ST MARY'S CATHOLIC PRIMARY SCHOOL

PROGRESSION IN KNOWLEDGE AND SKILLS

SCIENCE

Intent

At St. Mary's we want our children to be naturally inquisitive about the world around them throughout their time at school and beyond. Our Science curriculum has been developed to ensure full coverage of the National Curriculum alongside a healthy curiosity and sense of wonder about the universe whilst also upholding our Catholic faith. We are committed to providing a stimulating, engaging and challenging learning environment in which the acquisition of knowledge, concepts, skills and positive attitudes are embedded. Throughout the programmes of study, the children are will develop and use the key knowledge and skills identified within each year group which, in turn, is informed by the national curriculum. Key skills are mapped for each year group and are taught and practiced progressive throughout the school. This ensures systematic progression towards the Working Scientifically skills expectations of the national curriculum. The curriculum is designed to ensure that children are able to acquire key scientific knowledge through practical experiences such as using equipment, conducting experiments, building arguments and explaining concepts confidently. We want our children to have a broad vocabulary therefore we ensure scientific language to be taught is mapped and built upon as topics are revisited in different year groups and across key stages. We want our children to be confident and capable of asking questions and demonstrating their curiosity about their surroundings. A love of science is nurtured through a whole school ethos and a varied science curriculum.

Implementation

To ensure high standards of teaching and learning in science, teachers create a positive attitude towards science within their classrooms and reinforce the expectation that all pupils can achieve high standards in all aspects of science no matter what their individual starting points may be.
Planning for science is a process in which all teachers ensure that the school gives full coverage of The 2014 National Curriculum programmes of study for Science and Understanding of the World in the Early Years Foundation Stage. Wherever possible, Science is linked to class topics to enable a project-based approach with the intention that a greater depth of knowledge is achieved.

At the start of each topic teachers take time to find out what our children already understand and want to find out. Our teachers use this opportunity to recap prior knowledge from previous years and ensure that new knowledge is taught in the context of previous learning. This provides the teacher with an insight into the children's starting points for the topic, enabling the use of assessment to inform planning. The children are then asked what they would like to know and class responses are collated and used to inform the programme of study. A record of this process is kept in children's topic books either as a group mind map or individual response in KS2. At the end of the topic, children take part in a review of what they now know with reference to the key knowledge assigned to that topic. The teacher is then able to consolidate any of the key knowledge which is identified at this part of the process as not yet being secure.

Key vocabulary is introduced at the start of the new topic alongside definitions and accompanying visuals for each word (where possible) to ensure accessibility to all. This approach also means that children are able to understand the new vocabulary when it is used in teaching and learning activities and apply it themselves when they approach their work. Teachers use progressive questioning in class to test conceptual knowledge and skills, and assess pupils regularly to identify those children with gaps in learning. Learning opportunities are selected and designed to provide appropriate challenge to all learners.
As the children's knowledge and understanding increases, they become more proficient in selecting and using scientific equipment as well as collating and interpreting results appropriately. They become increasingly confident in their growing ability to come to conclusions based on real evidence that they themselves have sought. Working Scientifically skills are embedded into lessons to ensure that skills are systematically developed throughout the children's school career.

At St Mary's we aspire to promote children's independence and for all children to take responsibility in their own learning. Pupils regularly mark against success criteria to reflect how they feel about their learning in a lesson and this is used as appropriate, to aid teaching and learning. Attainment is tracked through our pupil tracking grids against National Curriculum expectations and Working Scientifically skills. Standards in science are monitored in a variety of ways to ensure the maximum impact. This includes book scrutinies, professional dialogue, pupil voice questionnaires, staff voice questionnaires, lesson observations and learning walks. The school governors are informed of standards and progression of the subject annually.

At St Mary's we are aware of the impact of current events in an ever changing world and ensure that regular events such as Science Week and Eco-School events are offered to broaden children's curriculum experiences. Teachers also plan trips and visitors to enhance our children's learning experience with purposeful links made to knowledge being taught in class. Outdoor learning opportunities are integrated throughout the science curriculum and ensure engagement with the local environment which gives children opportunities to learn through varied and first hand experiences of the world around them.

