HOLLY PRIMARY SCHOOL

Happiness Pride Commitment

Science

Progression of Knowledge

Key substantive and disciplinary knowledge to be taught in each year group.

Holly Primary School

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Progression in substantive knowledge

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	**Cycle A:** Good to be me. **Cycle B:** Super me	**Cycle A:** Wonderful Weather **Cycle B:** Day and Night	**Cycle A:** Dragon Scales and Knight Tales **Cycle B:** Dinosaur Detectives	**Cycle A:** A Pirate's life for me **Cycle B:** On the Farm	**Cycle A:** Ready, Steady, Grow! **Cycle B:** Our Amazing Earth	**Cycle A:** On Safari **Cycle B:** Down in the Jungle
	Animals including humans. Nursery • Know that they have grown and changed from when they were a baby. • Know that they have eyes to see, a nose to smell, ears to listen, a mouth to taste and skin to feel. • Know that they can take care of themselves by washing their hands before eating and after using the toilet or when dirty. • Know that they should brush their teeth twice a day. Reception • Know that they have and will continue to grow and change and name some of the changes. • Know that there are choices we can make which will lead to good growth and health- healthy eating, exercise, drinking water, brushing teeth, caring for feelings and emotions etc. • Know that humans have different body parts and name some. VOCABULARY: Baby, child, adult, elderly, healthy, exercise, eyes, nose, ears, moth, skin, body, grow, change, human	**Seasonal Changes** Nursery • Know that the weather can be described using basic vocabulary such as: rain, sun, cloudy, thunder. • Know that when the weather is cold, I need to wear a coat. • Know that there is a difference between day and night. Reception • Know that the weather changes each day in Forest Town and be able to talk about this. • Know that there are features of seasons – leaves fall off some trees in Autumn, it sometimes snows in Winter etc. • Know that there are changes in the natural world around them. • Know that we can match suitable clothing to associated weather conditions. • Know and describe some differences between day and night. VOCABULARY: Season, weather, rain, sun, cloudy, thunder, autumn, winter, spring, summer, night, day, light, dark, hot, cold	**Materials** Nursery • Know that changes can occur to materials (e.g., ice melting, cake mix setting…) Reception • Know that changes can occur to materials and what might be causing these changes (e.g., ice melting because it is getting warmer, cake mix setting because it has been heated in the oven…) • Know that materials can be combined, and ingredients mixed and notice how they change when cooked. VOCABULARY: Material, freeze, melt, water, ice, heat, change	**Forces** Nursery • Know that there are materials which float and sink. Reception • Know that there are materials which float and sink and begin to discuss why. **Materials** Nursery • Know that some materials are similar/ different and begin to describe them. Reception • Know that there are words to describe different materials e.g., soft, rough, hard, smooth, and waterproof. **Animals including humans/ Living things and their habitats.** Nursery • Know that there are different plants and animals that live in different habitats (e.g., under the sea/ farm animals). Reception • Know that there are different plants and animals that live in different habitats (e.g., under the sea/ farm animals) and begin to explain how these plants/ animals are the same or different. VOCABULARY: Float, sink, soft, rough, hard, smooth, waterproof, animal, plant, habitat, sea, farm	**Plants** Nursery • Know that there are ways to care for growing plants. Reception • Know that there are basic parts of a plant (petals, stem, leaves and roots) • Know that plants grow from seed. • Know that seeds will not grow if they have too much or too little water. **Animals including humans.** Nursery • Know that animals change from when they are a baby and begin to discuss these changes. Reception • Know the life cycles of some animals (e.g., ladybird/ butterfly/ frog/ chicken) **Earth and space** Nursery • Know that we live on the Earth. Reception • Know that the light we see in the sky is called the sun. • Know that it is dangerous to look directly at the sun so we must not do this. • Know that the lights up in the sky at night are called stars. • Know that there are other planets in space as well as the Earth. VOCABULARY: Grow, plant, petals, stem, leaves, roots, seed, life cycle, egg, caterpillar, chrysalis, butterfly, larva, pupa, ladybird, Earth, sun, stars, planets	**Animals including humans/ Living things and their habitats.** Nursery • Know that there are different plants and animals that live in different habitats (e.g., safari/ rainforest) Reception • Know that there are different plants and animals that live in different habitats (e.g., safari/ rainforest) and begin to describe similarities and differences between habitats. • Know and describe different habitats explaining some ways they are the same and different. VOCABULARY: Animal, plant, habitat, same, different, safari, rainforest, jungle, woodland, sea, desert, polar
	Ongoing knowledge throughout the year.					

	• Know and identify some of the trees and plants on our school site. • Know and identify some of the animals in the surrounding natural environment. • Know and observe changes in the natural environment throughout the seasons. • Know that different surfaces make different sounds under our feet. • Know that different materials make different sounds when struck. • Know and identify the direction from which a sound is heard. • Know that there are differences between sounds and identify some (e.g., the sounds that some garden birds make/ the sounds that some vehicles make).

