

Castle Primary's Science Curriculum
Skills Progression

	Year 1/2	Year 3/4	Year 5/6
	<p>1. Asking Questions & Carrying Out Fair & Comparative Tests:</p> <ul style="list-style-type: none"> a. explore the world around them, leading them to ask some simple scientific questions about how and why things happen; b. begin to recognise ways in which they might answer scientific questions; c. ask people questions and use simple secondary sources to find answers; d. carry out simple practical tests, using simple equipment; e. experience different types of scientific enquiries, including practical activities; f. talk about the aim of scientific tests they are working on. <p>2. Observing & Monitoring Changes:</p> <ul style="list-style-type: none"> a. observe the natural and humanly constructed world around them; b. observe changes over time; c. use simple measurements and equipment; d. make careful observations, sometimes using equipment to help them observe carefully. <p>3. Identifying, Classifying, Recording & Presenting Data.</p> <ul style="list-style-type: none"> a. use simple features to compare objects, materials and living things; b. decide how to sort and classify objects into simple groups with some help; c. record and communicate findings in a range of ways with support; d. sort, group, gather and record data in a variety of ways to help in answering questions such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables. <p>4. Drawing Conclusions, Noticing Patterns & Presenting Findings:</p> <ul style="list-style-type: none"> a. notice links between cause and effect with support; b. begin to notice patterns and relationships with support; c. begin to draw simple conclusions; d. identify and discuss differences between their results; e. use simple and scientific language; f. read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1; g. talk about their findings to a variety of audiences in a variety of ways. <p>5. Using Scientific Evidence & Secondary Sources of Information:</p>	<p>1. Asking Questions & Carrying Out Fair & Comparative Tests:</p> <ul style="list-style-type: none"> a. start to raise their own relevant questions about the world around them in response to a range of scientific experiences; b. start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; c. recognise when a fair test is necessary; d. help decide how to set up a fair test, making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used; e. set up and carry out simple comparative and fair tests. <p>2. Observing & Monitoring Changes:</p> <ul style="list-style-type: none"> a. note key changes over a period of time and be able to make systematic and careful observations; b. observe changes over time; c. use a range of equipment, including thermometers and data loggers; d. ask their own questions about what they observe where appropriate, take accurate measurements using standard units using a range of equipment. <p>3. Identifying, Classifying, Recording & Presenting Data:</p> <ul style="list-style-type: none"> a. talk about criteria for grouping, sorting and classifying; b. group and classify things; c. collect data from their own observations and measurements; d. present data in a variety of ways to help in answering questions; e. use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge; f. record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. <p>4. Drawing Conclusions, Noticing Patterns & Presenting Findings:</p> <ul style="list-style-type: none"> a. draw simple conclusions from their results; b. make predictions; c. suggest improvements to investigations; d. raise further questions which could be investigated; e. first talk about, and then go on to write about, what they have found out; f. report and present their results and conclusions to others in written and oral forms with increasing confidence. <p>5. Using Scientific Evidence & Secondary Sources of Information:</p> <ul style="list-style-type: none"> a. make links between their own science results and other scientific evidence; b. use straightforward scientific evidence to answer questions or support their findings; c. identify similarities, differences, patterns and changes relating to simple scientific ideas and processes; d. recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations. 	<p>1. Asking Questions & Carrying Out Fair & Comparative Tests:</p> <ul style="list-style-type: none"> a. with growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences; b. with increasing independence, make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; c. explore and talk about their ideas, raising different kinds of scientific questions; d. ask their own questions about scientific phenomena; e. select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; f. make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; g. plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary; h. use their test results to identify when further tests and observations may be needed; i. use test results to make predictions for further tests. <p>2. Observing & Monitoring Changes:</p> <ul style="list-style-type: none"> a. choose the most appropriate equipment to make measurements and explain how to use it accurately; b. take measurements using a range of scientific equipment with increasing accuracy and precision; c. make careful and focused observations; d. know the importance of taking repeat readings and take repeat readings where appropriate. <p>3. Identifying, Classifying, Recording & Presenting Data.</p> <ul style="list-style-type: none"> a. independently group, classify and describe living things and materials; b. use and develop keys and other information records to identify, classify and describe living things and materials; c. decide how to record data from a choice of familiar approaches; d. record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs. <p>4. Drawing Conclusions, Noticing Patterns & Presenting Findings:</p> <ul style="list-style-type: none"> a. notice patterns; b. draw conclusions based in their data and observations; c. use their scientific knowledge and understanding to explain their findings; d. read, spell and pronounce scientific vocabulary correctly; e. identify patterns that might be found in the natural environment; f. look for different causal relationships in their data; g. discuss the degree of trust they can have in a set of results; h. independently report and present their conclusions to others in oral and written forms. <p>5. Using Scientific Evidence & Secondary Sources of Information:</p> <ul style="list-style-type: none"> a. use primary and secondary sources evidence to justify ideas; b. identify evidence that refutes or supports their ideas; c. recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact; d. use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas; e. talk about how scientific ideas have developed over time.

