Science

	Reception	Year 1	Year 2
Vocabulary	Science, look closely, observe, watch, touch, feel, smell, listen, same, different, sort, ask questions, tree, bush, animals, big, small, jungle, desert, pole, rough, smooth, soft, hard, material, float, sink, slow, fast, sound	Compare, group, changes, identify, measure, record results, investigate, equipment, leaf, flower, fruit, berry, root, stem, trunk, bark, stalk, head, body, eyes, ears, mouth, nose, teeth, leg, tail, wing, scales, fin, feathers, fur, beak, paws, claws, weather, sunny, snow, rain, wind, autumn, spring, summer, winter, wood, plastic, metal, glass, waterproof, absorbent,	Patterns, data, pattern seeking, classifying, researching, light, shade, grow, healthy, bulb, germinate, shoot, seedling, living, dead, food chain, shelter, survive, micro-habitat, offspring, hygiene, germs, disease, opaque, transparent, translucent, flexible, reflective,
Working Scientifically	• Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions • Make comments about what they have heard and ask questions to clarify their understanding • 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 • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	• Use everyday language/begin to use simple scientific words to ask or answer a scientific question. • Begin to say what might happen in an investigation. • Observe objects, materials and living things and describe what they see • Use simple, nonstandard equipment and measurements in a practical task • Sort and group objects, materials and living things, with help, according to simple observational features. • Follow instructions to complete a simple test individually or in a group. • Begin to record simple data. • Talk about their findings and explain what they have found out. • Explain, with help, what they think they have found out. • Use every day or simple scientific language to ask and/or answer a question on given data.	• Suggest ideas, ask simple questions and know that they can be answered/investigated in different ways including simple secondary sources, such as books and video clips • Begin to make predictions • Observe something closely and describe changes over time. • Use simple equipment, such as hand lenses or egg timers to take measurements, make observations and carry out simple tests. • Decide, with help, how to group materials, living things and objects, noticing changes over time and beginning to see patterns • Do things in the correct order when performing a simple test and begin to recognise when something is unfair. • Gather data, record and talk about their findings, in a range of ways, using simple scientific vocabulary. • Use simple scientific language to explain what they have found out. • Identify simple patterns and/or relationships using simple comparative language.

Biology	• Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. • Explore the natural world around them, making observations and drawing pictures of animals and plants.	• Identify and name a variety of common wild (poppy, daisy, clover, dandelion) • Identify garden plants (tulips, sunflower, roses, daffodil) • Identify deciduous (acorn, horse chestnut, maple elm, oak) map and evergreen trees (fir, scots pine, cedar) • Identify and describe the basic structure (root, stem, petal, flower)of a variety of common flowering plants (rose, tulip, lily) • Identify and name the roots, trunk, branches and leaves of trees. • To know who Beatrix Potter was, when she was born/died, what she did for science. • Identify, name, draw and label the basic parts of the human body • To say which part of the body is associated with each sense • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • Identify and name a variety of common animals that are carnivores, herbivores and omnivores • To know who Chris Packham is, when he was born, what he does for science	• Know that plants may grow from either seeds or bulbs and that these can germinate and then grow into seedlings and then continue to grow into mature plants. • Knows that mature plants may have flowers which then develop into seeds, berries and fruits • Find out and describe how plants need water, light and warmth to grow and stay healthy. • know that seeds and bulbs need to be planted at particular times of the year and will germinate and grow at different rates • To know who Agnes Arber was, when she was born/died, what she did for science. • Know that animals, including humans, have offspring which grow into adults and know the basic stages in a life cycle for animals, including humans. • Find out 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. • Understand how humans change over time • To know who Steve Irwin was, when he was born/died, what he did for science. • Explore and compare the difference 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 habitats in our local area • Identify and name a variety of plants and animals in their habitats, including micro habitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food. • To know who Jane Goodall was, when she was born/died, what she did for science.