Impact

As a result of our curriculum, the children of St Mary's achieve their full potential in science and marvel at the awe and wonder of how science emulates throughout every aspect of our daily lives. The children recall the rich learning experiences they have been provided with and know that each new taught concept provides a new learning block that they can build upon. Children think critically, ask questions and use their metacognitive learning skills. As a result of exposure to a range of different scientists from various backgrounds, all children feel they are scientists and capable of achieving - our children know to persevere and embrace challenge. They have the understanding that science has changed our lives and that it is vital to the world's future prosperity.

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically Planning	Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps.	With prompting, I can ask simple questions that can be tested, e.g. about plants growing in their habitat. I can offer ways of gathering evidence to answer a question, e.g. by deciding on the best material to use for a particular application.	I can ask simple questions that can be tested, e.g. about the local environment and how organisms depend on each other. I can suggest different ways of answering a question, e.g. testing the suitability of materials for different purposes.	I can, with support, develop relevant, testable questions, e.g. what happens to shadows when the light source moves. I can plan enquiry, such as comparative or fair test, e.g. comparing the effect of different factors on plant growth. I can set up a comparative test, e.g. how far things move on different surfaces.	I can develop relevant, testable questions, e.g. based on observations of animals. I can plan investigations using different types of scientific enquiry, e.g. exploring various materials by observing change over time, running comparative tests and conducting surveys. I can set up comparative and fair tests, e.g. finding patterns in the sounds made by elastic bands of different thicknesses.	I can, with support, can answer questions using evidence gathered from different types of scientific enquiry, e.g. comparing life cycles of different plants using change over time, surveys and secondary research I can, with prompting, identifies and manages variables, e.g. when exploring falling paper cones.	I can answer questions using evidence gathered from different types of scientific enquiry, e.g. operation of circulatory system from experiment, survey and secondary research. I can identify and manage variables, e.g. distances and sizes in shadow formation.
Working Scientifically Recording evidence	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	I can examine objects to note key features, e.g. observe growth of plants they have planted. With support, I can conduct simple tests, e.g. comparing the properties of different materials. With prompting, I can identify what might usefully be recorded, e.g. drawing structures	I can examine carefully, e.g. using a hand lens. I can conduct simple tests, e.g. setting up comparative tests to show that plants need water and light. I can, with assistance, draw and label diagrams, e.g. recording plants changing over time, starting from seed or	I can use various equipment, as instructed, e.g. using a hand lens to examine rocks. I can use standard measurements when taking measurements, e.g. measuring distances between a light source and an object. I can, with prompting,	I can use various equipment, as instructed, repeatedly and with care, e.g. thermometers. I can recognise the importance of using standard units and measures accurately, e.g. measuring temperature when investigating its effect on washing drying.	I can, following discussion of alternatives, selects appropriate equipment, e.g. using a shadow stick and measuring length and angle of shadow. I can take measurements that are precise as well as accurate, e.g.	I can use appropriate equipment, such as meter rule, to take measurements, such as distance travelled by light. I can consider how by modifying instrument or technique, measurements can be improved, e.g. when recording route of light rays.

	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.	of plants or recording changing day length.	bulb.	draw and label diagrams, e.g. to show how water travels in a plant. I can, with prompting, use tables to record evidence, e.g. recording what happens when various rocks are rubbed together. I can, with prompting, gather and display evidence in various ways, e.g. about the ways that magnets behave in relation to each other	I can use words and diagrams to record findings, e.g. how habitats change during the year. I can use various ways to record evidence, e.g. comparing the teeth of herbivores and carnivores. I can use various ways to record, group and display evidence, e.g. grouping and classifying various materials.	measuring the force needed to pull different shapes of boat through the water I can know how to process repeat readings, e.g. when timing falling objects. I can start to use labelled diagrams to show more complex outcomes, e.g. comparing the time of day at different places on the earth. I can, with prompting, use various ways to record complex evidence, e.g. when investigating how gears and levers enable a small force to have a larger effect. I can use a line graph to record basic data, e.g. length and mass of a baby as it grows.	I can identify situations in which taking repeat readings will improve the quality of evidence, e.g. investigating the behaviour of components in a circuit. I can use labelled diagrams to show complex outcomes, e.g. relating specific adaptations of organisms to environmental factors. I can use various ways, as appropriate, to record complex evidence, e.g. in the construction of a key to aid plant identification. I can use line graphs to display complex data, e.g. size of object in relation to the size of the shadow it casts.
Working Scientifically Findings and Conclusions		I can identify key findings from an enquiry, e.g. noting how plants have changed over time.	I can identify and group key outcomes from enquiry, e.g. describing conditions in different habitats and how these	I can, with prompting, write a conclusion based on evidence, e.g. exploring the strengths of different magnets.	I can write a conclusion based on evidence, e.g. effect on brightness of bulbs if more cells are added.	I can, with prompting, write a conclusion using evidence and identifying causal links, e.g. investigating what	I can write a conclusion using evidence and identifying causal links, e.g. in the design