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
KS1 Year 1/2 Cycle A	**Animals including humans 2.** • know that animals, have offspring which grow into adults (examples include eggs, chick, chicken; egg, caterpillar, pupa, butterfly; spawn tadpole, frog; lamb, sheep) • know that animals, including humans, have offspring which grow into adults (baby, toddler, child, teenager, adult). • know and describe the basic needs of animals, including humans, for survival (water, food and air) • know and describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. VOCABULARY: **offspring**, **reproduction**, **growth**, baby, **toddler**, child, **teenager**, adult, old person, names of animals and their babies (e.g. chick/hen, kitten/cat, caterpillar/butterfly), **survive**, **survival**, water, food, **air**, exercise, **heartbeat**, **breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy).** SUGGESTED ENQUIRIES: ➢ How much food and drink do I have over a week? (Observation over time) ➢ Do bananas make us run faster? (Comparative testing) ➢ Which offspring belongs to which animal? (Identifying and classifying) ➢ What do you need to do to look after a pet dog/cat/lizard and keep it healthy? (Research using secondary sources)		**Everyday materials and their uses 1/2** • know the difference between an object and the material from which it is made. • know and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • know the simple physical properties of a variety of everyday materials. • know, compare and group together a variety of everyday materials on the basis of their simple physical properties. • know and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • know how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. VOCABULARY: **Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay,** Year 1 - hard, soft, **stretchy, stiff, bendy, floppy**, waterproof, **absorbent, breaks/tears**, rough, smooth, **shiny, dull, see-through, not see-through** Year 2 (as for Year 1 plus) - **opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching.** SUGGESTED ENQUIRIES: ➢ What happens to materials over time if we bury them in the ground? (Observation over time) ➢ Which materials are the most flexible? (Comparative testing) ➢ How stretchy are these fabrics? (Comparative testing) ➢ What is the best material for a bookshelf? Lining of a dog basket? Leotard? (Comparative testing) ➢ Which materials are shiny, and which are dull? (Identifying and classifying) ➢ Is there a pattern in the types of materials that are used to make objects in school? (Pattern seeking) ➢ Which materials can be recycled? (Research using secondary sources) ➢ How are plastics made? (Research using secondary sources)	**Living things and their habitats 2** • know and compare the differences between things that are living, dead, and things that have never been alive. • know that most living things live in habitats to which they are suited. • know how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • know about animals that live in less familiar habitats, for example on the seashore, in woodland, in the ocean, in the rainforest, and compare with animals in familiar habitats. • know, identify and name a variety of plants and animals in their habitats, including microhabitats. • know 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. VOCABULARY: **living, dead, never been alive, suited, suitable, basic needs,** food, **food chain, shelter**, move, **feed**, water, air, **survive, survival,** habitat**, microhabitat, names of local habitats (e.g. pond,** woodland**, forest, desert etc.), names of micro-habitats (e.g. under logs/stones, in bushes, in the soil etc.), conditions**, light, dark, **shady**, sunny, **wet, damp, dry**, hot, cold. SUGGESTED ENQUIRIES: ➢ How do the types of conditions in a habitat affect how many plants/animals that live there? (Observation over time) ➢ How does the school forest area change over the year? (Observation over time) ➢ How would you group these plants and animals based on what habitat you would find them in? (Identifying and classifying) ➢ How would you group things to show which are living, dead, or have never been alive? (Identifying and classifying) ➢ Which habitat do worms prefer – where can we find most worms? (Pattern seeking) ➢ How does a cactus survive in a desert with no water? (Research using secondary sources)		**Plants 2** • know, observe and describe how seeds and bulbs grow into mature plants. • know how plants grow throughout the year. • know and describe how plants need water, light and a suitable temperature to grow and stay healthy. VOCABULARY: **light, shade**, Sun, **warm, cool**, water, **space**, grow, healthy, **bulb, germinate, shoot, seedling.** SUGGESTED ENQUIRIES: ➢ How do a variety of plants change over time? (Observation over time) ➢ What happens to my bean after I have planted it? (Observation over time) ➢ Do cress seeds grow quicker inside or outside? (Comparative testing) ➢ Do plants grow better in the light or dark? (Comparative testing) ➢ Do plants grow better with or without water? (Comparative testing) ➢ Do bigger seeds grow into bigger plants? (Pattern seeking) ➢ Do the biggest apples have the most seeds? (Pattern seeking)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
KS1 Year 1/2 Cycle B	**Everyday materials 1** **Everyday materials and their uses 1/2** • know the difference between an object and the material from which it is made. • know and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • know the simple physical properties of a variety of everyday materials. • know, compare and group together a variety of everyday materials on the basis of their simple physical properties. • know and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. • know how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. VOCABULARY: **Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay,** Year 1 - hard, soft, **stretchy, stiff, bendy, floppy**, waterproof, **absorbent, breaks/tears**, rough, smooth, **shiny, dull, see-through, not see-through** Year 2 (as for Year 1 plus) - **opaque, transparent and translucent, reflective, non-reflective, flexible, rigid** **Shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching.** SUGGESTED ENQUIRIES: ➢ Would a paper boat float forever? (Observation over time) ➢ Which shapes make the strongest paper bridge? (Comparative testing) ➢ Which materials are the most absorbent? (Comparative testing) ➢ We need to choose a material to make an umbrella. Which materials are waterproof? (Identifying and classifying) ➢ Which materials will float, and which will sink? (Identifying and classifying) ➢ How are materials used differently in different places? (School, home, journey to school) (Identifying and classifying) ➢ How are bricks made? (Research using secondary sources) ➢ How have the materials we use changed over time? (Research using secondary sources		**Seasonal changes 1** • know and observe changes across the 4 seasons. • know, observe and describe weather associated with the seasons. • know and observe how day length varies across the seasons. VOCABULARY: weather, sunny, rainy, raining, **shower**, **windy**, snowy, cloudy, hot, **warm**, cold, **storm**, thunder, l**ightning**, **hail, sleet,** snow, **icy, frost, puddles, rainbow**, seasons, winter, summer, spring, autumn, Sun, **sunrise, sunset, day length** SUGGESTED ENQUIRIES: ➢ How does the length of daytime change throughout the seasons? (Observation over time) ➢ In which season does it rain the most? (Comparative testing/Pattern seeking) ➢ How would you group these things based on which season you are most likely to see them in? (Identifying and classifying) ➢ Does the wind always blow the same way? (Pattern seeking) ➢ Are there plants that are in flower in every season? What are they? (Research using secondary sources)	**Animals including humans 1.** • know and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • know and name a variety of common animals that are carnivores, herbivores and omnivores. • know, describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) • know, name, draw and label the basic parts of the human body (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth). • know which part of the body is associated with each sense: ears – hearing, eyes – sight, nose – smell, hands – touch, tongue – taste. VOCABULARY: head, neck, arms, elbows, legs, knees, face, body, eyes, ears, mouth, teeth, leg**, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ear, tongue** SUGGESTED ENQUIRIES: ➢ How does my height change over the year? (Observation over time) ➢ How can we organise all the zoo animals? (Identifying and classifying) ➢ How can you group the animals according to what they eat? (Identifying and classifying) ➢ How are the animals in Australia (or other country) different to the ones we find in Britain? (Research using secondary sources)	**Plants 1** • know, identify and name a variety of common wild and garden plants. • know, identify and name deciduous and evergreen trees. • know, identify and describe the basic structure of a variety of common flowering plants, including trees. • know, identify and describe the parts of a plant including leaves, flowers (blossom), petals fruit, roots, bulb, seed, stem. • know, identify and name the parts of a tree including roots, trunk, branches, leaves. VOCABULARY: Leaf, flower, **blossom**, petal, **fruit, berry**, root, seed, **trunk, branch**, stem, **bark, stalk, bud** **Names of trees in the local area.** **Names of gardens and wild flowering plants in the local area.** SUGGESTED ENQUIRIES: ➢ How does a daffodil bulb change over the year? (Observation over time) ➢ How does my sunflower change each week? (Observation over time) ➢ Which type of compost grows the tallest sunflower? (Comparative testing) ➢ Which tree has the biggest leaves? (Comparative testing) ➢ How does the amount of water affect how the seedlings grow? (Fair testing) ➢ How can we sort the leaves that we collected on our walk? (Identifying and classifying) ➢ Do trees with bigger leaves lose their leaves first in autumn? (Pattern seeking) ➢ What are the most common British plants and where can we find them? (Research using secondary sources)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
