The Oak Tree Federation

Science –Curriculum Progression Map

Cycle A Autumn Term 1	***Scrumdiddlyumptious - Roald Dahl (Whole school topic)***						
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World Seasonal Changes Expressive Arts and Design** *Rosie's Hat and Autumn- Primary Science Teaching Trust*	**Seasonal Changes – Year 1** *Kent Primary Science*		**States of Matter – Year 4** *Kent Primary Science*		**Properties and Changes of Materials – Year 5** *Kent Primary Science*	
Early Learning Goals (EYFS) **National Curriculum**	Pupils will be learning to: • Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Pupils should be taught to: • Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.		Pupils should be taught to: • Compare and group materials together, according to whether they are solids, liquids or gases. • 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). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		Pupils should be taught to: • Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes	

				associated with burning and the action of acid on bicarbonate of soda.
Key Concepts	Seasonal changes and weather, observing over time, identify, classify and grouping	Seasonal changes and weather, observing over time, identify, classify and grouping	Changes of state, Solids, Liquids and gases, comparative and fair testing	Reversible and irreversible changes, materials, solids, liquids and gases, comparative and fair testing
Substantive and Disciplinary Knowledge	• Can name and identify key parts of the body which relate to our senses. • Can describe the functions of key parts of the body e.g. eyes, ears etc. • Can name the 5 senses. • Can relate to their own lives and describe what they and their families do to look after their bodies. E.g. brushing teeth, eating a range of foods etc, washing, sleeping etc.	• Can name the four seasons and identify when in the year they occur. • Can observe and describe weather in different seasons over a year. • Can observe and describe days as being longer (in time) in the summer and shorter in the winter. • Can collect information to classify weather and day length in different seasons and present the information in tables or charts to compare the seasons. • Can collect information on features that change with seasons and present in displays.	• Can name properties of solids, liquids and gases and give reasons to justify why something is a solid liquid or gas. • Can give everyday examples of melting and freezing. • Can give everyday examples of evaporation and condensation. • Can describe the water cycle. • Can give examples of things that melt/freeze and how their melting points vary. • From their observations, can give the melting points of some materials. • Using their data, can explain what affects how quickly a solid melts • Can measure temperatures using a thermometer • Can present their learning about the water cycle in a range of ways e.g. diagrams, explanation text, story of a water droplet.	• Can use understanding of properties to explain everyday uses of materials. • Can explain what dissolving means, giving examples. • Can name equipment used for filtering and sieving. • Can use knowledge of liquids, gases and solids to suggest how materials can be recovered from solutions or mixtures by evaporation, filtering or sieving. • Can describe some simple reversible and non-reversible changes to materials, giving examples. • Can create a chart or table grouping/comparing everyday materials by different properties. • Can use test evidence gathered about different properties to suggest an appropriate material for a particular purpose. • Can group solids based on their observations when mixing them with water. • Can give reasons for choice of equipment and methods to separate a given solution or mixture such as salt or sand in water. • Can explain the results from their investigations involving dissolving and non-reversible change
End Points	Know the names of the seasons, spring, summer, autiumn and winter, know the effect of changing seasons on the natural world and the associated vocabulary, know vocabulary linked with the weather	Do living things change or stay the same throughout the year?	Is water always wet?	Can we change materials?

	e.g. wind, windy, cloud, cloudy, rain, raining, snow, snowing, temperature, hot, cold, icy, wet, dry			
Vocabulary **KS1** **KS2**	beach, habitat, sand, pebbles, shells, seaweed, rockpools, driftwood, feathers, litter, rubbish, plastic, pollution sand, water, mixture, wet, dry, sticky wind, breeze, blow, flutter, air, move, bend float, sink, shape, ball, flat/flatter/flatten	Seasons; spring, summer, autumn, winter Year, months, days Hot, warm, mild, cold Sunny Cloudy Rain, sleet, snow, hail, thunder, lightning, rainbow Wet, damp, dry Windy, breezy, gust Temperature Degrees Celsius Thermometer Weather vane Anemometer	**States of matter** - Solid, liquid and gas **Examples of gases (at room temperature and pressure)** – Oxygen, hydrogen, helium, carbon dioxide, methane **Examples of liquids (at room temperature and pressure)** – Water, milk, juice, petrol, oil **Examples of solids (at room temperature and pressure)** – Wood, rocks, metal, plastic, glass, wool, leather, etc **Processes** – Melting, condensation, evaporation, solidifying, freezing Water cycle, Water vapour, Steam, Heating, Cooling	**Thermal conductivity** – thermal conductor, thermal insulator **Electrical conductivity** – electrical conductor, electrical insulator **Dissolving –** Solvent, solution, solute, soluble, insoluble, solid, liquid, particles, suspensions **Separating materials** – Sieve, filter, evaporate, condense
Key Scientific Enquiry questions	What is wind? How do you know if it is windy? Where is it windy? Can you make a wind? How can you show me the wind? Can you change the direction of the wind? Which object travels furthest in the wind? What type of sand makes the best sandcastle? • How will you mix the sand? • How much water will you need? • How much sand will you use? • Which container is best? • How do you know which is 'best'?	Classifying – What types of clouds are there in the different seasons? Simple test – How much wind is there in the different seasons? Simple test – How can you measure the amount of rain in the different seasons? Simple test – How do we find out how warm the water is? Research – How much daylight is there in the different seasons? Survey – What happens to nature in the different seasons?	Comparing and sorting solids, liquids and gases – Which state of matter are you materials? Simple test – What happens to solids when they are heated? Problem-solving – Using the processes of melting and solidifying, can you make a candle of wax with holes in it? Illustrative fair test investigation– 'Will the location of a puddle affect how well it evaporates?' Model – What is the water cycle?	Comparative test – Which cups let through the most heat? Fair –test investigation – Which material is best at keeping the tea warm? Problem-solve – How do you keep the tea the warmest for the longest amount of time? Simple test – What affect will a coat have a person and an ice man? Investigative fair-test – What affects how well sugar dissolves? Fair-test – What is the best material for filtering? Investigative fair test – What affects how quickly carbon dioxide is created in the reaction between a vitamin tablet and water?
Scientist/Influential Role Model	-	John Dalton (1766 – 1844) Gabriel Fahrenheit (1686 – 1736)	Marie Curie (1867 – 1934) Famous chemists - see link in planning document	Antoine Lavoisier (1743 - 1794) Dmitri Mendeleyev (1834 - 1907) Sir Humphry Davy (1778 - 1829)