Chemistry	• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	• Identify and name a variety of everyday materials, fabric, ceramics, wood, metal, plastic, glass, water and rock, • Distinguish between and object and the material from which it is made. • 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 properties • To know who Charles Mackintosh is, when he was born/died, what he did for science	• Identify materials (wood, metal, rock, paper, cardboard, plastic, glass) • 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 shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. • To know who William Addis was, when he was born/died, what he did for science.
Physics	• 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.	• Observe changes across the four seasons • Knows that days are longer in summer (sunshine house) than winter • Knows what the features of autumn are and what happens to trees in this season • Know when each of the four seasons occurs (spring, summer, autumn, winter)	
Themes	Floating and Sinking Materials – The Three Little Pigs Parts of the Body Melting Habitats – minibeasts, under the sea Oral hygiene	Working Scientifically Plants Animals Including Humans Seasonal Changes Everyday Materials	Working Scientifically Living Things and their Habitats Plants Animals Including Humans Use of Everyday Materials
Enrichment	What's Under Your Feet day three times a year. Green day – plant hunt, pond dipping Science week WOW days – STEM LINKS Use of outdoor environment Cross curricular opportunities – maths, English, art, DT	What's Under Your Feet day three times a year. Science week Green day – plant hunt, pond dipping WOW days – STEM LINKS Use of outdoor environment Cross curricular opportunities – maths, English, art, DT	What's Under Your Feet day three times a year. Science week Green day – plant hunt, pond dipping WOW days – STEM LINKS Use of outdoor environment Cross curricular opportunities – maths, English, art, DT

	Year 3	**Year 4**	**Year 5**	**Year 6**
Vocabulary	Fair testing, timer, estimate, diagram, findings, conclusion, photosynthesis, pollen, pollination, seed formation/dispersal, nutrients, minerals, soil, absorb, transport, carbohydrates, protein, minerals, fibre, bones, muscles, skull, ribs, spine, fossil, magnetic force, attract, repel, light source, reflect, force, vibration, pitch, volume,	Relationships, thermometer, reason, improve, human impact, hibernate, migrate, herbivore, carnivore, omnivore, puberty, solid, liquid, gas, melting, freezing, condensation, evaporation, battery, electrical, insulator, conductor, circuit, bulb, switch, buzzer, motor,	Variables, argument, accuracy, life-cycle, reproduce, asexual, sperm, fertilises, metamorphosis, thermal insulator/ conductor, mixture, dissolve, solution, filter, reversible/non-reversible change, gravity, air resistance, mechanism, planets, solar system, orbit, rotate,	Justify, precision, ferns, conifers, vertebrates, fish, amphibians, reptiles, birds, mammals, warm/cold blooded, invertebrates, insects, pulse, blood vessels, oxygen, carbon dioxide, circulatory system, lifestyle, species, adapted, inherited, evolution, hemispheres, light rays, voltage,
Working Scientifically	• Use ideas to pose questions, independently, about the world around them. • Make predictions and begin to give a reason. • Make decisions about what to observe during an investigation. • Take accurate measurements using standard units. • Talk about criteria for grouping, sorting and categorising, beginning to see patterns and relationships. • Discuss enquiry methods and describe a fair test • Record their findings using scientific language and present in note form, writing frames, diagrams, tables and charts. • Draw, with help, a simple conclusion based on evidence from an enquiry or observation. • Gather, record and use data in a variety of ways to answer a simple question.	• Suggest relevant questions and know that they could be answered in a variety of ways, including using secondary sources such as ICT. • Answer questions using straight forward scientific evidence. • Make predictions and give a reason using simple scientific vocabulary. • Make systematic and careful observations. • Take accurate measurements using standard units and a range of equipment, including thermometers and data loggers. • Identify similarities/ differences/changes when talking about scientific processes. • Use and begin to create simple keys. • Make decisions about different enquiries, including recognising when a fair test is necessary and begin to identify variables. • Choose appropriate ways to record and present information, findings and	• Raise different types of scientific questions, and hypotheses. • Make predictions and give a reason using scientific vocabulary. • Plan and carry out comparative and fair tests, making systematic and careful observations. • Take measurements using a range of scientific equipment with increasing accuracy and precision. • Use and develop keys to identify, classify and describe living things and materials. • Plan a range of science enquiries, including comparative and fair tests. • Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar and line graphs and models. • Use a simple mode of communication to justify their conclusions on a hypothesis. • Begin to recognise how scientific ideas change over time. • Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.	• Pose/select the most appropriate line of enquiry to investigate scientific questions. • Make predictions and give a reason using scientific vocabulary. • Base predictions on findings from previous investigations • Make their own decisions about which observations to make, using test results and observations to make predictions or set up further comparative or fair tests. • Choose the most appropriate equipment in order to take measurements, explaining how to use it accurately. • Decide how long to take measurements for, checking results with additional readings. • Identify and explain patterns seen in the natural environment. • Select and plan the most suitable line of enquiry, explaining which variables need to be controlled and why, in a variety of comparative and fair tests.

