Science: Key Knowledge and Skills Progression Overview

Science Curriculum Intent

At Marie Weller Primary School, we envision an enriching approach to science education, empowering our children to explore, discover and understand the wonders of the natural world.

Our vision is for children to develop a deep appreciation for Science, recognising its essential role in their lives and in shaping our collective future. Through captivating and hands-on lessons, we create an engaging learning environment that sparks curiosity and nurtures scientific enquiry. Children will explore various scientific disciplines, develop critical thinking skills, and embrace the process of investigation and experimentation.

We strive for excellence in science education, fostering a collaborative and inclusive atmosphere where children and teachers work together as a cohesive team. Our curriculum brings expertise and passion, inspiring children to ask questions, seek answers, and develop a lifelong love for scientific learning.

Furthermore, we aim to actively engage with the wider community. By utilising local resources, we wish to provide enriching experiences and real-world applications of scientific knowledge, connecting children to the world of science.

Through our enriching approach to science education, we empower our children to become scientifically literate, critical thinkers, and problem solvers. We instil in them a sense of wonder, curiosity, and respect for the natural world. Together, we embark on a journey of scientific exploration and discovery, equipping our children with the knowledge, skills, and passion to contribute to a better future for themselves and our global community.

Science Key Concepts

Scientific knowledge and conceptual understanding	Through our curriculum and hands-on activities, we empower children to build a solid foundation of scientific principles, make connections between different disciplines, and apply their understanding to real-world scenarios.
Nature, processes and methods of science	Through engaging lessons and hands-on experiences, children develop a deep understanding of scientific inquiry, experimentation, and the systematic approach to uncovering knowledge about the natural world.
Scientific knowledge	We cultivate a strong foundation of scientific knowledge, empowering children with the understanding of key scientific concepts and principles to navigate the world around them.

Science Key Skills

Asking Questions	We foster a culture of curiosity and critical thinking, encouraging children to ask meaningful questions about the natural world. By developing their questioning skills, children become active participants in the scientific inquiry process, driving their own learning and exploration.
Conducting Experiments	We provide children with opportunities to actively engage in conducting experiments, fostering their skills in hands-on investigation, data collection, and analysis. Through practical experimentation, children develop a deep understanding of scientific methodologies and gain valuable insights into the nature of scientific inquiry.
Practical Enquiry	We prioritise practical enquiry as an essential component of science education. Through hands-on investigations and explorations, children develop essential skills in observation, data collection, analysis, and drawing evidence-based conclusions, fostering their scientific reasoning and critical thinking abilities.
Recording Data	We emphasise the importance of accurately recording data during scientific investigations. Children learn the significance of meticulous data collection, organizing information, and presenting findings in a clear and systematic manner, honing their scientific communication and data analysis skills.
Drawing conclusions	We guide children in the process of drawing evidence-based conclusions from scientific investigations. Through critical analysis of data, children learn to interpret results, identify patterns, and make informed judgments, nurturing their ability to draw meaningful conclusions and develop scientific explanations.
Thinking critically	We foster a culture of critical thinking in our children, empowering them to analyse, evaluate and question scientific information. By developing their critical thinking skills, children become active participants in scientific inquiry, confidently examining evidence, challenging assumptions and forming well-reasoned judgments in their scientific investigations.

	1	2	3	4	5	6
Year R	Topics – Space, Earth and Stephen Hawking, Plants, Weather, How Things Work, Healthy Eating, Seasons (Autumn, Winter, Spring, Summer), All about me, Our Bodies, Light Dark, Animals, The World Ongoing – Seasons, Materials, Weather, Rolling, Magnets, Being Healthy, Cooking with healthy food, Light and Dark, States of Matter, Floating and Sinking, plants, animals Experiences – Spacedome, show and tell linked to topics, local walks, forest school, experiments in the continuous provision, observational drawings					
Year 1	Seasonal Changes – Autumn/Winter Everyday Materials	Seasonal Changes – Autumn/Winter Everyday Materials	Seasonal Changes – Winter/Spring Animals including Humans	Seasonal Changes – Winter/Spring Animals including Humans	Seasonal Changes – Spring/Summer Plants	Seasonal Changes – Spring/Summer Plants
Year 2	Everyday Materials	Animals including Humans – Diet and Health	Living things and their habitats	Living things and their habitats – Habitats around the world	Plants – Growth and care	Animals including Humans - Growth
Year 3	Forces and Magnets	Rocks and soils	Animals including humans	Plants	Light and Shadow	Light and Shadow
Year 4	Animals including Humans	Living things and their habitats – Food and Digestion	Electricity	Sound	States of Matter	Living things and their habitats – Nature and the Environment
Year 5	Properties of Materials	Earth and Space	Forces	Living Things & Their Habitats	Animals Including Humans	
Year 6	Living things and their habitats	Animals including Humans	Light	Electricity	Evolution and inheritance	Scientists and Inventors