Castle Primary's *Science* Curriculum

Long Term Knowledge Plan A

Autumn Term	Animals and Humans 2 (Life Processes)	Rocks and Soils	Light	Electricity	Light
	<p>Skills: 1a, 1b, 1c, 1d, 1e, 1f, 2b, 2c, 2d, 3a, 3b, 3c, 3d, 4a, 4b, 4c, 4d, 4e, 4f, 4g.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Explore and understand life processes. Sort objects into living, dead and never been alive. Identify animals in their habitats and understand needs for healthy living. Explore how animals are suited and adapted to different habitats. 	<p>Skills: 1a, 1e, 2a, 2b, 2c, 2d, 2e, 3a, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 4e, 4f, 5a, 5c, 5d.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Identify different kinds of rock and their formation; including man-made. Investigate properties of rocks and group accordingly. Explain how fossils are formed; and understand Mary Anning's contribution to palaeontology. Investigate how soils are formed and the permeability of different soils. 	<p>Skills: 1a, 1d, 1e, 2a, 2c, 2d, 2e, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 4e, 4f, 5a, 5b, 5c.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Understand that we need light to see things. Notice that light is reflected from some surfaces including mirrors. Understand that the sun's rays can be dangerous. Investigate materials that block light to form shadows. Investigate how shadows change size. 	<p>Skills: 1a, 1b, 1c, 1e, 1f, 1g, 1h, 1i, 2c, 3a, 3c, 3d, 4a, 4b, 4c, 4d, 4f, 4g, 4h, 5c, 5d, 5e.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Explain the importance of the major discoveries in electricity. Use the recognised symbols when drawing circuit diagrams. Associate the brightness of bulbs/volume of buzzer with different volts. 	<p>Skills: 1c, 1d, 2a, 2b, 2c, 3d, 4a, 4b, 4c, 4d, 4g, 4h, 5b, 5c, 5d, 5e.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Explain how we see. Investigate reflection and refraction. Understand prisms and how we see colours. Explain why shadows have the same shape as the objects that cast them.
Spring Term	Everyday Materials	States of Matter		Earth & Space	Forces
	<p>Skills: 1b, 1d, 1e, 1f, 2a, 2d, 3a, 3b, 3c, 3d, 4c, 4d, 4e, 4f, 4g.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Identify and name different materials. Name objects and the materials from which they are made. Investigate properties of materials and use findings to decide which materials to make objects from. Sort objects according to their properties. 	<p>Skills: 1b, 1c, 1d, 1e, 2a, 2b, 2c, 2d, 2e, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 4c, 4d, 4e, 4f, 5a, 5b, 5c.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Understand solid, liquid and gas. Investigate gases and their properties. Heat and cool water to understand changing state. Investigate how water evaporates. Understand evaporation, precipitation and condensation and use understanding to explain the water cycle. 		