LKS2 Year 3/4 Cycle A	**Animals including humans 3.** • know that animals, including humans, need the right types and amount of nutrition. • know that animals including humans cannot make their own food; they get nutrition from what they eat. • know the importance of a nutritious, balanced diet. • know about the different food groups (including carbohydrates, protein, fat, fibre, vitamins and minerals, fruit and vegetables, water) • know and group animals with and without skeletons and observe and compare their movement. • know that humans and some other animals have skeletons and muscles for support, protection and movement. VOCABULARY: **Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat**, water, **skeleton**, bones, **muscles, joints, support, protect,** move**, skull, ribs, spine.** SUGGESTED ENQUIRIES: ➢ How does the skull circumference of a girl compare with that of a boy? (Comparative testing) ➢ How can we group the food that we eat? (Identifying and classifying) ➢ Which of these animals have skeletons and which do not? (Identifying and classifying) ➢ What do common pets eat and how do these foods compare? (Identifying and classifying) ➢ Why do different types of vitamins keep us healthy, and which foods can we find them in? (Research using secondary sources)	**Light 3** • know that light is needed in order to see things. • know that dark is the absence of light. • know and notice that light is reflected from surfaces. • know and name natural and artificial light sources. • know that light from the sun can be dangerous and that there are ways to protect their eyes. • know that shadows are formed when the light from a light source is blocked by an opaque object. • know that there are patterns in the way that the size of shadows change. VOCABULARY: light, **light source**, Sun, sunlight, dangerous, dark, **absence of light**, transparent, translucent, opaque, shadow, **reflect**, mirror**, natural, artificial.** SUGGESTED ENQUIRIES: ➢ Is the Sun the same brightness all day? (Observation over time) ➢ When is our classroom the darkest? (Observation over time) ➢ How does the number of layers of transparent plastic affect how much light can pass through? (Fair testing) ➢ How would you sort these light sources into natural and artificial light sources? (Identifying and classifying) ➢ What happens to shadows when the light source moves? (Pattern seeking) ➢ How does the Sun make light? (Research using secondary sources)	**Rocks 3** • know about different kinds of rocks and compare and classify them on the basis of their appearance and simple physical properties. • know the difference between sedimentary, metamorphic and igneous rocks and how they are formed. • know (in simple terms) how fossils are formed when things that have lived are trapped within rock. • know that soils are made from rocks and organic matter. VOCABULARY: rock, stone, pebble, **boulder, grain, crystals, layers,** hard, soft, **texture, absorb water, fossil**, bone, **flesh, minerals, marble, chalk, granite, sandstone, slate, soil, types of soil (e.g., peaty, sandy, chalk, clay)** SUGGESTED ENQUIRIES: ➢ What happens when water keeps dripping on a sandcastle? (Observation over time) ➢ How does tumbling change a rock over time? (Observation over time) ➢ Which soil absorbs the most water? (Comparative testing) ➢ How does adding different amounts of sand to soil affect how quickly water drains through it? (Fair testing) ➢ Can you use the identification key to find out the name of each of the rocks in your collection? (Identifying and classifying) ➢ Is there a pattern in where we find volcanoes on Earth? (Pattern seeking) ➢ Who was Mary Anning and what did she discover? (Research using secondary sources)	**Forces and magnets 3** • know and compare how things move on different surfaces • know that some forces need contact between 2 objects • know that magnetic forces can act at a distance • know and observe how magnets attract or repel each other • know that magnets attract some materials and not others • know the names of, compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, • know and identify some magnetic materials • know that magnets have 2 poles • know, after predicting, whether 2 magnets will attract or repel each other, depending on which poles are facing VOCABULARY: **Force,** push, pull, twist, **contact force, non-contact force, magnetic force,** magnet, strength, **bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole** SUGGESTED ENQUIRIES: ➢ If we magnetise a pin, how long does it stay magnetised for? (Observation over time) ➢ Which magnet is strongest? (Comparative testing) ➢ How long does a spinning top turn on different surfaces? (Comparative testing) ➢ How does the mass of an object affect how much force is needed to make it move? (Fair testing) ➢ Which materials are magnetic? (Identifying and classifying) ➢ Does the size and shape of a magnet affect how strong it is? (Pattern seeking) ➢ How have our ideas about forces changed over time? (Research using secondary sources) ➢ How does a compass work? (Research using secondary sources	**Plants 3** • know and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • know 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 • know and describe the way in which water is transported within plants • know the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal VOCABULARY: **photosynthesis, pollen, insect/wind pollination,** male, female, **seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal**), air, **nutrients, minerals**, soil, **absorb, transport** SUGGESTED ENQUIRIES: ➢ How do flowers in a vase change over time? (Observation over time) ➢ What happens to celery when it is left in a glass of coloured water? (Observation over time) ➢ Which conditions help seeds germinate quicker? (Comparative testing) ➢ How does the length of a carnation stem affect how long it takes for the food colouring to dye the petals? (Fair testing) ➢ How many ways can you group our seed collection? (Identifying and classifying) ➢ What colour flowers do pollinating insects prefer? (Pattern seeking) ➢ What are all the different ways that seeds disperse? (Research using secondary sources)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
LKS2 Year 3/4 Cycle B	**Sound 4** • know and identify how sounds are made, associating some of them with something vibrating. • know that vibrations from sounds travel through a medium to the ear. • know that there are patterns between the pitch of a sound and features of the object that produced it. • know that there are patterns between the volume of a sound and the strength of the vibrations that produced it. • know that sounds get fainter as the distance from the sound source increases. VOCABULARY: Sound, **source, vibrate, vibration, travel, pitch (high, low), volume, faint,** quiet, loud, **insulation**, ear, **particles**, instruments, **wave.** SUGGESTED ENQUIRIES: ➢ When is our classroom quietest? (Observation over time) ➢ Which material is best to sue for muffling sound in ear defenders? (Comparative testing) ➢ How does the volume of a drum change as you move further away from it? (Fair testing) ➢ Do animals have the same hearing range? (Research using secondary sources) ➢ Since the 1800s, how has science helped people who are deaf? (Research using secondary sources)	**States of matter 4** • know and name examples of solids, liquids and gases. • know that materials can be compared and grouped together, according to whether they are solids, liquids or gases. • know that some materials change state when they are heated or cooled. • know (through measuring or researching) the temperature at which materials change state when they are heated or cooled in degrees Celsius (°C) • know the part played by evaporation and condensation in the water cycle. • know and associate the rate of evaporation with temperature. VOCABULARY: solid, liquid, gas, **particles**, **heating, cooling,** material, **state, state change,** melting, freezing, **melting point**, boiling, **boiling point**, **evaporation, condensation, water vapour, precipitation**, temperature, **water cycle**, water, ice, **process,** SUGGESTED ENQUIRIES: ➢ How does the mass of an ice cube change over time? (Observation over time) ➢ How does the level of water in a glass change when left on the windowsill? (Observation over time) ➢ Which material is best for keeping our hot chocolate warm? (Observation over time) ➢ Does seawater evaporate quicker than fresh water? (Comparative testing) ➢ How does the mass of a block of ice affect how long it takes to melt? (Fair testing) ➢ Can you group these materials and objects into solids, liquids and gases? (Identifying and classifying) ➢ Is there a pattern in how long it takes different sized ice lollies to melt? (Pattern seeking)	**Living things and their habitats 4** • know that living things can be grouped in a variety of ways • know how classification keys work • know-how and use classification keys to help group, identify and name a variety of living things in their local and wider environment • know that environments can change and that this can sometimes pose dangers to living things VOCABULARY: **Classification, classification keys**, **environment**, habitat, **human impact, positive, negative**, **migrate, hibernate**, plants, animals, vertebrates, **invertebrates**, mammals, fish, amphibians, reptiles, birds, **nature reserves, deforestation, urbanisation** SUGGESTED ENQUIRIES: ➢ Can we use classification keys to identify all the animals that we caught pond dipping? (Identifying and classifying) ➢ How has the use of pesticides affected bee population? (Pattern seeking) ➢ Why are people cutting down the rainforests and what effect does that have? (Research using secondary sources)	**Animals including humans 4** • know and describe the simple functions of the basic parts of the digestive system in humans (mouth, tongue, teeth, oesophagus, stomach, small and large intestine) • know the different types of teeth in humans (incisors, canines, premolars and molars) and their simple functions • know and compare the teeth of carnivores and herbivores and suggest reasons for their differences • know about producers, predators and prey and construct and interpret a variety of food chains VOCABULARY: **Digestive system, digestion**, mouth, teeth, **saliva, oesophagus, stomach, small intestine**, nutrients, **large intestine, rectum, anus,** tooth, teeth, **incisor, canine, molar, premolars**, herbivore, carnivore, omnivore, **producer, consumer, predator, prey, food chain** SUGGESTED ENQUIRIES: ➢ How does an eggshell change when it is left in cola? (Observation over time) ➢ What are the names for all of the organs involved in the digestive system? (Identifying and classifying) ➢ How can we organise teeth into groups? (Identifying and classifying) ➢ Are foods high in energy always high in sugar? (Pattern seeking) ➢ How do dentists fix broken teeth? Research using secondary sources)	**Electricity 4** • know common appliances that run on electricity • know the basic parts of an electrical circuit including cells, wires, bulbs, switches and buzzers. • know how to construct a simple series electrical circuit, identifying and naming its basic parts • know 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 • know that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • know some common conductors and insulators, and associate metals with being good conductors • know how to work safely with electricity. VOCABULARY: Electricity, **electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip,** bulb, switch, **buzzer, motor, conductor, insulator**, metal, **non-metal, symbol** SUGGESTED ENQUIRIES: ➢ Which metal is the best conductor of electricity? (Comparative testing) ➢ How does the thickness of a conducting material affect how bright the lamp is? (Fair testing) ➢ How would you group these electrical devices based on where the electricity comes from? (identifying and classifying) ➢ Which room has the most electrical sockets in a house? (Pattern seeking) ➢ How has electricity changed the way we live? (Research using secondary sources) ➢ How does a light bulb work? (Research using secondary sources)