Knowledge Progression	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals including humans	UTW 9 – Explore the natural world around them. UTW 10 Describe what they see, hear and feel whilst outside. ELG 6C 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.	1.1.1 Be able to identify and name a variety of common animals including fish, amphibians, reptiles, mammals and birds 1.1.2 Be able to identify and name a variety of common animals that are carnivores, herbivores and omnivores 1.1.3 Be able to describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) 1.1.4 Be able to identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense 1.1.5 To recognise how humans change over time. 1.1.6 Understand what animals need to survive and grow.	**1.2.1 Be able to describe that animals, including humans, have offspring which grow into adults.** 1.2.2 Be able to describe the basic needs of animals, including humans, for survival (water, food and air) 1.2.3 Be able to describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	1.3.1 Be able to 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 1.3.2 Be able to identify that humans and some other animals have skeletons and muscles for support, protection and movement	1.4.1 Be able to describe the simple functions of the basic parts of the digestive system in humans 1.4.2 Be able to identify the different types of teeth in humans and their simple functions 1.4.3 Be able to construct and interpret a variety of food chains, identifying producers, predators and prey	Be able to describe the changes as humans develop to old age - indicate the stages in the growth and development of humans - development of babies in their first year - comparing the changes that take place to boys and girls during puberty - understand changes that take placein old age Record data and results of increasing complexity using bar and line graphs as well as report findings from enquiries - in the context of the growth of babies in height and/or weight during their first year after birth. - in the context of comparing gestation periods and life expectancies of animals	1.6.1 Be able to identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood 1.6.2 Be able to recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function 1.6.3 Be able to describe the ways in which nutrients and water are transported within animals, including humans
Everyday Materials	ELG 6C 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.	**2.1.1 Be able to distinguish objects from materials, describe their properties, identify and group everyday materials** 2.1.2 Be able to distinguish between an object and the material from which it is made 2.1.3 Be able to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock 2.1.4 Be able to describe the simple physical properties of a variety of everyday materials 2.1.5 Be able to compare and group together a variety of everyday materials on the basis of their simple physical properties 2.1.6 Explore magnets in relation to a variety of materials.	**Be able to distinguish objects from materials, describe their properties, identify and group everyday materials and compare their suitability for different uses** **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** **Be able to describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching**			Be able to 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 Be able to recognise that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Be able to use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating 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 Be able to demonstrate that dissolving, mixing and changes of state are reversible changes	

		Vocab **Materials:** hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. brick, paper, fabrics, elastic, foil.				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	
Light	UTW 10 Describe what they see, hear and feel whilst outside. ELG 6C 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.			3.3.1 Be able to recognise that he/she needs light in order to see things and that dark is the absence of light 3.3.2 Be able to notice that light is reflected from surfaces 3.3.3 Be able to recognise that light from the sun can be dangerous and that there are ways to protect eyes 3.3.4 Be able to find patterns in the way that the size of shadows change 3.3.5 To understand it is not safe to look directly at the sun, even when wearing dark glasses			3.6.1 Be able to recognise that light appears to travel in straight lines 3.6.2 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 3.6.3 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 3.6.4 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 3.6.5 Be able to recognise that light can be refracted through prisms. 3.6.6 Be able to understand that white light is made up of a spectrum of colours.
Magnets and forces (Yr 3)	ELG 6C 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.			4.3.1 Be able to compare how things move on different surfaces 4.3.2 Be able to notice that some forces need contact between two objects, but magnetic forces can act at a distance 4.3.3 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 4.3.4 Be able to describe magnets as having two poles 4.3.5 Be able to predict whether two magnets will attract or repel each other, depending on which poles are facing			

Electricity					5.4.1 Be able to identify common appliances that run on electricity 5.4.2 Be able to 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 5.4.3 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 5.4.4 Be able to recognise some common conductors and insulators, and associate metals with being good conductors		5.6.1 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 5.6.2 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 5.6.3 Be able to use recognised symbols when representing a simple circuit in a diagram 5.6.4 Be able to explain how static electricity occurs.
Seasonal changes	UTW 10 Describe what they see, hear and feel whilst outside. UTW12 Understand the effect of changing seasons on the natural world around them ELG 6C 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.	**6.1.1 Be able to observe and describe changes across the four seasons** 6.1.2 Be able to observe and describe weather associated with the seasons and how day length varies 6.1.3 To understand how to be safe in a variety of weathers					

