SCIENCE

End of EYFS Expectations

Opportunities for learning Science can be found throughout all the Early Learning Goals and specifically through 'Understanding the World'. Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

The Natural World – EARLY LEARNING GOAL

Children at the expected level of development will:
- 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

Key Stage 1 National Curriculum Expectations

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should begin to use simple scientific language to talk about what they have learnt. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. *Pupils should read and spell scientific vocabulary at a level consistent with their increasing word-reading and spelling knowledge at key stage 1.*

Key Stage 2 National Curriculum Expectations

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. *Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word-reading and spelling knowledge.*

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. *Pupils should read, spell and pronounce scientific vocabulary correctly.*

Working Scientifically Key Stage 1 National Curriculum Expectations

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways;
- observing closely, using simple equipment;
- performing simple tests;
- identifying and classifying;

using their observations and ideas to suggest answers to questions; gathering and recording data to help in answering questions.

Working Scientifically Key Stage 2 National Curriculum Expectations

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them;
- setting up simple practical enquiries, comparative and fair tests;
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers;

- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions;
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables;
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions;
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions;
- identifying differences, similarities or changes related to simple scientific ideas and processes;
- using straightforward scientific evidence to answer questions or to support their findings.

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary;
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate;
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs;
- using test results to make predictions to set up further comparative and fair tests;
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations; identifying scientific evidence that has been used to support or refute ideas or arguments.

Specific to St Martin's

All Key Stage 1 and 2 (and EYFS where appropriate) children at St Martin's, will learn their working scientifically skills (as stated above) using these 7 symbols and statements:
Symbols will be displayed around the classroom and in children's exercise books.
Children will use the symbols to recognise and analyse the 'working scientifically' skills they Have used in lessons.
Teachers will use the symbols for teaching of 'working scientifically' skills and for recognition of individual children's achievements whilst giving verbal and written feedback (symbol stickers)
Children will relate the skills to those shown by real life scientists and will refer to themselves as scientists.

- I can ask questions
- I can make predictions
- I can set up tests
- I can observe and measure
- I can record data
- I can interpret and communicate results
- I can evaluate

CURRICULUM COVERAGE (including Features of our St Martin's school life)				
	AUTUMN	SPRING		SUMMER
Year 1	Seasons (As appropriate throughout the year) + Senses	Seasons (As appropriate throughout the year) Plants + Animals Zoolab visit	WHOLE SCHOOLSCIENCE WEEK DURING SPRING TERM	Seasons (As appropriate throughout the year) Materials Wisley Trip
Year 2	Materials Engineering workshop with parent (real life scientist)	Living Things & Habitats Zoolab visit		Plants Nower Wood Trip
Year 3	Forces, Magnets + Animals including humans	Light and shadow Hands on Science Workshop		Rocks +What do plants need, Parts of a plant Sutton Ecology Trip Science Fair
Year 4	Animals including humans + sound *Hands on Science workshop* *Sounds Spring ..how sounds are produced and classified*	Digestion and teeth + States of matter, Changes of state		Electricity + Human impact, Environmental issues
Year 5	Properties of materials + Forces	Earth and space + Separating materials Pop –up Planetarium		Types of change + Life cycles + Reproduction in plants Science Fair
Year 6	Light and sight + Electricity, Circuits	Circulatory system + Classification		Evolution + Inheritance + Reproduction Paleoquest workshop

SCIENTISTS TO STUDY	**For each topic covered, 2 suggested scientists have been included within the objectives sections for all year groups. These have been chosen to cover a diverse range of scientists from different time periods and should be appropriately integrated into lessons. Classroom Science displays should include information/photos about relevant scientists, their skills (linked to school symbols) and achievements.**
SOW	• We do not follow a specific scheme of work but we do use the PLAN Knowledge Matrices for reference to ensure accurate National Curriculum coverage. All year groups have a hard copy of the PLAN SOW relevant to their topics. The Knowledge Matrices are also on the school server: S:\Curriculum\The St. Martin's Curriculum (reviewed curriculum)\Reviewed Curriculum\Whole School SOW\Science • We use https://explorify.uk/en/activities as a resource to enrich lesson delivery in KS1 and 2 • We use the PSTT (Primary Science Teaching Trust) Play, Observe and Ask materials https://pstt.org.uk/resources/curriculum-materials/eyfs-science to support planning in EYFS. • EYFS use Development Matters 'Understanding the World' to structure their curriculum and 'Evidence Me' to record evidence of Scientific learning.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Vocabulary	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough,	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed light, shade, sun, warm, cool, water, grow, healthy Offspring, reproduction, growth, child, young/old stages, exercise, heartbeat, breathing, hygiene, germs, disease, food types (examples – meat, fish, vegetables, bread, rice, pasta) wood, metal, plastic, glass, brick, rock, paper,	Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal) Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints Rock, stone, pebble, boulder, grain, crystals,	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain Solid, liquid, gas, state change, melting, freezing,	Life cycle, reproduce, sexual, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings Puberty – the vocabulary to describe sexual characteristics Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle Offspring, sexual reproduction, sperm,