		I can collect data, e.g. comparing and contrasting familiar plants. I can suggest answers to enquiry questions using data, e.g. describe how to group plants.	affect the numbers and types of organisms. I can collect data relevant to the answering of questions, e.g. seeing how the shapes of some materials can be changed. I can answer enquiry questions using data and ideas, e.g. to help decide how the properties of certain materials make them suitable for certain applications.	I can indicate findings from an enquiry that could be reported, e.g. answering questions about how rocks are formed. I can, with prompting, recognise patterns that relate to scientific ideas, e.g. investigating the behaviour of magnets. I can, with support, use evidence to produce a simple conclusion, e.g. the changes that occur when rocks are in water I can suggest how an investigation could be extended, e.g. suggesting creative uses for different magnets	I can present findings either in writing or orally, e.g. relating to investigating which materials are conductors. I can recognise patterns that relate to scientific ideas, e.g. finding out which materials make better earmuffs. I can use evidence to produce a simple conclusion, e.g. the effect of temperature on various substances. I can use evidence to suggest further relevant investigations, e.g. making own instruments, using ideas about pitch and volume.	makes a parachute fall quicker. I can, with support, display and present key findings from enquiries orally and in writing, e.g. suggesting reasons for similarities and differences between various animals. I can, with support, indicate why some results may not be entirely trustworthy, e.g. when timing falling objects. I can show how evidence supports a conclusion, e.g. researching gestation periods of various mammals and relating them to adult mass. I can suggest further relevant comparative or fair tests, e.g. when testing materials for various properties to determine their suitability for an application.	of a periscope I can display and present key findings from enquiries orally and in writing, e.g. deciding how well classifications fit unfamiliar animals and plants. I can, in conclusions, indicate how trustworthy they are, e.g. in relating brightness of bulb to voltage supplied. I can identify how an idea is supported or refuted by evidence, e.g. selective breeding to produce animals or plants with desirable characteristics. I can use evidence to suggest further comparative or fair tests that would develop the investigation, e.g. in the design of rear view mirrors for cars.

Biology		I can identify a range of local plants I can name parts of a range of familiar plants. I can compare and contrast a collection of items, sorting into categories: 'living', 'dead' and 'things that have never been alive'. I can name a variety of common animals. I can identify and group a range of familiar animals. I can identify key features of a range of common animals I can relate each of the human senses to organs.	I can explain how, for a named animal or plant, it gets what it needs from its habitat and other living things that are there. I can identify a range of living things in habitats of various sizes. I can construct a simple food chain and identify what is eating what. I can explore and identify what plants need to thrive I can describe stages of development of a full grown plant. Describe the relationship between adult animals and their offspring. I can identify human's basic needs. I can describe the importance of a healthy diet and exercise	I can explain what all plants need to flourish and recognise how these requirements vary in amount. I can describe what each part of a flowering plant does. I can explain, with the aid of a diagram or plant, how water is carried up from the soil. I can explain how pollination, seed formation and seed dispersal play a role in the reproduction of flowering plants. I can describe why animals depend on the correct nutrition. I can explain which parts of the skeleton provide support and protection, and how they allow for movement.	I can suggest different ways of sorting the same group of living things, e.g. grouping birds according to where they live, what they eat and size of adults. I can use classification keys to group and identify members from a range of familiar and less familiar living things I can describe examples of living things that are threatened by changes to environments, e.g. owls and habitat loss. I can identify what each of the principal organs in the digestive system do. I can describe the function of each type of tooth in the human skull. I can use a food chain to represent predator-prey relationships.	I can identify similarities and differences in two different life cycles, e.g. sparrow and butterfly, with reference to eggs and intermediate stages I can describe the changes as humans develop to old age, e.g. trends in changes to size, weight, mobility etc. I can describe in sequence the stages of reproduction in some plants and animals, e.g. dog and a thistle.	I can use similarities and differences in observable features to decide how living things should be grouped, e.g. a cat is a mammal because it is warm blooded and gives birth to live young. I can explain why certain features are useful in classifying living things, e.g. backbones in animals and flowers in plants. I can use fossils as evidence that living things have changed over time, e.g. explain that these have died out and others have taken their place. I can recognise that offspring normally vary from each other and from their parents, e.g. that puppies vary from each other and from their parents. I can describe

