ST PETER'S CHURCH OF ENGLAND PRIMARY SCHOOL

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Progression at St Peter's CE Primary School

Subject: Science

		Nursery	Reception	KS1	Lower KS2	Upper KS2	KS3
Knowledge	**Biology** **Living things and their habitats**	Understand the key features of the life cycle of a plant and an animal. Talk about what they see, using a wide vocabulary.	Understand the key features of the life cycle of a plant and an animal. Talk about what they see, using a wide vocabulary.	Can explore and compare the differences between things that are living, dead, and things that have never been alive. Can 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 Can identify and name a variety of plants and animals in their habitats, including micro-habitats.	Can compare how things move on different surfaces. Can notice that some forces need contact between two objects, but magnetic forces can act at a distance. Can observe how magnets attract or repel each other and attract some materials and not others describe magnets as having two poles. Can predict whether two magnets will attract or repel each other,	Can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Can describe the life process of reproduction in some plants and animals. Can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals.	*Cells and organisation* cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope the functions of the cell wall, cell membrane, cytoplasm, nucleus, vacuole, mitochondria and chloroplasts the similarities and differences between plant and animal cells the role of diffusion in the movement of

					depending on which poles are facing. Can 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	Can give reasons for classifying plants and animals based on specific characteristics.	materials in and between cells the structural adaptations of some unicellular organisms the hierarchical organisation of multicellular organisms: from cells to tissues to organs to systems to organisms *Relationships in an ecosystem* the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops the importance of plant reproduction through insect pollination in human food security how organisms affect, and are affected by, their environment,

							including the accumulation of toxic materials
	Vocabulary			Living, dead, never-alive, habitats, sun, grass, healthy, shelter, plants, animals, environment, lifecycles, taste, smell, touch, hearing, sight, tongue, lips, mouth, arms legs, head, teeth, neck, hair.	Amphibians, classify, endangered, flowering plants, sensitivity, movement, growth, reproduction, excretion, respiration, mammals, reptiles, birds, fish. Water cycle, evaporation, condensation, precipitation, steam, solid, liquid, gas, melting, freezing, boiling.	Lifecycle, habitat, mammal, amphibian, insect, fish, bird, differences, sexual, asexual, reproduction. Classify, Linnaean, kingdom, domain, vertebrates, invertebrates, characteristics.	
	Animals including humans	Name different parts of the body and know and talk about the different factors that	Name different parts of the body and know and talk about the different factors that support their overall	Can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Can identify and name a variety of common animals that are carnivores,	Can 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.	Can describe the changes as humans develop to old age. Can identify and name the main parts of the human circulatory system, and describe the functions of	*The skeletal and muscular systems* the structure and functions of the human skeleton, to include support,

		support their overall health and wellbeing.	health and wellbeing.	herbivores and omnivores Can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). Can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of	Can identify that humans and some other animals have skeletons and muscles for support, protection and movement. Can describe the simple functions of the basic parts of the digestive system in humans. Can identify the different types of teeth in humans and their simple functions. Can construct and interpret a variety of food chains, identifying producers, predators and prey	the heart, blood vessels and blood. Can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Can describe the ways in which nutrients and water are transported within animals, including humans.	protection, movement and making blood cells biomechanics – the interaction between skeleton and muscles, including the measurement of force exerted by different muscles the function of muscles and examples of antagonistic muscles *Nutrition and digestion* the content of a healthy human diet: carbohydrates, lipids (fats and oils), proteins, vitamins, minerals, dietary fibre and water, and why each is needed calculations of energy requirements in a healthy daily diet

				different types of food, and hygiene.			the consequences of imbalances in the diet, including obesity, starvation and deficiency diseases the tissues and organs of the human digestive system, including adaptations to function and how the digestive system digests food (enzymes simply as biological catalysts) the importance of bacteria in the human digestive system plants making carbohydrates in their leaves by photosynthesis and gaining mineral nutrients and water from the soil via their roots