	smooth, shiny, dull, see-through, not see-through Weather (sunny, rainy, windy, snowy etc.) Seasons (winter, summer, spring, autumn) Sun, sunrise, sunset, day length	cardboard, opaque, transparent and translucent, reflective, non- reflective, flexible, rigid Shape, push/pushing, pull/puling, twist/twisting, squash/squashing, bend/bending, stretch/stretching	layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole	melting point, boiling point, evaporation, temperature, water cycle Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol	reversible change, burning, rusting, new material Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	fertilises egg, vary, characteristics, suited, adapted, environment, inherited, species, fossils Light, plus straight lines, light rays Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage

Animals Including Humans	• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense Scientists to Study: Joan proctor—zoologist and curator of reptiles Dr Sandeun Lek Chailert—Creator of the Elephant nature foundation protecting elephants	• notice that animals, including humans, have offspring which grow into adults • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene Scientists to Study: Louis Pasteur—developed the first vaccines Katalin Kariko—Covid vaccine development	• identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • identify that humans and some other animals have skeletons and muscles for support, protection and movement Scientists to Study: William James White, organic chemist and osteologist	• describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions • construct and interpret a variety of food chains, identifying producers, predators and prey Scientists to Study: Dr Jane Goodall—International chimpanzee expert and zoologist Jill Robinson— Animal Rights activist	• describe the changes as humans develop to old age	• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans Scientists to study: Dr Christiaan Barnard, performed first heart transplant https://www.bhf.org.uk/informationsupport/heart-matters-magazine/research/women-in-science 10 Inspirational women working for the BHF
						Risk Assessment: Explanation of how to handle a knife carefully while dissecting – gloves to be used during activity

ACC		Healthy eating		Adonna Khave art work		circulatory system Dance Activity Drawing line graphs for heart rate
Plants	• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • identify and describe the basic structure of a variety of common flowering plants, including trees Scientists to Study: Alan Mitchell—British forester who recorded tree growth Suzanne Simard—professor of forest ecology	• observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy Scientists to Study: Marie Clark Taylor—a botanist who studied the effects of light on plant growth Michael Way—Botanist, sets up and runs plant conservation projects, seed banking	• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal Scientists to Study: Anna Atkins - botanist and photographer of plants Dr Aaron P Davis—Senior Research Leader of Plant Resources for Kew			

	Risk Assessment: Importance of hand washing after handling plants. Reminders to children that not all plants are edible and some are poisonous or can cause skin Irritation.					
ACC	Local plants in my locality Measuring height of plants	Measuring growth in plants	Observational drawing of plants Measuring Drawing bar charts			
Living Things and Their Habitats		• explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including microhabitats • 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		• recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things Scientists to Study: Lorenzo Langstroth— Inventor of the beehive Seirian Sumner— Ecologist who studies focus on bees and wasps	• describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics Scientists to Study: Carl Linnaeus—created a modern systems of naming organisms

		Scientists to Study: Evelyn Cheesman— Entomologist and curator of insects Dr Alexandra Harmon Threatt— Entomologist and bee expert				
		Risk Assessment: Importance of hand washing after handling plants. Reminders to children that not all plants are edible and some are poisonous or can cause skin Irritation.				
ACC		Microhabitats in local area			'Changing Me' RSE unit How babies are made and puberty Close observational drawings of plants – botanical art work	
Evolution and Inheritance						• recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago (fossils taught in year 3) • recognise that living things produce offspring of the same kind, but normally offspring vary

						and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution Scientists to Study: Charles Darwin— Biologist known for contributions to the science of evolution Kevin Laland— Evolutionary biologist
ACC						How babies develop in the womb and how they develop after birth
Seasonal Changes	• observe changes across the 4 seasons • observe and describe weather associated with the seasons and how day length varies Scientists to Study: Christopher Wren— Inventor of the rain gauge Jane Strachen—Climate scientist					
	Weather and Seasons					

Forces			Forces and Magnets • compare how things move on different surfaces • notice that some forces need contact between 2 objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing Scientists to Study: Isaac Newton— Developed the theory of gravity.		Forces • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect. Scientists to Study: Galileo Galilei - Contribution to the science of motion. Emma England— Aerospace engineer	
			<u>Risk Assessment:</u> Explanation that magnets should never be put in			

			mouth and the dangers of swallowing			
ACC			Measuring		Building Quidditch Stadium with levers and pulleys	
Light			• recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by an opaque object • find patterns in the way that the size of shadows change Scientists to Study: Lewis Latimer—Helped invent the light bulb. Nicky Fox—Nasa scientist who studies the sun.			• recognise that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them Scientists to Study: Alhazen— discoveries in optics and knowing light affect our eyes. Dr Patricia Bath— Laser cataract surgery