							examples of a living thing that has adapted to live in a particular habitat and evolved as a result, e.g. a polar bear or cactus. I can describe what heart, blood vessels and blood do, e.g. carry oxygen to all parts of the body. I can suggest how their bodies are affected by substances and actions, e.g. that a high fat diet coupled with little exercise is likely to lead to obesity. I can describe with aid of diagrams the route that water takes within animals, e.g. through the human body.
Chemistry		I can correctly identify both object and material. I can identify and name a range of materials.	I can describe changes achieved by applying forces in different directions I can select and justify a material for a particular use	I can explain how fossils are formed. I can describe how soil is made.	I can group materials according to their state of matter. I can describe how evaporation and condensation happen	I can test and sort a range of materials based on their physical properties. I can describe how some materials, e.g.	

		I can describe a range of properties of a variety of materials. I can classify a variety of materials into groups based on physical properties.		I can examine and test rocks, grouping them according to the results.	in the water cycle, and how temperature affects evaporation. I can identify changes of state and research values of degrees Celsius at which changes happen.	sugar, will dissolve and can be retrieved. I can justify separation techniques proposed, with reference to materials being separated. I can show how the original materials can be retrieved from each of these changes. I can identify reactants and products of chemical changes and recognise these as being irreversible I can use evidence to justify the selection of a material for a purpose.	
Physics		I can describe seasonal changes. I can relate weather patterns and day length to seasons.		I can compare how an object, such as a toy car, will move on different surfaces I can recognise the difference between contact and contact forces. I can describe how magnets attract or repel each other, and attract magnetic	I can explain, with reference to vibrations, how an object makes a sound. I can describe the role of a medium in the transmission of sound I can describe the effect of moving further from the source of a sound I can explain with	I can describe how motion may be resisted by air resistance, water resistance or friction. I can describe how some devices may turn a smaller force into a larger one.	I can represent light using straight line ray diagrams I can draw diagrams using straight lines showing light travelling to the eye. I can explain how we can see an object by referring to light travelling into the eye.

				materials I can group materials on the basis of testing for being magnetic I can describe and identify the poles of a magnet I can predict outcomes of a particular arrangement of magnets. I can relate being able to see to the presence of light. I can describe how some objects reflect light I can describe how and why our eyes should be protected from sunlight. I can explain how shadows are made I can describe how to change the size of a shadow.	reference to a particular object how the pitch of the sound can be changed. I can explain with reference to a particular object how the volume of the sound can be changed. I can list examples of appliances that run on electricity I can construct a simple circuit and name its components. I can sort materials into conductors and insulators, identifying metals as conductors I can predict whether a particular arrangement of components will result in a bulb lighting. I can predict how the operation of a switch will affect bulbs lighting.		I can draw a diagram showing an object, shadow and light to relate object shape to shadow shape. I can explain how number and voltage of cells affects the lamp or buzzer. I can explain the use of switches, how bulbs can be made brighter and buzzers made louder. I can represent a circuit that has been constructed using symbols. I can explain that gravity causes objects to fall towards Earth. I can draw a diagram or use a model to describe planetary orbits. I can draw a diagram or use a model to describe the Moon's

							orbit around the Earth. I can describe the Sun, Earth & Moon as spheres I can use a diagram or model to explain why the Sun seems to travel across the sky, and what causes day and night.