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
UKS2 Year 5/6 Cycle A	**Properties and changes of materials 5** • know that everyday materials can be compared and grouped together on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal) • know that everyday materials can be compared and grouped together on the basis of their response to magnets • know that some materials will dissolve in liquid to form a solution, and know how to recover a substance from a solution • know how mixtures might be separated, including through filtering, sieving and evaporating, using knowledge of solids, liquids and gases • know and give examples of the particular uses of everyday materials, including metals, wood and plastic and give reasons, based on evidence from comparative and fair tests • know that dissolving, mixing and changes of state are reversible changes • know that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including burning and the action of acid on bicarbonate of soda VOCABULARY: Solid, liquid, gas, particles, state, materials, properties, **matter**, **thermal/electrical insulator/conductor**, **change of state, mixture**, evaporate, **dissolve, solution, soluble, insoluble, suspension, filter, sieve, reversible/irreversible change, chemical, physical**, burning, **rusting, new material, property**, hardness, **solubility, transparency, conductivity, magnetic.** SUGGESTED ENQUIRIES: ➢ How does a nail in salt water change over time? (Observation over time) ➢ How does a container of salt water change over time? (Observation over time) ➢ How does a sugar cube change as it is put in a glass of water? (Observation over time) ➢ Which type of sugar dissolves the fastest? (Comparative testing) ➢ How does the temperature of tea affect how long it takes for a sugar cube to dissolve? (Fair testing)	**Light 6** • know that light appears to travel in straight lines • know and explain that objects are seen because they give out or reflect light into the eye • know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • know and explain why shadows have the same shape as the objects that cast them VOCABULARY: light, light source, Sun, sunlight, dangerous, dark, absence of light, transparent, translucent, opaque, shadow, reflect, mirror, natural, artificial, **straight lines, light rays,** mirror, visible SUGGESTED ENQUIRIES: ➢ How does my shadow change over the day? (Observation over time) ➢ Which material is the most reflective? (Comparative testing) ➢ How does the angle that a light ray hits a plane mirror affect the angle at which it reflects off the surface? (Fair testing) ➢ How does the distance of the light source from the screen affect the size of the shadow produced? (Fair testing) ➢ Why do some people need to wear glasses to see clearly? (Research using secondary sources)	**Forces 5** • know and explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • know the effects of air resistance, water resistance and friction, that act between moving surfaces • know that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect VOCABULARY: Force, push, pull, **gravity**, Earth, **air resistance, water resistance, friction, opposing, streamline, brake, mechanisms, simple machines, levers, pulleys, gears, Newton** SUGGESTED ENQUIRIES: ➢ How long does a pendulum swing for before it stops? (Observation over time) ➢ Which shoe is the slippiest? (Comparative testing) ➢ Which shape parachute takes the longest to fall? (Comparative testing) ➢ How does the surface are of a container affect the time it takes to sink? (Fair testing) ➢ How does the surface are of a parachute affect the time it takes to fall to the ground? (Fair testing) ➢ Can you label and name all the forces acting on the objects in each of these situations? (Identifying and classifying) ➢ Do all objects fall through water in the same way? (Pattern seeking) ➢ How do submarines sink if they are full of air? (Research using secondary sources)	**Living things and their habitats 5** • know and describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • know and describe the life process of reproduction in some plants and animals • know about the process of sexual reproduction in animals • know about the processes of sexual and asexual reproduction in plants VOCABULARY: life cycle, reproduce, reproduction, **sexual, asexual, fertilises, fertilisation**, **runners, tubers,** bulbs, **cuttings,** pollination, **dispersal**, male, female, **pregnancy**, **egg, embryo**, young, mammal, bird, insect, amphibian, plant, **metamorphosis** SUGGESTED ENQUIRIES: ➢ How does and bean change as it germinates? (Observation over time) ➢ How do brine shrimp change over their lifetime? (Observation over time) ➢ Compare this collection of animals based on similarities and differences in their lifecycle. (Identifying and classifying) ➢ Do smaller animals have shorter gestation periods? (Pattern seeking) ➢ What are the differences between the life cycle of an insect and a mammal? (Research using secondary sources)	**Animals including humans 5** • know the changes as humans develop to old age • know the timeline of stages in the growth and development of humans: foetus, baby, toddler, child, adolescent, adult, elderly • know and explain the changes that males and females experience during puberty • know that animals have different gestation periods by researching and comparing with the gestation period of humans VOCABULARY: human, development, **foetus**, baby, toddler, child, teenager, **adolescent**, adult, elderly, **puberty**, **gestation**, length, grow, growing SUGGESTED ENQUIRIES: ➢ How does age affect a human's reaction time? (Fair testing) ➢ Can you identify all the stages in the human life cycle? (Identifying and classifying) ➢ Is there a relationship between a mammal's size and its gestation period? (Pattern seeking) ➢ Are the oldest children in school the tallest? (Pattern seeking) ➢ Why do people get grey/white hair when they get older? (Research using secondary sources) ➢ How does skin change as you grow older? (Research using secondary sources)