			Risk Assessment: Reminder not to shine torches into people's eyes.			
ACC			Shadow art, Vincent Bal and Kumi Yamashita Measuring			
Sound				• identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases Scientists to Study: Miller Reese Hutchinson— Hearing Aids Francesca Rosella— Cute circuit smart clothing		
ACC				Beatboxing		

				Making Music Programme		
Earth and Space					• describe the movement of the Earth and other planets relative to the sun in the solar system • describe the movement of the moon relative to the Earth • describe the sun, Earth and moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky Scientists to Study: Caroline Herschel— Astronomer Maggie Aderin-Pocock — Space scientist	
ACC					Space Art The Planets 'Holtz'	

Electricity				• identify common appliances that run on electricity • 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 • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors Scientists to Study: Professor James Blyth— The first wind turbine to generate electricity Yi Guo—Senior scientist for renewable energy		• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram Scientists to Study: Nikola Tesla— invented the current power system that provides electricity in homes and buildings Peter Rawlinson— British engineer developing electrical vehicles.

				Risk Assessment: Instruction to dismantle circuits after use to prevent batteries and bulbs over – heating. Reminder not to put batteries in mouths		Risk Assessment: Instruction to dismantle circuits after use to prevent batteries and bulbs over – heating. Reminder not to put batteries in mouths
				Circuit board games		
Materials	Everyday Materials • distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties Scientists to Study: Charles Macintosh—Raincoat and waterproof materials Zach Johnson—Clothes made from recycled plastic bottles found in the ocean	Uses of Everyday Materials • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching Scientists to Study: John McAdam—Road surfacing Julie and Scott Brusaw—Solar roads	Rocks • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter Scientists to Study: Mary Anning —Fossil collector and palaeontologist Holly Betts—Palaeontologist investigating when things evolved	States of Matter • compare and group materials together, according to whether they are solids, liquids or gases • observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature Scientists to Study: Antoine Lavoisier—Developed the modern system of naming chemical substances and key in	Properties and Changes of Materials • 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 • know that some materials will dissolve in liquid to form a solution, and 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	

				discoveries around combustion	comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda Scientists to Study: Walter Lincoln Hawkins— Engineering and uses of plastics. Spencer Silver— invented the post it note	
			<u>Risk Assessment:</u> Reminder to wash hands after handling rocks and soil	<u>Risk Assessment:</u> Care to be taken when handling hot water and thermometers – careful supervision by adults in room	<u>Risk Assessment:</u> Explanation that you must never put unknown materials in mouth or rub eyes. You must never eat known	

					materials (eg sugar cubes) that have been used in science investigations Care to be taken when handling hot water and thermometers – careful supervision by adults in room	
ACC		Great Fire of London		Water Cycle in a box Making Ice Lollies	Types of change, baking cupcakes Reading charts and drawing line graphs Measuring Temperature, positive and negative numbers	
Working Scientifically 					• I can ask questions • I can make predictions • I can set up tests • I can observe and measure • I can record data • I can interpret and communicate results • I can evaluate	
KS1			**LKS2**		**UKS2**	

Asking Questions and Carrying Out Fair and Comparative Tests	**KS1 Science National Curriculum** Asking simple questions and recognising that they can be answered in different ways. Performing simple tests. Children can: 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.	**Lower KS2 Science National Curriculum** Asking relevant questions and using different types of scientific enquiries to answer them. Setting up simple practical enquiries, comparative and fair tests. Children can: 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.	**Upper KS2 Science National Curriculum** Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. Using test results to make predictions to set up further comparative and fair tests. Children can: 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.

Observing and Measuring Changes	**KS1 Science National Curriculum** Observing closely, using simple equipment. Children can: 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.	**Lower KS2 Science National Curriculum** Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Children can: a 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; e where appropriate, take accurate measurements using standard units using a range of equipment.	**Upper KS2 Science National Curriculum** Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. Children can: 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.
Identifying, Classifying, Recording and Presenting Data	**KS1 Science National Curriculum** Identifying and classifying. Gathering and recording data to help in answering questions. Children can: 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.	**Lower KS2 Science National Curriculum** Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. Children can: 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.	**Upper KS2 Science National Curriculum** Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Children can: 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.

Drawing Conclusions, Noticing Patterns and Presenting Findings	**KS1 Science National Curriculum** Using their observations and ideas to suggest answers to questions. Children can: 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.	**Lower KS2 Science National Curriculum** Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Children can: 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.	**Upper KS2 Science National Curriculum** Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. Children can: 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.
Using Scientific Evidence and Secondary Sources of Information		**Lower KS2 Science National Curriculum** Identifying differences, similarities or changes related to simple scientific ideas and processes. Using straightforward scientific evidence to answer questions or to support their findings. Children can: 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;	**Upper KS2 Science National Curriculum** Identifying scientific evidence that has been used to support or refute ideas or arguments. Children can: 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;

		d recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.	e talk about how scientific ideas have developed over time.