St. Mewan C.P. School Knowledge and Skills Progression for Science

Year Group	Knowledge	Skills/Working scientifically	Tier 3 Vocabulary	Tier 2 Vocabulary
Nursery/ Reception	The world: children know about similarities and differences in relation to objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and explain why some things occur, and talk about changes. They make observations of plants and explain why some things occur, and talk about changes. Explore and respond to different natural phenomena in their setting and on trips.	Make relevant observations Communicate with others.	Solid, liquid, floating, sinking, waterproof, light, dark, shadow, material, sense, growing, nocturnal, hibernating, hidden, open.	Same, different, animal, plant, observation, change, Autumn, Winter, Summer, Spring, see.
1	**Plants** • P1 identify and name a variety of common wild and garden plants, including deciduous and evergreen trees • • P2 identify and describe the basic structure of a variety of common flowering plants, including trees. **Animals, including Humans** • AH1 identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • AH2 identify and name a variety of common animals that are carnivores, herbivores and omnivores • AH3 describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • AH4 identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **Everyday Materials** • EM1 distinguish between an object and the material from which it is made • EM2 identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • EM3 describe the simple physical properties of a variety of everyday materials • EM4 compare and group together a variety of everyday materials on the basis of their simple physical properties. **Seasonal Changes** • SC1 observe changes across the four seasons	asking simple questions when prompted Make relevant observations performing simple tests, with support identifying and classifying use observations and ideas to suggest answers to questions with prompting suggest how findings could be recorded	Deciduous Carnivores, omnivores, herbivores opaque/transparent.	evergreen, leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem, fish, amphibians, reptiles, birds and mammals, head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth hard/soft; stretchy/stiff; shiny/dull; rough/smooth; waterproof/not waterproof; absorbent/not absorbent; weather, seasons

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	• SC2 observe and describe weather associated with the seasons and how day length varies			
2	**Living Things and their Habitats** · LH1 explore and compare the differences between things that are living, dead, and things that have never been alive · LH2 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 · LH3 identify and name a variety of plants and animals in their habitats, including micro-habitats · LH4 describe how animals obtain their food from plants and other animals, using a simple food chain, and identify and name different sources of food. **Plants** · P1 observe and describe how seeds and bulbs grow into mature plants · P2 find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **Animals including Humans** · AH1 notice that animals, including humans, have offspring which grow into adults · AH2 find out about and describe the basic needs of animals, including humans, for survival (water, food and air) · AH3 describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **Uses of Everyday Materials** · EM1 identify and compare the suitability of a variety of everyday materials, including wood, metal,plastic, glass, brick, rock, paper and cardboard for particular uses · EM2 find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	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	Characteristics , habitat, micro-habitat, environment Germination, survival, reproduction Nutrition, hygiene	seashore, woodland, ocean, rainforest, food chain Seed, bulb, growth, change Exercise wood, metal, plastic, glass, brick, rock, paper and cardboard
3	**Plants** · P1 identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers · P2 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 · P3 investigate the way in which water is transported within plants · P4 explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Animals including Humans**	asking relevant questions when prompted setting up simple practical enquiries, comparative and fair tests	Nutrition, reproduction, seed dispersal, pollination, Nutrition, skeleton. Absence, reflect Attract, repel, poles	Fertiliser, air, light, water, soil, grow, transport Diet, muscles, support Fossil, rock, soil Light, dark, shadow Magnetic, forces, materials

	• AH1 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 • AH2 identify that humans and some animals have skeletons and muscles for support, protection and movement. **Rocks** • R1 compare and group together different kinds of rocks on the basis of appearance and simple physical properties • R2 describe in simple terms how fossils are formed when things that have lived are trapped within rock • R3 recognise that soils are made from rocks and organic matter. **Light** • L1 recognise that they need light in order to see things and that dark is the absence of light • L2 notice that light is reflected from surfaces • L3 recognise that light from the sun can be dangerous and that there are ways to protect their eyes • L4 recognise that shadows are formed when the light from a light source is blocked by a solid object • L5 find patterns in the way that the size of shadows change. **Forces and Magnets** • FM1 compare how things move on different surfaces • FM2 notice that some forces need contact between two objects, but magnetic forces can act at a distance • FM3 observe how magnets attract or repel each other and attract some materials and not others • FM4 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 • FM5 describe magnets as having two poles • FM6 predict whether two magnets will attract or repel each other, depending on which poles are facing.	making systematic observations using simple equipment With prompting, use various ways of recording, grouping and displaying evidence suggest how findings could be reported with prompting, suggest conclusions from enquiries identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings. suggest possible improvements or further questions to investigate		
4	**Living things and their Habitats** • LH1 recognise that living things can be grouped in a variety of ways • LH2 explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • LH3 recognise that environments can change and that this can sometimes pose dangers to living things. **Animals including Humans**	asking relevant questions and using different types of scientific enquiries to answer them	Vertebrate, invertebrates Classify, oesophagus Evaporation, condensation Insulation, medium Components,	fish, amphibians, reptiles, birds, mammals, slugs, worms, spiders, and insects. Digestive system, mouth, tongue,