	➢ Can you group these materials based on whether they are transparent or not? (Identifying and classifying) ➢ Which materials are transparent, translucent and opaque? (Identifying and classifying) ➢ Do all stretchy materials stretch in the same way? (Pattern seeking) ➢ What are microplastics and why are they harming the planet? (Research using secondary sources) ➢ At what temperature do different metals melt? (Research using secondary sources)				

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
UKS2 Year 5/6 Cycle B	**Electricity 6** • know that the brightness of a lamp or the volume of a buzzer is associated with the number and voltage of cells used in the circuit • know that there are variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • know and use the recognised symbols when representing a simple circuit in a diagram VOCABULARY: Circuit, complete circuit, **circuit diagram**, **circuit symbol**, component, cell, battery, battery holder, bulb, buzzer, motor, switch, **voltage, electrons**, **electric current**, appliances, mains, crocodile clips, wires, electrical conductor/insulator SUGGESTED ENQUIRIES: ➢ Does the temperature of a light bulb go up the longer it is on? (Observation over time) ➢ Which make of battery lasts the longest? (Comparative testing) ➢ How does the voltage of the batteries in a circuit affect the brightness of the lamp? (Fair testing) ➢ How does the voltage of the batteries in a circuit affect the volume of the buzzer? (Fair testing) ➢ How does the number of layers of fabric wrapped around a buzzer affect its volume? (Fair testing) ➢ How would you group electrical components and appliances based on what electricity makes them do? (Identifying and classifying) ➢ How has our understanding of electricity changed over time? (Research using secondary sources) ➢ How have batteries changed over time? (Research using secondary sources)	**Animals including humans 6** • know and name the main parts of the human circulatory system (heart, lungs, blood vessels, arteries, veins, capillaries) • know the functions of the heart, blood vessels and blood • know the impact of diet, exercise and lifestyle on the way their bodies function • know the impact of drugs on the way their bodies function including how some drugs can be harmful to the human body • know the ways in which nutrients and water are transported within animals, including humans VOCABULARY: Heart**, pulse, rate, pumps**, blood, **blood vessels, transported**, lungs, oxygen, **carbon dioxide**, nutrients, water, muscles, cycle, **circulatory system**, diet, exercise, **drugs, lifestyle** SUGGESTED ENQUIRIES: ➢ How does my heart rate change over the day? (Observation over time) ➢ How much exercise do I do in a week? (Observation over time) ➢ Which type of exercise has the greatest effect on our heart rate? (Comparative testing) ➢ How does the length of time we exercise for affect our heart rate? (Fair testing) ➢ Which organs of the body make up the circulation system, and where are they found? (Identifying and classifying) ➢ Is there a pattern between what we eat for breakfast and how fast we can run? (Research using secondary sources)	**Earth and Space 5** • know and describe the movement of the Earth and other planets relative to the sun in the solar system • know and describe the movement of the moon relative to the Earth • know and describe the sun, Earth and moon as approximately spherical bodies • know about and use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky • know that ideas about the solar system have changed over time • know about the geocentric and heliocentric models of the solar system • know that it is not safe to look directly at the Sun, even when wearing dark sunglasses VOCABULARY: Sun, Moon, Earth, **planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit, axis, rotate, rotation,** day, night, star**, spherical, geocentric, heliocentric** SUGGESTED ENQUIRIES: ➢ How does the length of daylight hours change in each season? (Comparative testing) ➢ How could you organise all the objects in the solar system into groups? (Identifying and classifying) ➢ Can you observe all the phases in the cycle of the Moon? (Identifying and classifying) ➢ Is there a pattern between the size of a planet and the time it takes to travel around the Sun? (Pattern seeking) ➢ How have our ideas about the solar system changed over time? (Research using secondary sources) ➢ What unusual objects did Jocelyn Bell Burnell discover? (Research using secondary sources)	**Living things and their habitats 6** • know and describe how animals are classified into broad groups according to common observable characteristics and based on similarities and differences • know that animals can be classified into broad groups, vertebrates and invertebrates, and then further sub-groups, mammals, birds, fish, reptiles and amphibians • know and describe how plants are classified into broad groups according to common observable characteristics and based on similarities and differences • know and classify a range of plants including flowering and non-flowering plants • know and describe how microorganisms are classified into broad groups according to common observable characteristics and based on similarities and differences • know how to classify plants and animals based on specific characteristics and give reasons VOCABULARY: **organism**, vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, **warm-blooded, cold-blooded**, insects, spiders, snails, worms, **flowering, non-flowering, mosses, ferns, conifers**, classify, classification, observe, **observable**, environment, habitat, **microorganisms, bacteria, Carl Linnaeus, Linnaean** SUGGESTED ENQUIRIES: ➢ What happens to a piece of bread if you leave it on the windowsill for two weeks? (Observation over time) ➢ How does the temperature affect how much gas is produced by yeast? (Fair testing) ➢ How would you make a classification key for vertebrates /invertebrates or microorganisms? (Identifying and classifying) ➢ How can we sort animals into groups? (Identifying and classifying) ➢ Do all flowers have the same number of petals? (Pattern seeking) ➢ What do different types of microorganisms do? Are they always harmful? (Research using secondary sources)	**Evolution and Inheritance 6** • know that living things have changed over time • know that fossils provide information about living things that inhabited the Earth millions of years ago • know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • know that characteristics are passed from parents to offspring • know how animals are adapted to suit their environment in different ways and that adaptation may lead to evolution • know how plants are adapted to suit their environment in different ways and that adaptation may lead to evolution VOCABULARY: **offspring, sexual reproduction, vary, characteristics, suited, adapted,** environment, **inherited, species**, fossils, **evolve, evolution** SUGGESTED ENQUIRIES: ➢ Which eye colour is the most common in our class? (Comparative testing) ➢ Is there a pattern between the size and shape of a bird's beak and the food it will eat? (Pattern seeking) ➢ How are local animals adapted to their environment? (Identifying and classifying) ➢ What happened when Charles Darwin visited the Galapagos Islands? (Research using secondary sources) ➢ What are the advantages and disadvantages of specific adaptations, such as being on 2 feet rather that 4, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers (Research using secondary sources)