							Gas exchange systems the structure and functions of the gas exchange system in humans, including adaptations to function the mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases, including simple measurements of lung volume the impact of exercise, asthma and smoking on the human gas exchange system the role of leaf stomata in gas exchange in plants *Reproduction*

							reproduction in humans (as an example of a mammal), including the structure and function of the male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta reproduction in plants, including flower structure, wind and insect pollination, fertilisation, seed and fruit formation and dispersal, including quantitative investigation of some dispersal mechanisms

							Health the effects of recreational drugs (including substance misuse) on behaviour, health and life processes *Cellular respiration* aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life a word summary for aerobic respiration the process of anaerobic respiration in humans and micro-organisms, including fermentation, and a word summary for anaerobic respiration

							the differences between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organism
	Vocabulary.			Fish, amphibians, reptiles, mammals, birds, carnivores, omnivores, herbivores, offspring, adults, food, exercise, nutrition, baby, child, adult, teenager, toddler, survive, oxygen, nutrients, vitamin, carbohydrates, protein, dairy, vegetables, meat, blood, heart, lungs, muscles.	Invertebrate, vertebrate, skull, cranium, ribcage, mandible, clavicle, spine, femur, sternum, tibia, fibula, radius, ulna, support, move, joints. Protein, fibre, carbohydrates, digestive system, oesophagus, stomach, intestines, rectum, anus, salivary glands, water, vitamins, fats.	Internal organs, blood vessels, heart, veins, capillaries, arteries, diet, lifestyle, exercise, oxygen, haemoglobin. Puberty, life-cycle, gestation, growth, reproduce, foetus, fertilisation, pregnancy, teenager, adulthood, childhood, toddler, old age.	
	Plants	Plant seeds and care for growing plants. Talk about what	Plant seeds and care for growing plants. Talk about what they	Can identify and name a variety of common wild and garden plants, including deciduous and evergreen.	Can identify and describe the functions of different parts of flowering plants: roots,		*Photosynthesis* the reactants in, and products of, photosynthesis, and a

		they see, using a wide vocabulary.	see, using a wide vocabulary.	Can identify and describe the basic structure of a variety of common flowering plants, including trees. Can observe and describe how seeds and bulbs grow into mature plants Can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	stem/trunk, leaves and flowers. Can 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. Can investigate the way in which water is transported within plants. Can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.		word summary for photosynthesis the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere the adaptations of leaves for photosynthesis
	Vocabulary			Deciduous, evergreen, leaf, bud, blossom, roots,	Absorb, air, compare, dispersal, fertilisation, filament, flower, germinate, petal, root,		

				flowers, petals, stems, oxygen, carbon dioxide.	stem, light, nutrient, ovary, germination, seeds, sepals, sigma, style, temperature, pollen.		
	Seasonal changes	Understand the effect of changing seasons on the natural world around them. Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the need to respect and	Understand the effect of changing seasons on the natural world around them. Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the need to respect and care for the natural environment and all living things.	Can observe changes across the four seasons. Can observe and describe weather associated with the seasons and how day length varies			

		care for the natural environment and all living things. Naming plants and animals. Explore Hibernation.	Naming plants and animals. Explore Hibernation.				
	vocabulary			Day, night, summer, winter, deciduous, evergreen, hibernate, storage.			
	Evolution and inheritance					Can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Can recognise that living things produce offspring of the same kind, but normally offspring vary	*Inheritance, chromosomes, DNA and genes* heredity as the process by which genetic information is transmitted from one generation to the next a simple model of chromosomes, genes and DNA in heredity,

						and are not identical to their parents. Can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model differences between species the variation between individuals within a species being continuous or discontinuous, to include measurement and graphical representation of variation the variation between species and between individuals of the same species meaning some organisms compete more successfully, which can drive natural selection changes in the environment which may leave individuals

							within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction the importance of maintaining biodiversity and the use of gene banks to preserve hereditary material
	vocabulary					Evolution, inherited, traits, DNA, natural selection, variation, offspring, environment.	
	Chemistry **Rocks**				Can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Can describe in simple terms how fossils are		*Earth and atmosphere* the composition of the Earth the structure of the Earth the rock cycle and the formation of igneous,

					formed when things that have lived are trapped within rock. Can recognise that soils are made from rocks and organic matter		sedimentary and metamorphic rocks Earth as a source of limited resources and the efficacy of recycling the composition of the atmosphere the production of carbon dioxide by human activity and the impact on climate
	vocabulary				Appearance, properties, rock, igneous, metamorphic, sedimentary, fossils, weathering, erosion.		
	Materials and their properties **Everyday materials**			Can distinguish between an object and the material from which it is made Can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.		Can compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal),	*The particulate nature of matter* the properties of the different states of matter (solid, liquid and gas) in terms of