	• AH1 describe the simple functions of the basic parts of the digestive system in humans • AH2 identify the different types of teeth in humans and their simple functions • AH3 construct and interpret a variety of food chains, identifying producers, predators and prey. **States of Matter** • SM1 compare and group materials together, according to whether they are solids, liquids or gases • SM2 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) • SM3 identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **Sound** • S1 identify how sounds are made, associating some of them with something vibrating • S2 recognise that vibrations from sounds travel through a medium to the ear • S3 find patterns between the pitch of a sound and features of the object that produced it • S4 find patterns between the volume of a sound and the strength of the vibrations that produced it • S5 recognise that sounds get fainter as the distance from the sound source increases. **Electricity** • E1 identify common appliances that run on electricity • E2 construct a simple series circuit, identifying/naming its basic parts, including cell, wire, bulb, switch and buzzer • E3 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 • E4 recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • E5 recognise some common conductors and insulators, and associate metals with being good conductors.	setting up simple practical enquiries, comparative and fair tests making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest	conductors, insulators	teeth, stomach, small and large intestine Solid, liquid, gas Pitch, volume, vibrations Circuit, bulb, lamp, cell, wire, switch, buzzer

		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.		
5	**Living things and their Habitats** • LT1 describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • LT2 describe the life process of reproduction in some plants and animals. **Animals, including Humans** • AIH1describe the changes as humans develop to old age. **Properties and changes of materials** • PM1 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 • PM2 know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • PM3 use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • PM4 give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • PM5 demonstrate that dissolving, mixing and changes of state are reversible changes • PM6 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. **Earth and Space** • ES1 describe the movement of the Earth, and other planets, relative to the Sun in the solar system • ES2 describe the movement of the Moon relative to the Earth	With prompting, plan different types of scientific enquiries to answer questions With prompting, recognise and control variables where necessary Select, with prompting, and use appropriate equipment to take readings Take precise measurements using standard units Take and process repeat readings	Mammal, amphibian, Puberty Dissolve, reversible, irreversible, comparative celestial body, orbits, spherical, gravity, air resistance, friction	Life-cycle, reproduction Growth, development evaporating, filtering, sieving, melting and dissolving, liquid, solid, gas Solar system, day, night, rotate, Levers, pulleys, gears

	• ES3 describe the Sun, Earth and Moon as approximately spherical bodies • ES4 use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. **Forces** • F1 explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • F2 identify the effects of air resistance, water resistance and friction, that act between moving surfaces • F3 recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	Record data and results Record data using labelled diagrams, keys, tables and charts Use line graphs to record data Report and present findings from enquiries, including conclusions and, with prompting, suggest causal relationships With support, present findings from enquiries orally and in writing With prompting, identify that not all results may be trustworthy Suggest how evidence can support conclusions Suggest further comparative or fair test		
6	**Living things and their Habitats** • LTH1 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 • LTH2 give reasons for classifying plants and animals based on specific characteristics. **Animals, including Humans** • AIH1 identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	microorganisms, vertebrates, invertebrates circulatory system, substances, aorta, nutrients offspring, variation,	Similarities, differences, classification skeletal, muscular and digestive system, transported characteristics, fossils, adapted,

	• AIH2 recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • AIH3 describe the ways in which nutrients and water are transported within animals, including humans. **Evolution and Inheritance** • EI1 recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago • EI2 recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • EI3 identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution **Light** • L1 recognise that light appears to travel in straight lines • L2 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 • L3 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 • L4 use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. **Electricity** • E1 associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • E2 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 • E3 use recognised symbols when representing a simple circuit in a diagram.	taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations identifying scientific evidence that has been used to support or	Periscope Voltage, components, variations	light sources, reflection and shadows Circuits, symbols, diagram

		refute ideas or arguments		