				➢ How did Carl Linnaeus' ideas help us to group plants? (Research using secondary sources)	

As science is a core subject, it must be taught each week for half a day (e.g. one afternoon 1½-2hours minimum). This means that our units do not fit within one half term and will extend beyond and into the next half term. Units in KS1 will need to have between 8 and 9 lessons (can vary between units). Units in KS2 will need to have between 7 and 8 lessons (can vary between units). This allows us to build in more opportunities for development of disciplinary knowledge, and ensuring substantive knowledge is secure before moving on.

Progression in disciplinary knowledge (working scientifically)

			EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PLAN	Asking questions 	Questioning	Know how to show curiosity about objects, events and people Know how to question why things happen.	Know how to raise own questions about the world around them Know how to use different question stems (Why… Where… Which…?)	Know how to raise own questions about simple scientific processes Know how to use a range of sentence stems (Is a… Where… Which… Do… What… Why…?)	Know how to raise questions about why things happen the way they do Know how to write a range of questions relevant to the topic Know how to suggest questions that can be explored, observed, tested or investigated further.	Know how to raise questions to help identify and group Know how to write a range of questions using their own scientific knowledge Know how to choose / select a relevant question that can be answered [by research or experiment / test].	Know how to use their scientific experiences to raise questions Know how to ask their own questions taking some ownership for finding out the answers. Know how to raise further questions from enquiries and research	Know how to raise questions to further prove a scientific enquiry Know how to ask a variety of scientific questions and decide the type of enquiry to answer them. Know how to create further questions from enquiries to investigate
	Making predictions 	Predicting	Know how to suggest what might be 'best' or 'worst'	Know how to suggest what might happen	Know how to suggest what might happen giving a simple reason	Know how to make a prediction, based on everyday experiences	Know how to make a prediction, based on prior knowledge and giving reasons for what I think will happen and why	Know how to use knowledge and understanding to justify my prediction Know how to suggest more than one possible prediction and begin to suggest which is the most likely.	Know how to use scientific evidence to justify my prediction Know how to suggest more than one possible prediction and begin to suggest which is the most likely justifying their reason with some knowledge and understanding of the scientific concept.
	Planning enquiries 	Variables	Know that a factor can change or stay the same in a test	Know that one variable is changed in a test	Know how to identify the variable that is changed in a test	Know that an independent variable is changed, and the dependent variable is measured	Know how to identify the independent and dependent variables	Know that a controlled variable remains constant Know how to make decisions about which variables to change, measure and keep the same	Know how to identify controlled variables Know how to identify variables to change, measure and keep the same in order for a test to be fair.
		Designing	Know how to suggest an idea to investigate	Know how to suggest an idea to investigate and ask questions Know how to talk about ways of setting up a test.	Know how to suggest an idea to investigate based on observations Know how to make suggestions about setting up a simple comparative test	Know how to make some decisions about the best way of answering their questions (in a group) Know how to plan a fair test by selecting variables (e.g. make choices from a list of variables)	Know how to make own decisions about the most appropriate type of science enquiry they might use to answer scientific questions Know how to plan a fair test by selecting variables to change and measure	Know how to make most of the planning decisions for an investigation Know how to plan a fair test ensuring all variables to change, measure and keep the same are identified with support	Know how to independently (or in groups) plan investigations and explain planning decisions Know how to plan a fair test ensuring all variables to change, measure and keep the same are identified