				Can describe the simple physical properties of a variety of everyday materials. Can compare and group together a variety of everyday materials on the basis of their simple physical properties Can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		and response to magnets. Can name some materials that will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. Can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Can demonstrate that dissolving, mixing and changes of state are reversible changes. Can explain that some changes result in the	the particle model, including gas pressure changes of state in terms of the particle model *Atoms, elements and compounds* a simple (Dalton) atomic model differences between atoms, elements and compounds chemical symbols and formulae for elements and compounds conservation of mass changes of state and chemical reactions Pure and impure substances the concept of a pure substance mixtures, including dissolving

						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	diffusion in terms of the particle model simple techniques for separating mixtures: filtration, evaporation, distillation and chromatography the identification of pure substances *Chemical reactions* chemical reactions as the rearrangement of atoms representing chemical reactions using formulae and using equations combustion, thermal decomposition, oxidation and displacement reactions defining acids and alkalis in terms of neutralisation reactions

							the pH scale for measuring acidity/alkalinity; and indicators reactions of acids with metals to produce a salt plus hydrogen reactions of acids with alkalis to produce a salt plus water what catalysts do The periodic table the varying physical and chemical properties of different elements the principles underpinning the Mendeleev periodic table the periodic table: periods and groups; metals and non-metals how patterns in reactions can be predicted with

							reference to the periodic table the properties of metals and non-metals the chemical properties of metal and non-metal oxides with respect to acidity *Materials* the order of metals and carbon in the reactivity series the use of carbon in obtaining metals from metal oxides properties of ceramics, polymers and composites (qualitative)
	vocabulary			Wood, metal, plastic, squashing, twisting, metal, glass, bending, stretching, absorbent, waterproof, cardboard, properties. hard, soft, dull, stiff, fabric.		Solid, liquid, gas, melt, freeze, reversible, irreversible, rusting, gases, sieving, filtering, solubility, dissolving, thermal,	

						conductor, hard, malleable, ductile, evaporating, transparency, properties, insulation, thermal, hardness.	
	States of matter				Can compare and group materials together, according to whether they are solids, liquids or gases. Can 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). Can identify the part played by evaporation and condensation in the water cycle and associate the rate of		*Energetics* energy changes on changes of state (qualitative) exothermic and endothermic chemical reactions (qualitative) Physical changes conservation of material and of mass, and reversibility, in melting, freezing, evaporation, sublimation, condensation, dissolving similarities and differences, including density differences,

					evaporation with temperature.		between solids, liquids and gases Brownian motion in gases diffusion in liquids and gases driven by differences in concentration the difference between chemical and physical changes Particle model the differences in arrangements, in motion and in closeness of particles explaining changes of state, shape and density; the anomaly of ice-water transition atoms and molecules as particles *Energy in matter* changes with temperature in

							motion and spacing of particles internal energy stored in materials
	vocabulary				Solid, liquid, gas, melt, freeze, evaporate, condense, boil, thermometer, degrees, Celsius		
	Physics **Space**					Can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. Can describe the movement of the Moon relative to the Earth. Can describe the Sun, Earth and Moon as approximately spherical bodies. Can use the idea of the Earth's rotation to explain day and night and the	*Space physics* gravity force, weight = mass x gravitational field strength (g), on Earth g=10 N/kg, different on other planets and stars; gravity forces between Earth and Moon, and between Earth and sun (qualitative only) our sun as a star, other stars in our galaxy, other galaxies