Science Curriculum Key Vocabulary

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals including humans Fish, Reptiles, Mammals, Birds, Amphibians (+ examples of each) Herbivore, Omnivore, Carnivore, Leg, Arm, Elbow, Head, Ear, Nose, Back, Wings, Beak	**Animals including humans** Survival, Water, Air, Food, Adult, Baby, Offspring, Kitten, Calf, Puppy, Exercise, Hygiene	**Animals including humans** Movement, Muscles, Bones, Skull, Nutrition, Skeletons,	**Animals including humans** Mouth, Tongue, Teeth, Oesophagus, Stomach, Small Intestine, Large Intestine, Herbivore, Carnivore, Canine, Incisor, Molar	**Animals including humans** Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty	**Animals including humans** Circulatory, Heart, Blood Vessels, Veins, Arteries, Oxygenated, Deoxygenated, Valve, Exercise, Respiration
Plants Deciduous, Evergreen trees, Leaves, Flowers (blossom), Petals, Fruit, Roots, Bulb, Seed, Trunk, Branches, Stem	**Plants** Seeds, Bulbs, Water, Light, Temperature, Growth	**Plants** Air, Light, Water, Nutrients, Soil, Reproduction, Transportation, Dispersal, Pollination, Flower	**Living things and their habitats** Vertebrates, Fish, Amphibians, Reptiles, Birds, Mammals, Invertebrates, Snails, Slugs, Worms, Spiders, Insects, Environment, Habitats	**Living things and their habitats** Mammal, Reproduction, Insect, Amphibian, Bird, Offspring	**Living things and their habitats** Classification, Vertebrates, Invertebrates, Micro-organisms, Amphibians, Reptiles, Mammals, Insects
Everyday Materials Wood, Plastic, Glass, Paper, Water, Metal, Rock, Hard, Soft, Bendy, Rough, Smooth	**Living things and their habitats** Living, Dead, Habitat, Energy, Food chain, Predator, Prey, Woodland, Pond, Desert	**Rocks** Fossils, Soils, Sandstone, Granite, Marble, Pumice, Crystals, Absorbent	**States of Matter** Solid, Liquid, Gas, Evaporation, Condensation, Particles, Temperature, Freezing, Heating	**Properties and changes of materials** Hardness, Solubility, Transparency, Conductivity, Magnetic, Filter, Evaporation, Dissolving, Mixing	**Evolution and Inheritance** Fossils, Adaptation, Evolution, Characteristics, Reproduction, Genetics
Seasonal Changes Summer, Spring, Autumn, Winter, Sun, Day, Moon, Night, Light, Dark	**Everyday materials and their uses** Hard, Soft, Stretchy, Stiff, Shiny, Dull, Rough, Smooth, Bendy, Waterproof, Absorbent, Opaque, Transparent Brick, Paper, Fabrics, Squashing, Bending, Twisting, Stretching Elastic, Foil	**Light** Light, Shadows, Mirror, Reflective, Dark, Reflection	**Sound** Volume, Vibration, Wave, Pitch, Tone, Speaker	**Earth and Space** Earth, Sun, Moon, Axis, Rotation, Day, Night, Phases of the Moon, star, constellation	**Light** Refraction, Reflection, Light, Spectrum, Rainbow, Colour,
		Forces and magnets Magnetic, Force, Contact, Attract, Repel, Friction, Poles, Push, Pull	**Electricity** Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators	**Forces** Air resistance, Water resistance, Friction, Gravity, Newton, Gears, Pulleys	**Electricity** Cells, Wires, Bulbs, Switches, Buzzers, Battery, Circuit, Series, Conductors, Insulators, Amps, Volts, Cell