			Know how to follow a short demonstration and spoken instructions	Know how to follow a demonstration and spoken/picture instructions	Know how to follow short spoken and written instructions in order	Know how to follow instructions and write a simple method	Know how to design and write a simple ordered method	Know how to design and write a reliable ordered method	Know how to design and write a reliable and precise method
DO	Setting up tests 	Equipment	Know how to use a range of everyday items to investigate Know how to work safely when given instructions Know how to use senses to compare different sounds, textures and smells	Know how to use some scientific equipment Know how to identify some common dangers Know how to use simple equipment including hand lenses and egg timers	Know how to use a range of scientific equipment Know how to identify and explain common dangers Know how to use rulers, scales, thermometers and measuring vessels with some accuracy	Know how to select suitable equipment for a given task Know how to predict obvious risks and act on safety suggestions Know how to use a range of equipment for measuring time, length, capacity and temperature Know how to read measurements from data loggers	Know how to select and use suitable equipment for a given task Know how to minimize risk and work safely Know how to use a range of equipment for measuring time, length, capacity and temperature Know how to read measurements from data loggers	Know how to select and use equipment with the correct scale for a task Know how to minimize risk and describe the safe use of equipment Know how to use rulers, tape measures, trundle wheels and force meters with suitable scales Know how to use a data logger and thermometer independently	Know how to select equipment for an independently designed task and justify reasons Know how to predict risks and explain how they can control a range of risks Know how to use rulers, tape measures, trundle wheels and force meters with suitable scales Know how to use a data logger and thermometer independently
		Identifying	Know how to name things related to science with support	Know how to name a range of things related to science	Know how to identify and name simple scientific things, ideas and processes	Know how to identify and name a range of scientific things, ideas and processes	Know how to identify changes in scientific things. ideas and processes	Know how to use knowledge and understanding to help identify unknown scientific things, ideas and processes	Know how to use knowledge, understanding and secondary sources to help identify unknown scientific things, ideas and processes
		Classifying	Know how to group by similar features e.g. shape, colour, size Know how to use given instructions or pictures to sort	Know how to group by similarity or difference Know how to sort using simple yes/no statements	Know how to use multiple groups when sorting Know how to use simple sorting diagrams e.g. Venn diagrams	Know how to create own criteria for sorting Know how to use sorting diagrams including Venn and Carroll diagrams (with support) Know how to follow and complete simple classification keys	Know how to create and explain own criteria for sorting Know how to use sorting diagrams including Venn and Carroll diagrams Know how to construct a simple classification key using given information	Know how to create own criteria for sorting and identify sub-groups Know how to sort using sorting diagrams that involve multiple criteria Know how to construct a simple classification key	Know how to create own criteria for sorting and identify and explain multiple sub-groups Know how use complex sorting diagrams Know how to construct a complex classification key
		Comparing	Know how to describe given things	Know how to identify obvious differences	Know how to identify similarities and differences	Know how to identify similarities and differences using knowledge of properties	Know how to make links between properties, and purpose/ suitability	Know how to compare objects and ideas based on similarities and differences	Know how to identify when and how properties change
		Testing		Know how to carry out a simple test with help from an adult	Know how to carry out simple comparative tests as part of a group, following a method with some independence	Know how to set up simple tests including comparative and fair tests. Know how to recognize when a test is not fair (with support).	Know how to carry out comparative tests and simple fair tests with increasing confidence Know how to recognize when a test is not fair (with support).	Know how to carry out fair tests and other investigations with increasing independence Know how to recognise when it is appropriate to carry out a fair test.	Know how to carry out a range of investigations and tests with confidence Know how to decide when it is appropriate to carry out a fair or comparative test or an alternative.