Plants	UTW 10 Describe what they see, hear and feel whilst outside. UTW12 Understand the effect of changing seasons on the natural world around them ELG 6C 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.	7.1.1 Be able to identify and name a variety of common wild and garden plants, including deciduous and evergreen trees 7.1.2 Be able to identify and describe the basic structure of a variety of common flowering plants, including trees 7.1.3 Keep records of how plants have changed over time 7.1.4 Observe the growth of flowers and vegetables that they have planted (Bean diaries)	7.2.1 Be able to describe the basic needs of plants for survival and the impact of changing these and the main changes as seeds and bulbs grow into mature plants 7.2.2 Be able to observe and describe how seeds and bulbs grow into mature plants 7.2.3 Be able to find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	7.3.1 Be able to identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers 7.3.2 Be able to 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 7.3.3 Be able to investigate the way in which water is transported within plants 7.3.4 Be able to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal			
Living things and their habitats	UTW 10 Describe what they see, hear and feel whilst outside. UTW 11 Recognise some environments that are different to the one in which they live ELG 6C 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.		**Be able to identify whether things are alive, dead or have never lived** Be able to explore and compare the differences between things that are living, dead, and things that have never been alive **Be able to name different plants and animals and describe how they are suited to different habitats** 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 Be able to identify and name a variety of plants and animals in their habitats, including micro-habitats 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		8.4.1 Be able to recognise that living things can be grouped in a variety of ways 8.4.2 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 8.4.3 Be able to recognise that environments can change and that this can sometimes pose dangers and have an impact on living things	Be able to describe the life cycles of a mammal, an amphibian, an insect and a bird Be able to describe the life process of reproduction in some plants and animals Be able to describe the differences in life cycles	8.6.1 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 8.6.2 Be able to give reasons for classifying plants and animals based on specific characteristics
Rocks				9.3.1 Be able to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties 9.3.2 Be able to describe in simple terms how fossils are formed when things that have lived are trapped within rock			

				9.3.3 Be able to recognise that soils are made from rocks and organic matter.			
Forces				See Magnets and Forces above		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 Be able to identify the effects of air resistance, water resistance and friction, that act between moving surfaces Be able to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	
Sound					11.4.1 Be able to identify how sounds are made, associating some of them with something vibrating 11.4.2 Be able to recognise that vibrations from sounds travel through a medium to the ear 11.4.3 Be able to find patterns between the pitch of a sound and features of the object that produced it 11.4.4 Be able to find patterns between the volume of a sound and the strength of the vibrations that produced it 11.4.5 Be able to recognise that sounds get fainter as the distance from the sound source increases		
States of matter	ELG 6C 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.				12.4.1 Be able to compare and group materials together, according to whether they are solids, liquids or gases 12.4.2 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) 12.4.3 Be able to identify the part played by evaporation and condensation in the water cycle		

					and associate the rate of evaporation with temperature		
Earth and Space	ELG 6C 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.					Be able to describe the movement of the Earth, and other planets, relative to the Sun in the solar system Be able to describe the movement of the Moon relative to the Earth Be able to describe the Sun, Earth and Moon as approximately spherical bodies 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 understand the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006). To understand a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).	
Evolution and inheritance							14.6.1 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 14.6.2 Be able to recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents 14.6.3 Be able to identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

Famous Scientists	Space – Stephen Hawking		Pupils might find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam. Edward Jenner, Louis Pasteur Prem Singh Gill (Polar Scientist who studies where Antarctic seals live, breed and feed, so we can know more about where they prefer to live) Dawood Qureshi (Marine Biologist who studies wildlife in the ocean) Gregor Mendel .	Rocks – Mary Anning Forces – Sir Isaac Newton		They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall - *discussed in Humanities (Sustainability / Biomes)* They should find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton. Pupils should find out about the way that ideas about the solar system have developed, understanding how the geocentric model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus. Pupils might find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.	15.6.1 Pupils might find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification 15.6.2 Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.