<p>Skills: 1a, 1b, 1c, 1d, 3d, 4a, 4b, 4c, 4d, 4e, 4f, 4h, 5a, 5b, 5c, 5d, 5e.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Understand the sun, moon and earth are spherical. Name and describe features of the planets in the solar system and explain how they move. Investigate day and night around the world. Understand how the moon orbits the earth. 	<p>Skills: 1c, 1d, 1f, 1g, 1h, 1i, 2a, 2b, 2d, 3d, 4a, 4b, 4c, 4d, 4e, 4f, 4h, 5a, 5b, 5c, 5d, 5e.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Identify forces acting on objects. Explore gravity, air resistance, water resistance and friction. Explore and design mechanisms.
Summer Term	Plants 1 and 2 Growth, simple Life Cycle.	Animals including Humans Diet, skeleton & muscles	Plants Structure & Life Cycle Processes.	Animal Including Humans Growth & Life Cycle	Living Things & Their Habitats
	<p>Skills: 1a, 1b, 1d, 1e, 1f, 2a, 2b, 2c, 2d, 3a, 3b, 3c, 3d, 4a, 4b, 4c, 4d, 4e, 4f, 4g</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Grow a bean plant to investigate structure of flowering plants and what they need to grow well. Identify and name common wild flowers, garden flowers and trees. Investigate how seeds and bulbs germinate and grow. Explain the life cycle of plants. Investigate food crops and how different plants grow. 	<p>Skills: 1a, 1b, 1c, 1d, 1e, 2a, 2b, 2c, 2d, 2e, 3b, 3c, 3d, 3e, 3f, 4a, 4b, 4c, 4d, 4e, 4f, 5a, 5b, 5c.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Understand nutrition and balanced diet Investigate nutrition of different food groups. Identify different skeletons. Identify and name human bones. Describe the functions of the skeleton and explain how muscles work. 	<p>Skills: 1a, 1c, 1d, 1e, 2a, 2b, 2c, 2d, 2e, 3c, 3d, 3e, 3f, 4a, 4b, 4e, 4f, 5a, 5b, 5c.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Explain different parts of a flowering plant and their function. Explore needs of plants to grow well. Investigate how water is transported in plants. Name the different parts of flowers and their functions. Explore the life cycle of flowering plants: pollination, seed formation, and seed dispersal. 	<p>Skills: 1a, 1b, 1c, 1d, 3a, 3b, 3c, 3d, 4a, 4b, 4c, 4d, 4e, 4f, 4h, 5a, 5b, 5c, 5d.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Explain the Human timeline - growth of babies, puberty and changes in old age. Explore gestation periods and life expectancy of different animals. 	<p>Skills: 1c, 2c, 3a, 4d, 4e, 4h, 5a, 5c, 5d.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Explain how some plants reproduce. Investigate the life cycle of different mammals. Understand the work of Jane Goodall with chimpanzees. Explain metamorphosis by studying amphibian and insect life cycles. Compare life cycles of all of the above.