						apparent movement of the sun across the sky.	the seasons and the Earth's tilt, day length at different times of year, in different hemispheres the light year as a unit of astronomical distance
	Vocabulary					Earth, moon, mars, mercury, Venus, mars, Jupiter, Saturn, Uranus, Neptune, planets, rotate, axis, spherical, orbit, gravity.	
	Forces and magnets	Explore collections of materials with similar and/or different properties. Talk about the differences	Explore collections of materials with similar and/or different properties. Talk about the differences between materials and		Can compare how things move on different surfaces. Can notice that some forces need contact between two objects, but magnetic forces can act at a distance.	Can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Can identify the effects of air resistance, water resistance and friction,	*Describing motion* speed and the quantitative relationship between average speed, distance and time (speed = distance ÷ time)

		between materials and changes they notice.	changes they notice.		Can observe how magnets attract or repel each other and attract some materials and not others describe magnets as having two poles. Can predict whether two magnets will attract or repel each other, depending on which poles are facing. Can 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.	that act between moving surfaces. Can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	the representation of a journey on a distance-time graph relative motion: trains and cars passing one another *Forces* forces as pushes or pulls, arising from the interaction between 2 objects using force arrows in diagrams, adding forces in 1 dimension, balanced and unbalanced forces moment as the turning effect of a force forces: associated with deforming objects; stretching and squashing – springs; with rubbing and friction between surfaces, with pushing things out of the way;

							resistance to motion of air and water forces measured in newtons, measurements of stretch or compression as force is changed force-extension linear relation; Hooke's Law as a special case work done and energy changes on deformation non-contact forces: gravity forces acting at a distance on Earth and in space, forces between magnets, and forces due to static electricity *Pressure in fluids* atmospheric pressure, decreases with increase of height as

							weight of air above decreases with height pressure in liquids, increasing with depth; upthrust effects, floating and sinking pressure measured by ratio of force over area – acting normal to any surface *Balanced forces* opposing forces and equilibrium: weight held by stretched spring or supported on a compressed surface *Forces and motion* forces being needed to cause objects to stop or start moving, or to change their speed or direction of motion (qualitative only)

							change depending on direction of force and its size
	vocabulary				Forces, attract, repel, gravity, friction, north pole, south pole, opposites.	Gravity, water resistance, friction, pulley, lever, air resistance, mechanism, gear, accelerate, decelerate, balanced, unbalanced.	
	Electricity				Can identify common appliances that run on electricity. Can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a	Can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. Can 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.	*Current electricity* electric current, measured in amperes, in circuits, series and parallel circuits, currents add where branches meet and current as flow of charge potential difference, measured in volts, battery and bulb ratings; resistance, measured in ohms, as the ratio of potential

					complete loop with a battery. Can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Can recognise some common conductors and insulators, and associate metals with being good conductors.	Can use recognised symbols when representing a simple circuit in a diagram.	difference (p.d.) to current differences in resistance between conducting and insulating components (quantitative) *Static electricity* separation of positive or negative charges when objects are rubbed together: transfer of electrons, forces between charged objects the idea of electric field, forces acting across the space between objects not in contact *Magnetism* magnetic poles, attraction and repulsion

							magnetic fields by plotting with compass, representation by field lines Earth's magnetism, compass and navigation the magnetic effect of a current, electromagnets, DC motors (principles only) Calculation of fuel uses and costs in the domestic context comparing energy values of different foods (from labels) (kJ) comparing power ratings of appliances in watts (W, kW) comparing amounts of energy transferred (J, kJ, kW hour) domestic fuel bills, fuel use and costs

							fuels and energy resources *Energy changes and transfers* simple machines give bigger force but at the expense of smaller movement (and vice versa): product of force and displacement unchanged heating and thermal equilibrium: temperature difference between 2 objects leading to energy transfer from the hotter to the cooler one, through contact (conduction) or radiation; such transfers tending to reduce the temperature difference; use of insulators

							other processes that involve energy transfer: changing motion, dropping an object, completing an electrical circuit, stretching a spring, metabolism of food, burning fuels *Changes in systems* energy as a quantity that can be quantified and calculated; the total energy has the same value before and after a change comparing the starting with the final conditions of a system and describing increases and decreases in the amounts of energy associated with movements, temperatures, changes in positions in a field, in elastic