		Secondary sources	Know how to recall some simple scientific facts Know how to ask people questions	Know how to use simple secondary sources (such as objects, books and photographs) Know how to select some facts to use in an answer Know how to ask people questions to find out information	Know how to use more than one secondary source to gather and present information Know how to select relevant scientific facts to use in an answer Know how to make suggestions about who to ask or where to look for information	Know that secondary sources can be used to answer questions that cannot be answered in practical science Know how to carry out research using a small range of secondary sources (e.g. books, videos, photographs).	Know that secondary sources can be used to answer questions and recognise when to use them Know how to select appropriate information from sources Know how to make decisions about which information to use from a wide range of sources and make decisions about how to present their research.	Know how to independently use secondary sources to find relevant facts about a topic Know how to make decisions about which information to use from a wide range of sources. Know how to link relevant scientific facts together in an answer	Know how to independently use secondary sources and use evidence from a variety of sources Know how to recognise which secondary sources will be most useful to research their ideas Know how to select scientific facts to create a clear argument
	Observation and measurement	Observing	Know how to observe and describe what they see using everyday language	Know how to observe changes over time and describe the changes Know how to use observations to make suggestions and/or ask questions	Know how to use observations to suggest answers to questions Know how to observe and describe simple processes and cycles	Know how to make observations and decide how to record them Know how to observe and record changes over time. Know how to explore and observe things in the local environment and record observations.	Know how to make observations and decide how to record them to answer a question Know how to suggest their own ideas on a concept and compare these with what they observe.	Know how to make own decisions about what to observe Know how to evaluate their observations and suggest a further test, offer another question or make a prediction. Know how to observe and suggest reasons for what they observe.	Know how to answer own and others' questions based on observations made.
		Measuring	Know how to use non-standard units of measure and compare two things e.g. heavier/lighter	Know how to use non-standard units of measure and compare multiple things e.g. light, lighter, lightest	Know how to measure using standard units: length: cm/ m mass: g/ kg capacity: ml/ l	Know how to measure and compare using standard units: length: cm/ mm/ m mass: g/ kg capacity: ml/ l Know how to read scales increasing in different values.	Know how to measure accurately and compare using standard units: length: cm/ mm/ m mass: g/ kg capacity: ml/ l time: seconds/ minutes Know how to read a range of scales when measuring.	Know how to measure, convert and compare using standard units: length: cm/ mm/ m mass: g/ kg capacity: ml/ l time: seconds/ minutes Know how to gather repeat readings to increase accuracy.	Know how to measure, convert and compare using standard units: length: cm/ mm/ m mass: g/ kg capacity: ml/ l time: seconds/ minutes Know how to calculate an average from repeated measurements.
RECORD	Recording	Explaining	Know how to recall simple scientific facts with support Know how to pronounce simple scientific words to help with an activity	Know how to recall some simple scientific facts Know how to use relevant scientific words during an activity	Know how to recall relevant scientific facts with some confidence Know how to construct an oral sentence using scientific words before writing it down	Know how to use scientific ideas and facts to describe and explain Know how to use simple scientific words in a written sentence	Know how to show developing knowledge and understanding of scientific ideas Know how to use scientific words during oral and written explanations	Know how to show clear knowledge of scientific ideas and concepts Know how to accurately use a range of scientific words during oral and written explanations	Know how to show secure knowledge of scientific ideas and concepts Know how to use a range of complex scientific words in a written report

			Know how to describe what is happening using words or actions with support	Know how to describe what is happening using words	Know how to describe and recall what I have observed	Know how to describe simple scientific models and diagrams	Know how to describe and explain scientific models and diagrams	Know how to use knowledge and understanding to describe and explain scientific models / diagrams Know how to identify scientific evidence that supports ideas or arguments.	Know how to use knowledge and understanding to describe and explain scientific models / diagrams confidently Know how to identify scientific evidence that supports or refutes ideas or arguments.
		Diagrams	Know how to match a picture to the correct label Know how to draw pictures of objects in their own environment and take photographs of things of interest to them	Know how to use a word bank to match a label to the correct part of an image	Know how to label a simple diagram with scientific words	Know how to label and annotate a simple diagram with scientific information	Know how to draw, label and annotate my own diagram with given scientific information	Know how to draw, label and annotate my own diagram with selected scientific information	Know how to draw, label, annotate and explain my own diagram using scientific information
		Tables	Know how to count results and mark make to record results	Know how to use and complete a simple given table of results	Know how to use a simple given table to tally and record totals	Know how to use a blank table to add headings to and record results	Know how to create and complete own table with headings and data	Know how to construct a complex table of results to show repeated data with support Know how to record results systematically	Know how to construct a complex table of results to show repeated data Know how to calculate the mean and range of a set of data
		Charts and graphs	Know how to create a class chart/pictogram using pictures and objects	Know how to complete a prepared block graph or pictogram	Know how to construct simple pictograms and block charts Know how to record using prepared vertical bar charts	Know how to use axes to construct a bar chart, with support Know how to use results from tally charts	Know how to accurately and independently construct a bar chart/pictogram Know how to construct vertical and horizontal bar charts, adding own labels and bars	Know how to accurately construct and scale a graph, with support Know how to construct scatter and line graphs with support Know that discrete data is made of whole numbers/values that are separate, and continuous data is measured (e.g. time, length)	Know how to accurately construct and scale a graph Know how to construct scatter and line graphs using various scales and multiple data Know that discrete data is made of whole numbers/values that are separate, and continuous data is measured (e.g. time, length)
REVIEW	Interpreting and concluding 	Patterns and relationships	Know how to recognise and create simple patterns e.g. size Know how to use 'more' or 'less' to compare observations	Know how to recognise, create and describe simple patterns Know how to use 'more' or 'less' to compare observations and numbers	Know how to describe simple patterns in data and charts Know how to identify patterns in a set of numbers or data	Know how to describe simple patterns in data, charts and graphs Know how to identify patterns and differences in sets of data	Know how to describe patterns, trends and relationships in data and charts Know how to identify and explain patterns and differences in sets of data	Know how to describe and compare patterns, trends and relationships in data and charts Know how to identify and explain differences in sets of repeated data	Know how to describe changing patterns, trends and relationships in data and charts Know how to identify and explain differences in sets of repeated data and identify anomalies

		Concluding	Know how to talk about changes noticed	Know how to describe the changes that are happening	Know how to recall and describe the changes that happened (after an activity)	Know how to describe the results linking cause and effect	Know how to describe trends and use scientific observations to explain	Know how to use data in my conclusions to explain	Know how to use primary and secondary data when concluding
	Evaluating 	Evaluating	Know how to talk about what we did Know how to talk about how things work and what didn't work	Know how to explain what we did afterwards and what worked well Know how to talk about changes that could be made	Know how to explore different ways to do things Know how to suggest an improvement to an enquiry	Know how to identify any weaknesses in my methods Know how to suggest improvements and raise further questions	Know how to identify weaknesses in my methods. Know how to suggest improvements after evaluating different aspects of their enquiry	Know how to identify limitations in my method and how they might affect the results Know how to evaluate and decide when further observations and tests might be needed	Know how to identify limitations in my method and suggest and justify improvements Know how to use scientific language to evaluate how their enquiry has answered the question