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Long Term Knowledge Plan B

Autumn Term	Seasonal Changes	Electricity	Sound	Evolution & Inheritance
	<p>Skills: 1a,1b,1c,1d,1e,1f,2a,2b,2c,2d,3a,3c,3d,4b,4c,4d,4e,4f,4g,</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Observe changes across the 4 seasons in the context of weather Gather & record data for the weather: temperature, rainfall and wind direction across the seasons Observe and describe how day length varies across the seasons Observe changes across the 4 seasons by looking at how trees & the clothes we wear change Explore how some animals adapt to winter Learn how to Stay Safe in the Sun 	<p>Skills: 1a,1e,2a,2c,2d,3b,3c,3d,3e,3f,4a,4b,4e,4f,5a,5b,5c,5d.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Explain ways electricity is generated Identify common electrical appliances Construct a simple circuit, identifying & naming it's basic parts Visualise & test circuits to identify complete & incomplete circuits Investigate electrical conductors & insulators Explore switches & explain why they are needed 	<p>Skills: 1a,1e,2a,2c,2d,3c,3e,3f,4a,4e,4f,5a,5b,5c.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Identify how sounds are made Investigate sound sources Explore how high & low sounds are created Investigate how sounds change over distance Learn how the ear works Investigate soundproofing Make a musical instrument and explain how it works 	<p>Skills: 1a,1c,1d,3a,3b,3d,4a,4b,4c,4d,4e,4h,5a,5b,5c,5d,5e.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Understand the scientific concept of inheritance Explore ways animals & plants are adapted to suit their environments- variation & adaptation Examine Theories of Evolution Identify scientific evidence that supports evolution – fossil records Investigate how Human Beings have evolved Understand how adaptation may lead to evolution Look at the role of human intervention in the process of evolution.
Spring Term	Uses of Everyday Materials	Forces & Magnets		Properties & Changes of Materials
	<p>Skills: 1a,1b,1c,1d,1e,1f,2a,2c,3a,3b,3c,3d,4c,4d,4e,4f,4g.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Identify the uses & suitability for purpose of different materials Identify & Classify the uses of different materials in the context of the local area. Investigate how the shape of some solid objects can be changed by bending, squashing, twisting & stretching Learn about recycling Learn about the inventor John McAdam 	<p>Skills: 1a,1e,2a,2c,2d,3b,3c,3d,3e,3f,4a,4b,4e, 4f,5a,5c,5d</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Identify the different types of forces acting on objects. Investigate how things move on different surfaces Sort magnetic & non-magnetic materials Investigate the strength of different magnets Explore magnetic poles Investigate attraction & repulsion of magnetic poles 		<p>Skills: 1a,1b,1c,1d,1e,1f,1g,2a,2b,2c,2d,3a,3d,4a,4b,4c,4d,4f,4h,5a,5d.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Compare materials according to their properties Investigate thermal conductors & insulators Investigate electrical conductors & insulators Investigate dissolving & understand solubility Use different processes to separate mixtures of materials Identify & explain reversible & non-reversible chemical changes
Summer Term	Animals & Humans 1 Body Parts, Senses, Animal Groups	Animals including Humans Digestive system & teeth	Living Things & Their Habitats Classification	Animal Including Humans Circulatory System & Healthy Lifestyles
	<p>Skills: 1b,1c,1d,1e,2a,2d,3a,3b,3c,3d, 4b,4c, 4e,4f,4g</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Identify & name a variety of common animals: fish, amphibians, reptiles, birds & mammals Describe & compare the structure of a variety of common animals Identify, name & sort common animals that are carnivores, herbivores & omnivores Identify, draw, name & label the basic parts of the human body Name the 5 senses & perform simple tests to find out more about them Sort animals into recognised groups 	<p>Skills: 1a,1b,1c,1d,1e,2a,2b,2c,3a,3b,3c,3d,3e,3f,4a,4b,4c,4d,4e,4f, 5b,5c,5d</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Identify & name parts of the digestive system Explain the functions of the digestive system Identify the types & functions of teeth Understand the process of tooth decay Construct & interpret food chains 	<p>Skills: 1a,2a,2c,2d,3a,3b,3c,3d,3e,3f,4e,5a,5b,5c,5d.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Group living things in different ways Learn to use a classification key Create a classification key Carry out a local habitat survey Consider environmental changes & their effects Learn about endangered animals 	<p>Skills: 1b,1c,1e,1f,1g,1h,1i,2a,2b,2c,3a,3c,3d,4a,4b,4c,4d,4f,4h,5c,5d,5e.</p> <p>Knowledge:</p> <ul style="list-style-type: none"> Identify & name parts of the human circulatory system Describe the functions of the main parts of the circulatory system Explain how water & nutrients are transported in plants Describe how diet & exercise impact on human bodies Create & carry out an enquiry to compare & categorise different forms of exercise Explain the impact of drugs & alcohol on the body Describe how scientific evidence highlighted the dangers of smoking