Science Curriculum

Knowledge	Skills.
Year 1- Animals including humans.	
To be able to identify, name draw and label the basic parts of the human body. To know which part of the body is associated with each sense. To be able to describe and compare the structure of a variety of common animals. To be able to identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals and invertebrates. To be able identify and name a variety of common animals that are carnivores, herbivores and omnivores. To be able to describe and compare the structure of a variety of common animals. To be able to describe and compare the structure of a variety of common animals.	To be able to observe closely, using simple equipment. To be able to record data in a table. To be able to identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals. To be able to use secondary sources to find out more about animals (non-statutory). To be able to sort and group animals with some help (non-statutory). To be able to record data in simple ways (Venn diagram). To be able to record data in simple ways (chart).
Year 1 Everyday Materials	
To be able to distinguish between an object and the material from which it is made. To be able to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. To be able to describe the simple physical properties of a variety of everyday materials. To be able to compare and group together a variety of everyday materials on the basis of their physical properties.	To be able to identify and classify. To be able to observe carefully, using simple equipment. To be able to ask simple questions and recognise that they can be answered in different ways. To be able to perform simple tests. To be able to record simple data in order to answer a question. To be able to make simple measurements with equipment (non-statutory).
Year 1- Plants	
To be able to identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and	To be able to observe closely. To be able to ask simple questions and recognise that they can be

flowers. To be able to identify and name a variety of common plants. To be able to classify trees as deciduous and evergreen.	answered in different ways. To be able to observe carefully using simple equipment. To be able to use parts of the plant to identify and classify it. To be able to use simple features of a plant to sort and group them (non-statutory). To be able to ask simple questions and recognise the ways in which they can be answered.
Year 1- Seasonal Change	
To be able to observe and describe weather associated with the seasons and how day length varies. To be able to observe changes across the four seasons.	To be able to ask simple questions and recognise that they can be answered in different ways. To able to identify objects. To able to perform simple tests. To be able to observe closely, using simple equipment. To be able to gather and record data to help answer a question.

Year 2- Animals including humans	
To know that animals, including humans, have offspring that grow into adults. To know that human offspring grow into adults. To be able to find out about and describe the basic needs of animals, including humans, for survival (water, food and air). To know the importance for humans of eating the right amounts of different types of food.	To be able to use observations to suggest answers to questions. To be able to record data (flow diagram). To be able to observe using simple equipment. To be able to record data (table). To be able to perform a simple test. To be able to record data (tally chart).

To know the importance for humans of exercise. To know the importance to humans of hygiene.	
Year 2- Living things and their Habitats.	
To be able to explore and compare the differences between things that are living, dead, and things that have never been alive. To be able to 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. To be able to 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. To be able to identify and name a variety of plants and animals in their habitats, including micro-habitats.	To be able to ask simple questions and recognise that they can be answered in different ways. To be able to observe closely. To be able to gather and record data to help answer a question. To be able to record data in a tally chart. To be able to record data in a bar chart. To be able to use observations to suggest answers to questions. To be able to observe using a microscope/hand lens.
Year 2 Plants To be able to observe how bulbs grow into mature plants. To be able to observe and describe how seeds grow into mature plants. To be able to find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	To be able to perform a simple test. To be able to recognise that questions can be answered in a range of ways. To be able to observe closely using simple equipment. To be able to sort objects using observable features (non-statutory). To be able to gather and record date to help in answering a question. To use their observations and ideas to suggest answers to questions.
Year 2- Uses of Every day Materials	
To be able to 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	To be able to ask simple questions and recognise that they can be answered in different ways. To be able to use their observations and ideas to suggest answers to questions.

stretching.	To be able to gather and record data to help in answering questions. To be able to perform simple tests. To be able to gather and record data to help in answering questions. To be able to use simple measurements to gather data. To be able to use simple secondary sources to find answers (non-statutory). To be able to talk about what they have found out and how they found it out (non-statutory). To be able to, with help, notice relationships (non-statutory).

Year 2- Animals including humans.	
To be able to describe the simple functions of the basic parts of the digestive system in humans. To be able to identify the different types of teeth in humans and their simple functions.	To be able to record findings using labelled diagrams. To be able to use written explanations to report on findings from an enquiry. To be able to identify the correct type of enquiry to answer a question. To be able to set up a comparative test. To be able to use evidence to support findings.