	R	Y1	Y2	Y3	Y4	Y5	Y6
Asking Questions	CL4 - Ask questions to find out more and to check they understand what has been said to them. ELG 1a Listening Attention and Understanding 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. Hold conversations when engaged in back-and-forth exchanges with their teacher and peers. ELG 1b Speaking Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary. Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate. Express their ideas and feelings about their experiences using full sentences, including use of past, present and future tenses and making use of conjunctions, with modelling and support from their teacher.	Asking simple questions and recognising that they can be answered in different ways • While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways • Everyday Materials • Seasonal Changes • Animals, including Humans • Plants	Asking simple questions and recognising that they can be answered in different ways • While exploring the world, the children develop their ability to ask questions (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, they answer these questions. • The children answer questions developed with the teacher often through a scenario. • The children are involved in planning how to use resources provided to answer the questions using different types of enquiry, helping them to recognise that there are different ways • Living things and their Habitats • Plants • Living things and their Habitats around the World • Animals including Humans - Growth	Asking relevant questions and using different types of scientific enquiries to answer them • The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. • The children answer questions posed by the teacher. • Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question.	Asking relevant questions and using different types of scientific enquiries to answer them • The children consider their prior knowledge when asking questions. They independently use a range of question stems. Where appropriate, they answer these questions. • The children answer questions posed by the teacher. • Given a range of resources, the children decide for themselves how to gather evidence to answer the question. They recognise when secondary sources can be used to answer questions that cannot be answered through practical work. They identify the type of enquiry that they have chosen to answer their question. • Food and digestion - Living things and their habitats • Animals including humans • Electricity • Sound • States of matter • Living things and their habitats – Nature and the environment	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. • Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work. • Properties of materials • Forces •	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • Children independently ask scientific questions. This may be stimulated by a scientific experience or involve asking further questions based on their developed understanding following an enquiry. • Given a wide range of resources the children decide for themselves how to gather evidence to answer a scientific question. They choose a type of enquiry to carry out and justify their choice. They recognise how secondary sources can be used to answer questions that cannot be answered through practical work. • Living things and their habitats • Animals including humans/Systems in the Body • Light • Electricity • Evolution and Adaptation
Conducting Experiments	CL8 Use talk to help work out problems to organise thinking and activities, explain how things work and why they might happen. ELG 6C 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,	Observing closely, using simple equipment • Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. • They begin to take measurements, initially by comparisons, then using non-standard units. • Everyday Materials • Seasonal Changes	Observing closely, using simple equipment • Children explore the world around them. They make careful observations to support identification, comparison and noticing change. They use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations. • They begin to take measurements, initially by comparisons, then using non-standard units. • Everyday Materials	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • The children make systematic and careful observations. • They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements.	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • The children make systematic and careful observations. • They use a range of equipment for measuring length, time, temperature and capacity. They use standard units for their measurements. • Animals including humans	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale. • During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • The children select measuring equipment to give the most precise results e.g. ruler, tape measure or trundle wheel, force meter with a suitable scale. • During an enquiry, they make decisions e.g. whether they need to: take repeat readings (fair testing); increase the sample size (pattern seeking); adjust the observation period and frequency (observing over time); or check further secondary sources (researching); in order

	including the seasons and changing states of matter. **Characteristics of Effective Learning - playing and exploring** - children investigate and experience things, and 'have a go'	• Plants	• Animals including Humans – Diet • Living things and their habitats • Habitats around the world • Plants		• Electricity • Sound • States of matter • Living things and their habitats – Nature and the environment	to get accurate data (closer to the true value). • Forces • Properties of materials	to get accurate data (closer to the true value). • Animals including humans/Systems in the Body • Light • Electricity
Practical Enquiry	CL8 Use talk to help work out problems to organise thinking and activities, explain how things work and why they might happen. **Characteristics of Effective Learning - playing and exploring** - children investigate and experience things, and 'have a go'	Performing simple tests • The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. Identifying and classifying • Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting. • They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics • Everyday Materials • Seasonal Changes • Animals, including Humans • Plants	Performing simple tests • The children use practical resources provided to gather evidence to answer questions generated by themselves or the teacher. They carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. Identifying and classifying • Children use their observations and testing to compare objects, materials and living things. They sort and group these things, identifying their own criteria for sorting. • They use simple secondary sources (such as identification sheets) to name living things. They describe the characteristics • Everyday Materials • Animals including Humans – Diet • Living things and their Habitats • Habitats around the world • Plants • Animals including Humans - Growth	Setting up simple practical enquiries, comparative and fair tests • The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. • They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking. **Explanatory note** A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome. A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship.	Setting up simple practical enquiries, comparative and fair tests • The children select from a range of practical resources to gather evidence to answer questions generated by themselves or the teacher. • They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking. **Explanatory note** A comparative test is performed by changing a variable that is qualitative e.g. the type of material, shape of the parachute. This leads to a ranked outcome. A fair test is performed by changing a variable that is quantitative e.g. the thickness of the material or the area of the canopy. This leads to establishing a causative relationship. • Electricity • Sound • States of matter Living things and their habitats – Nature and the environment	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample. • Forces • Properties of materials •	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • The children select from a range of practical resources to gather evidence to answer their questions. They carry out fair tests, recognising and controlling variables. They decide what observations or measurements to make over time and for how long. They look for patterns and relationships using a suitable sample. • Animals including humans/Systems in the Body • Light • Electricity
Recording Data		Gathering and recording data to help in answering questions • The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. • They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs.	Gathering and recording data to help in answering questions • The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. • They record their measurements e.g. using prepared tables, pictograms, tally charts and block graphs.	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 • The children sometimes decide how to record and present evidence. They record their observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They	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 • The children sometimes decide how to record and present evidence. They record their	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • The children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • The children decide how to record and present evidence. They record observations e.g. using annotated photographs, videos, labelled diagrams, observational drawings, labelled scientific diagrams or writing. They record measurements e.g. using tables, tally charts, bar charts, line graphs and scatter