		conclusions for different audiences (e.g. displays, oral or written explanations). • Use recorded data to make predictions, pose new questions and suggest improvements for further enquiries. • Identify, with help, changes, patterns, similarities and differences in data to help form conclusions. • Use scientific evidence to support their findings.		• Choose the most effective approach to record and report results, linking to mathematical knowledge. • Identify validity of conclusion and required improvement to methodology. • Discuss how scientific ideas develop over time • Identify and explain causal relationships in data and identify evidence that supports or refutes their findings, selecting fact from opinion.
Biology	• Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers • Explore the part flowers play in a flowering plants life cycle, including: pollination, seed formation and seed dispersal • Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants • Know the way in which water is transported between plants • To know who Jan Ingenhousz is, when he was born/died, what he did for science • Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat.	• Identify and name parts of the human digestive system (mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus) • Explain and model the functions of the digestive system (mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus) • Identify the types of teeth humans have (incisor, canine, molar) • Explain the functions of different types of teeth (incisor, canine, molar) • Interpret food chains (herbivore, carnivore, omnivore) • Construct food chains (herbivore, carnivore, omnivore) • To know who Ivan Pavlov is, when he was born/died, what he did for science • Recognise that living things can be grouped in a variety of ways • Research living things	• Describe the changes as humans develop to old age. • Know the life cycle of different living things, Mammal, amphibian, insect, bird, fish • Know the differences between different life cycles • Plants can be divided broadly into two main groups – flowering plants and nonflowering plants. • Know the process of reproduction in plants • Know the process of reproduction in animals • To know who David Attenborough is, when he was born, what he does for science • 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. • Knows that bulbs, tubers, runners and plantlets are examples of plant reproduction involving only one parent	• Know about evolution and can explain what it is. • Know how fossils can be used to find out about the past. • 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 • 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 know who Charles Darwin is, when he was born/died, what he did for science • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.