Year 3- Animals including human	
To know that animals cannot make their own food. To know that animals, including humans, need the right amounts and types of food.	To be able to record using drawings. To be able to report on findings from enquiries.

To know the ways in which nutrients and water are transported within animals, including humans. To know that humans and some animals have skeletons and muscles for support, protection and movement.	To be able to use evidence to answer questions. To be able to set up a comparative test. To be able to record data in a table. To be able to identify the correct type of enquiry to answer a question. To be able to record data in a scatter graph (non-statutory).
Year 3- Forces and Magnets	
To be able to compare how things move on different surfaces. To be able to 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. To be able to notice that some forces need contact between two objects, but magnetic forces can act at a distance. To be able to predict whether two magnets will attract or repel each other, depending on which poles are facing. To be able to observe how magnets attract or repel each other and attract some materials and not others. To be able to describe magnets as having two poles.	To be able to set up a simple fair-test. To be able to record findings in a bar chart. To be able to identify changes related to scientific ideas. To be able to use results to draw simple conclusions. To be able to provide an oral explanation of findings. To be able to make systematic and careful observations.
Year 3- Light	
To be able to recognise that they need light in order to see things	

and that dark is the absence of light. To be able to notice that light is reflected from surfaces. To be able to recognise that light from the sun can be dangerous and that there are ways to protect their eyes. To be able to recognise that shadows are formed when the light from a light source is blocked by a solid object. To be able to find patterns in the way that the sizes of shadows change.	To be able to set up a simple fair test. To be able to make systematic and careful observations and measurements. To be able to record findings as drawings. To be able to record findings as a bar chart. To be able to make predictions for further values.
Year 3 Plants	
To be able to identify and describe the function of the roots. To be able to investigate the ways in which water is transported within plants. To be able to identify and describe the function of the stem. To be able to identify and describe the function of the leaves. To be able to explore the requirements of plants for life and growth (air, light, water, nutrients from soil). To be able to identify and describe the function of the flowers.	To be able to set up a simple practical enquiry. To be able to make systematic and careful observations. To be able to gather and record data. To be able to use results to draw simple conclusions. To be able to use straightforward scientific evidence to answer questions or to support their findings.
Year 3- Rocks	
To be able to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. To be able to recognise that soils are made from rocks and organic matter. To be able to recognise that soils are made from rocks and organic matter.	To be able to make careful observations. To be able to set up simple comparative tests. To be able to measure using beakers and syringes. To be able to present information in a branching key.

Year 4- Animals including humans	
To be able to describe the simple functions of the basic parts of the digestive system in humans. To be able to identify the different types of teeth in humans and their simple functions.	To be able to record findings using labelled diagrams. To be able to use written explanations to report on findings from an enquiry. To be able to identify the correct type of enquiry to answer a question. To be able to set up a comparative test. To be able to use evidence to support findings.
Year 4- Electricity	
To be able to identify common appliances that run on electricity. To be able to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. To be able to 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. To be able to recognise some common conductors and insulators, and associate metals with being good conductors. To be able to recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.	To be able to set up a simple practical enquiry. To be able to record findings using drawings. To be able to use results to make predictions.
Year 4- Living things and their habitats	
To be able to recognise that living things can be grouped in a variety of ways. To be able to explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. To be able to recognise that environments can change and that this can sometimes pose dangers to living things.	To be able to gather, record, classify and present data in a variety of ways to help in answering questions. To be able to report on findings from enquiries, including oral and written explanations.

Year 4- Sound	
To be able to identify how sounds are made, associating some of them with something vibrating. To be able to recognise that vibrations from a sound travel through a medium to the ear. To be able to find patterns between the pitch of a sound and features of the object that produced it. To be able to find patterns between the volume of a sound and the strength of the vibrations that produced it. To be able to recognise that sounds get fainter as the distance from the sound source increases.	To be able to use a scientific enquiry to answer a question. To be able to set up a simple practical enquiry. To be able to make systematic and careful measurements with a data logger. To be able to report on findings from an enquiry. To be able to identify differences, similarities or changes related to simple scientific ideas. To be able to set up simple fair tests.
Year 4- States of Matter	
To be able to compare and group materials together, according to whether they are solids, liquids or gases. To be able to 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). To be able to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	To be able to set up a fair test. To be able to set up a simple test. To be able to use results to draw simple conclusions. To be able to use a data logger to take accurate measurements. To be able to use a thermometer to take accurate measurements. To be able to provide a written explanation. To be able to use straightforward scientific evidence to answer questions or to support their findings.

