons and changing states of matter.</p>	<p>variety of everyday materials</p> <ul style="list-style-type: none"> <li>• Compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul>	<p>changed by squashing, bending, twisting and stretching</p>		<p>degrees Celsius (°C)</p> <ul style="list-style-type: none"> <li>• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul>	<p>will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <ul style="list-style-type: none"> <li>• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>• Demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>• Explain that some changes result in the</li> </ul>	
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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	
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**Electricity**

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p><i>Talk about what they see, using a wide vocabulary.</i></p> <p><i>Explore how things work.</i></p>	<p><i>Describe what they see, hear and feel while they are outside.</i></p>	<p><i>Know that electricity is needed to make somethings work.</i></p>	<p><i>Know that electricity is needed to make somethings work. Know that some appliances need batteries and some use mains electricity to work.</i></p>		<ul style="list-style-type: none"> <li>Identify common appliances that run on electricity</li> <li>Construct a simple series electrical circuit, identifying and naming its 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</li> <li>Recognise that a switch opens and closes a circuit and</li> </ul>		<ul style="list-style-type: none"> <li>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li> <li>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</li> </ul>

					<p>associate this with whether or not a lamp lights in a simple series circuit</p> <ul style="list-style-type: none"> <li>Recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul>		<ul style="list-style-type: none"> <li>Use recognised symbols when representing a simple circuit in a diagram</li> </ul>
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## Earth and Space

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Talk about what they see, using a wide vocabulary.	Talk about what they see, using a wide vocabulary.		<p><i>Know that the Sun is a star.</i></p> <p><i>Know that the Moon orbits the Earth.</i></p> <p><i>Name the planets.</i></p>			<ul style="list-style-type: none"> <li>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</li> <li>Describe the movement of the Moon relative to the Earth</li> <li>Describe the Sun, Earth and Moon as approximately spherical bodies</li> <li>Use the idea of the Earth's rotation to explain day and</li> </ul>	

night and the apparent movement of the sun across the sky

## Forces and Magnets

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>• Explore and talk about different forces they can feel.</li> <li>• Talk about what they see, using a wide vocabulary.</li> <li>• Explore how things work.</li> </ul>	<p><i>Describe what they see, hear and feel while they are outside.</i></p>	<p><i>Explore floating and sinking, pushes and pulls.</i></p>	<p><i>Explore cars moving quicker on different surfaces.</i></p> <p><i>Sort objects using a magnet.</i></p>	<ul style="list-style-type: none"> <li>• Compare how things move on different surfaces</li> <li>• Notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>• 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</li> <li>• Describe magnets as having two poles Predict whether</li> </ul>		<ul style="list-style-type: none"> <li>• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>• Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>• Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</li> <li>• Describe the</li> </ul>	

				two magnets will attract or repel each other, depending on which poles are facing		<p>differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <ul style="list-style-type: none"> <li>Describe the life process of reproduction in some plants and animals</li> </ul>	
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## Light

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Talk about what they see, using a wide vocabulary.</p>	<p><i>Describe what they see, hear and feel while they are outside.</i></p> <p><i>Explore the natural world around them e.g. sunlight, rainbows, shadows.</i></p>	<p><i>Know that light is needed to see.</i></p>		<ul style="list-style-type: none"> <li>Recognise that he/she needs light in order to see things and that dark is the absence of light</li> <li>Notice that light is reflected from surfaces</li> <li>Recognise that light from the sun can be dangerous and that there are ways to protect eyes</li> <li>Recognise that light from the sun can be dangerous and that there are ways to protect</li> </ul>			<ul style="list-style-type: none"> <li>Recognise that light appears to travel in straight lines</li> <li>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</li> <li>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</li> </ul>

				<p>eyes</p> <ul style="list-style-type: none"> <li>Find patterns in the way that the size of shadows change</li> </ul>			<ul style="list-style-type: none"> <li>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul>
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## Sound

Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p><i>Talk about what they hear, using a wide vocabulary.</i></p>	<p><i>Describe what they see, hear and feel while they are outside.</i></p>	<p><i>Exploring how to change the volume of a sound during music lessons.</i></p>	<p><i>Exploring how to change the volume and pitch of a sound during music lessons.</i></p>	<p><i>Exploring how to change the volume and pitch of a sound during music lessons.</i></p>	<ul style="list-style-type: none"> <li>Identify how sounds are made, associating some of them with something vibrating</li> <li>Recognise that vibrations from sounds travel through a medium to the ear</li> <li>Find patterns between the pitch of a sound and features of the object that produced it</li> <li>Find patterns between the volume of a sound and the strength of the vibrations that produced it</li> </ul>		

					<ul style="list-style-type: none"> <li>Recognise that sounds get fainter as the distance from the sound source increases</li> </ul>		
<b>Rocks</b>							
Pre-school	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> <li>Talk about what they see, using a wide vocabulary.</li> </ul>	<ul style="list-style-type: none"> <li>Describe what they see, hear and feel while they are outside.</li> <li>Explore the natural world around them.</li> <li>Recognise some environments that are different to the one in which they live.</li> </ul>			<ul style="list-style-type: none"> <li>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>Recognise that soils are made from rocks and organic matter</li> </ul>			<ul style="list-style-type: none"> <li>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> </ul>

The objectives in italics are non-curriculum but used to introduce physics topics in KS1