		• They classify using simple prepared tables and sorting rings. • Everyday Materials • Seasonal Changes • Animals, including Humans • Plants	• They classify using simple prepared tables and sorting rings. • Everyday Materials • Animals including Humans – Diet • Living things and their Habitats • Plants • Animals including Humans - Growth	record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. • Children are supported to present the same data in different ways in order to help with answering the question.	observation e.g. using photographs, videos, pictures, labelled diagrams or writing. They record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which they can add headings). They record classifications e.g. using tables, Venn diagrams, Carroll diagrams. • Children are supported to present the same data in different ways in order to help with answering the question. • Electricity • Sound • States of matter	scatter graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys. • Children present the same data in different ways in order to help with answering the question. • Forces • Properties of materials • Animals including humans • Living things and their habitats	graphs. They record classifications e.g. using tables, Venn diagrams, Carroll diagrams and classification keys. • Children present the same data in different ways in order to help with answering the question. • Living things and their habitats • Animals including humans/Systems in the Body • Light • Electricity
Drawing conclusions		Using their observations and ideas to suggest answers to questions • Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. • The children recognise 'biggest and smallest', 'best and worst' etc. from their data. • Everyday Materials • Seasonal Changes • Animals, including Humans • Plants	Using their observations and ideas to suggest answers to questions • Children use their experiences of the world around them to suggest appropriate answers to questions. They are supported to relate these to their evidence e.g. observations they have made, measurements they have taken or information they have gained from secondary sources. • The children recognise 'biggest and smallest', 'best and worst' etc. from their data. • Everyday Materials • Animals including Humans – Diet • Living things and their Habitats • Habitats around the world • Plants • Animals including Humans - Growth	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.the distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.	Using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. The distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry. • Electricity • Sound • States of matter	Using test results to make predictions to set up further comparative and fair tests • Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests. • Properties of materials • Forces •	Using test results to make predictions to set up further comparative and fair tests • Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests. • Living things and their habitats • Animals including humans/Systems in the Body • Light • Electricity

Thinking critically				Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. • Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry.	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • They identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry. • Children use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface. • Following a scientific experience, the children ask further questions which can be answered by extending the same enquiry. • Electricity • Sound • States of matter	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. • They identify any limitations that reduce the trust they have in their data. Using test results to make predictions to set up further comparative and fair tests • Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests. • Forces • Properties of Materials • Animals including humans • Living things and their habitats	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • They evaluate, for example, the choice of method used, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources used. • They identify any limitations that reduce the trust they have in their data. Using test results to make predictions to set up further comparative and fair tests • Children use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests. • Living things and their habitats • Animals including humans/Systems in the Body • Light • Electricity • Evolution and Adaptation
Communicating their findings	CL2 Learn new vocabulary CL8 Use talk to help work out problems to organise thinking and activities, explain how things work and why they might happen.			Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary.	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • They communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary • Food and digestion - Living things and their habitats • Animals including humans • Electricity • Sound • States of matter • Living things and their habitats – Nature and the environment	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • They communicate their findings to an audience using relevant scientific language and illustrations. • Forces • Properties of Material	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • They communicate their findings to an audience using relevant scientific language and illustrations. • Living things and their habitats • Animals including humans/Systems in the Body • Light • Electricity

							• Evolution and Adaptation