Year 5 Animals including humans	
To be able to describe the changes as humans develop from birth to old age.	To be able to raise different types of questions (non-statutory). To be able to communicate data using a scatter graph. To be able to present conclusions. To be able to use evidence to refute or support an idea. To be able to record data within tables. To be able to record data using line graphs.
Year 5- Forces	
To be able to explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. To be able to identify the effects of air resistance, water resistance and friction, that act between moving surfaces. To be able to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	To be able to identify scientific evidence that has been used to support or refute ideas or arguments. To be able to take repeated accurate measurements using a stopwatch. To be able to explain the degree of trust in results. To be able to use test results to make predictions to set up further fair-tests. To be able to plan a fair-test; identifying the control variables.
Year 5- Living things and their habitats	
To be able to explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird. To be able to describe the life process of reproduction in some plants and animals.	To be able to plan the correct enquiry to answer a question. To be able to recognise which secondary sources will be most useful to their research (non-statutory). To be able to use scientific diagrams and labels. To be able to explain findings.
Year 5- Properties and Changes of materials	
To be able to compare and group together everyday materials based on evidence from comparative and fair tests, including their conductivity of heat. To be able to understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.	To take accurate measurements using a data-logger. To be able to measure accurately using a thermometer. To be able to record data in a line graph. To be able to use test results to make predictions to set up further comparative and fair tests.

To be able to use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. To be able to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. To be able to demonstrate that dissolving, mixing and changes of state are reversible changes. To be able to 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.	To be able to report and present findings from enquiries, including conclusions, causal relationships and explanations. To be able to plan a scientific enquiry that will answer a question. To be able to recognise control variables when planning a fair-test. To be able to evaluate an enquiry in terms of the amount of trust one can have in it.
Year 5- Evolution and Inheritance	
To be able to recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. To be able to recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. To be able to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	To be able to identify scientific evidence that has been used to support or refute ideas or arguments. To be able to plan an enquiry that will answer a question. To be able to record data in a table. To be able to measure with a data logger. To be able to present findings from an enquiry. To be able to recognise which secondary sources will be most useful to research ideas (non-statutory).

Year 6- Earth and Space	
To be able to describe the movement of the Earth, and other planets, relative to the Sun in the solar system. To be able to describe the Sun, Earth and Moon as approximately spherical bodies. To be able to describe the movement of the Moon relative to the Earth. To be able to use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	To be able to plan a scientific enquiry to answer a question. To be able to report a presentation of an explanation.

Year 6- Animals including humans	
To be able to Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood. To be able to describe the ways in which nutrients and water are transported within animals, including humans.	To be able to plan pattern-seeking enquiry. To be able to report causal relationships. To be able to record results using a line graph. To be able to present findings from enquiries.
Year 6- Electricity	
To be able to use recognised symbols when representing a simple circuit in a diagram. To be able to associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. To be able to 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.	To be able to take repeat measurements of data with precision using a data-logger. To be able to explain the degree of trust can be had in results. To be able to plan a fair-test by recognising the control variables. To be able to use predictions to set up fair tests.
Year 6- Light	
To recognise that light appears to travel in straight lines. To be able to 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. To be able to 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. To be able to use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	To be able to use scientific evidence to support or refute on idea. To be able to use test results to make predictions to set up further comparative tests. To be able to plan a fair-test; recognising and controlling variables. To be able to plan a scientific enquiry to answer a questions. To be able to report as to the degrees of trust in results.
Year 6- Living things and their Habitats	
To be able to 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. To be able to give reasons for classifying plants and animals based	To be able to make a key to classify plants. To be able to identify scientific evidence that has been used to support or refute ideas or arguments.

on specific characteristics.	