							distortions and in chemical compositions using physical processes and mechanisms, rather than energy, to explain the intermediate steps that bring about such changes
	vocabulary				Appliances, crocodile clips, wire, buzzer, current, insulators, electricity, cell, bulb, conductors, insulators, danger, voltage, shock, battery, charge.	Voltage, circuit, buzzer, cell, bulb, wires, switch, series, parallel, motor, amp.	
	Light				Can recognise that they need light in order to see things and that dark is the absence of light. Can notice that light is reflected from surfaces. Can recognise that light from the sun can be	Can 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. Can explain that we see things because light travels from light sources	*Light waves* the similarities and differences between light waves and waves in matter light waves travelling through a vacuum; speed of light

					dangerous and that there are ways to protect their eyes. Can recognise that shadows are formed when the light from a light source is blocked by a solid object. Can find patterns in the way that the size of shadows change.	to our eyes or from light sources to objects and then to our eyes. Can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	the transmission of light through materials: absorption, diffuse scattering and specular reflection at a surface use of ray model to explain imaging in mirrors, the pinhole camera, the refraction of light and action of convex lens in focusing (qualitative); the human eye light transferring energy from source to absorber, leading to chemical and electrical effects; photosensitive material in the retina and in cameras colours and the different frequencies of light, white light and prisms (qualitative only); differential colour

							effects in absorption and diffuse reflection
	Vocabulary.				Light source, reflect, torch, natural, artificial, shadow, sunlight, opaque, translucent, transparent.	Light source, reflection, shadow, straight line, opaque, translucent, transparent. vision	
	Sound				Can identify how sounds are made, associating some of them with something vibrating. Can recognise that vibrations from sounds travel through a medium to the ear. Can find patterns between the pitch of a sound and features of the object that produced it. Can find patterns between the volume of a		*Observed waves* waves on water as undulations which travel through water with transverse motion; these waves can be reflected, and add or cancel – superposition *Sound waves* frequencies of sound waves, measured in hertz (Hz); echoes, reflection and absorption of sound

					sound and the strength of the vibrations that produced it. Can recognise that sounds get fainter as the distance from the sound source increases		sound needs a medium to travel, the speed of sound in air, in water, in solids sound produced by vibrations of objects, in loudspeakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal the auditory range of humans and animals *Energy and waves* pressure waves transferring energy; use for cleaning and physiotherapy by ultrasound; waves transferring information for conversion to electrical signals by microphone

	vocabulary				Vibrate, ear, sound, pitch, loud, insulate, hammer, percussion, ear drum.		
Skills		performing simple tests observing closely, using simple equipment. Gathering and recording data to help in answering questions. make tables and charts about the weather. Make displays of weather around the world show the seasons changing Using their observations and ideas to suggest answers to questions. asking simple questions and recognising they can be answered in different ways identifying and classifying.		asking simple questions and recognising that they can be answered in different ways observing closely, using simple equipment performing simple tests identifying and classifying using their observations and ideas to suggest answers to questions gathering and recording data to help in answering questions	asking relevant questions and using different types of scientific enquiries to answer them setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests	*Scientific attitudes* pay attention to objectivity and concern for accuracy, precision, repeatability and reproducibility understand that scientific methods and theories develop as earlier explanations are modified to take account of new evidence and ideas, together with the importance of publishing results and peer review evaluate risks

		gathering and recoding data to help in answering questions		recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.	reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations identifying scientific evidence that has been used to support or refute ideas or arguments	*Experimental skills and investigations* ask questions and develop a line of enquiry based on observations of the real world, alongside prior knowledge and experience make predictions using scientific knowledge and understanding select, plan and carry out the most appropriate types of scientific enquiries to test predictions, including identifying independent, dependent and control variables use appropriate techniques, apparatus, and materials during fieldwork and

						laboratory work, paying attention to health and safety make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements apply sampling techniques *Analysis and evaluation* apply mathematical concepts and calculate results present observations and data using appropriate methods, including tables and graphs

						interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions present reasoned explanations, including explaining data in relation to predictions and hypotheses evaluate data, showing awareness of potential sources of random and systematic error identify further questions arising from their results *Measurement* understand and use SI units and IUPAC (International Union of Pure and Applied

						Chemistry) chemical nomenclature use and derive simple equations and carry out appropriate calculations undertake basic data analysis including simple statistical techniques