	• Know about the importance of a nutritious, balanced diet. • Know how nutrients, water and oxygen are transported within animals and humans • To know who Marie Curie is, when she was born/died, what she did for science	• Group living things in a variety of ways • Create a classification key • Recognise potential threats to environments • Describe environmental dangers to endangered species • To know who Jacques Cousteau is, when he was born/died, what he did for science	• To know who Liz Bonnin is, when she was born, what she did for science	• 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. • To know who Justus von Liebig is, when he was born/died, what he did for science • Living things can be formally grouped according to characteristics. • Animals can be divided into two main groups – vertebrates and invertebrates. • Know that each group (vertebrates and invertebrates) have common characteristics • To know who Carl Linnaeus is, when he was born/died, what he did for science
Chemistry		• Knows how to distinguish between a solid, liquid and gas. • Knows that some materials change state when they are heated or cooled. • Knows the temperatures at which ice, water and water vapour change state. • Knows the part played by evaporation and condensation in the water cycle. • To know who Anders Celcius was, when he was born/died, what he did for science	• Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • 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. • To know who Ruth Benerito is, when she was born/died, what she did for science • 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. • Give reasons based on evidence from comparative and fair tests, for the particular uses of everyday materials, including wood, metals 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 this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda • To know who Arthur Fry is, when he was born, what he did for science	
Physics	• Compare how things move on different surfaces. • Know how a simple pulley works and use making lifting an object simpler • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract and repel each other and attract some materials and not others. • Describe magnets as having two poles. • 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.	• Identify common appliances (hair dyer, microwave, washing machine, kettle) that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, (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 the circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and	• Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object and the impact of gravity on our lives. • Identify the effects of air resistance and friction, which act between moving surfaces. • Identify the effects of water resistance that acts between moving surfaces • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. • To know who Isaac Newton is, when he was born/died, what he did for science	• 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. • Knows the effect of adding more components to a circuit with one cell and the effect of adding multiple cells • Use recognised symbols when representing a simple circuit in a diagram. • To know who Nicola Tesla is, when he was born/died, what he did for science

	• To know who Andre Marie Ampere is, when he was born/died, what he did for science • 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 a solid object. • Find patterns in the way that the sizes of shadows change • To know who James Clerk Maxwell is, when he was born/died, what he did for science • To know that Rock is a naturally occurring material • There are different types of rock (sandstone, limestone, slate) which have different properties • Rocks can be hard or soft. They have different sizes of grain or crystal. • Rocks can be different shapes and sizes (stones, pebbles, boulders) and some absorb water. • Knows, in simple terms, how fossils are formed when things that have lived are trapped within rock.	associate metals with being good conductors. • Know the difference between a conductor and an insulator; giving examples of each. • Safety when using electricity • To know who Thomas Edison was, when he was born/died, what he did for science • Know how sound is made associating some of them with vibrating. • Know what happens to a sound as it travels from its source to our ears. • Know the correlation between the volume of a sound and the strength of the vibrations that produced it. • Know that sounds get fainter as the distance from the source increases. • Know the correlation between pitch and the object producing a sound. • To know who Alexander Graham Bell is, when he was born/died, what he did for science	• 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 • Describe the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. • To know who Helen Sharman is, when she was born, what she did for science	• 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. • Know how simple optical instruments work, (periscope, telescope, binoculars, mirror, magnifying glass) • To know who Percy Shaw is, when he was born/died, what he did for science

	- Knows that soils are made from rocks and organic matter. - To know who Mary Anning is, when she was born/died, what she did for science			
Themes	Working Scientifically Plants Animals Including Humans Light Rocks Forces and Magnets	Working Scientifically Living Things and their Habitats Animals Including Humans States of Matter Sound Electricity	Working Scientifically Living Things and their Habitats Animals Including Humans Properties and Change of Materials Earth and Space Forces	Working Scientifically Living Things and their Habitats Animals Including Humans Evolution and Inheritance Light Electricity
Enrichment	What's Under Your Feet day three times a year. Green day – identifying and classifying plants, pond dipping Science week WOW days – STEM LINKS Use of outdoor environment Cross curricular opportunities – maths, English, art, DT	What's Under Your Feet day three times a year. Green day – identifying and classifying plants, pond dipping Science week WOW days – STEM LINKS Use of outdoor environment Cross curricular opportunities – maths, English, art, DT	What's Under Your Feet day three times a year. Green day – identifying and classifying plants, pond dipping Science week WOW days – STEM LINKS Use of outdoor environment Cross curricular opportunities – maths, English, art, DT	What's Under Your Feet day three times a year. Green day – identifying and classifying plants, pond dipping Science week WOW days – STEM LINKS Use of outdoor environment Cross curricular opportunities – maths, English, art, DT