		Inez Fung (1941 -)	Famous women chemists – see link in planning document	John Dalton (1766 - 1844)

Cycle A Autumn Term 2	**Lights, Camera, Action!**			**Footsteps through time**		**Bouncing bombs**	
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World** **Seasonal Changes** **Expressive Arts and Designs** **People, Culture and Communities** *The Scarecrows Wedding, The Rainbow Fish and Autumn - Primary Science Teaching Trust*	**Animals, including Humans – Year 1** *Kent Primary Science*		**Rocks and Soils – Year 3** *ASE / Kent Primary Science*		**Electricity – Year 6** *Kent Primary Science*	
Early Learning Goals (EYFS) **National Curriculum**	Pupils will be learning to: • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Understand some important processes and changes in the natural world around them,	Pupils should be taught to: • Identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles and mammals, and including pets). • Identify, name draw and label the basic parts of the human body and say which parts of the body		Pupils should be taught to: • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties		Pupils should be taught to: • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. • Use recognised symbols when representing a simple circuit in a diagram.	

	including the seasons and changing states of matter.	is associated with each sense.		
Key Concepts	Seasons and weather, species of animals, naming body parts and senses, identifying, classifying and grouping	Species of animals, naming body parts and senses, identifying, classifying and grouping	types of rocks, rock formation, identifying, classifying and grouping	Electricity, circuit variation, functions of components
Substantive and Disciplinary Knowledge	• Can name and identify key parts of the body which relate to our senses. • Can describe the functions of key parts of the body e.g. eyes, ears etc. • Can name the 5 senses. • Can relate to their own lives and describe what they and their families do to look after their bodies. E.g. brushing teeth, eating a range of foods etc, washing, sleeping etc.	• Can name and identify key parts of the human body. • Can label these parts on a diagram. • Can identify the 5 senses and and the body parts related to each sense. • Can describe what humans need to survive. • Can use secondary resources, including talking to experts, to find out and describe how some animals have offspring.	• Can name some types of rock and give physical features of each. • Can classify rocks in a range of different ways using appropriate vocabulary. • Can devise tests to explore the properties of rocks and use data to rank the rocks. • Can link rocks changing over time with their properties e.g. soft rocks get worn away more easily.	• Can make electric circuits and demonstrate how variation in the working of particular components. • Can draw circuit diagrams of a range of simple series circuits using recognised symbols. • Can incorporate a switch into a circuit to turn it on and off. • Can change cells and components in a circuit to achieve a specific effect. • Can communicate structures of circuits using circuit diagrams with recognised symbols. • Can devise ways to measure brightness of bulbs, speed of motors, volume of a bu zzer during a fair test. • Can predict results and answer questions by drawing on evidence gathered.
End Points	Know the names of some common animals and plants in the local environment. Know the main parts of some animals' bodies.	What are bodies and what can they do?	Are all rocks the same?	Can we vary the effects of electricity?
Vocabulary **KS1** **KS2**	**animal names** - crows, geese, cows, crabs, mice, bees, toad, snail	Birds, fish, amphibians, reptiles, mammals and invertebrates	**Names of rocks –** Chalk, limestone, granite, basalt, sandstone, flint, slate, shale, marble **Types of rock** – Sedimentary, metamorphic, igneous	Electricity, Volts Series circuit Components: battery, bulb (lamp), bulb (lamp) holder, buzzer, crocodile clip, leads, wires, switch

	body parts – head, body, legs, tail, whiskers, claws, feathers, beak, wings, shell, etc. **habitats** - tree, field, grass/lawn, flowerbed, pond, beach **materials** - fabric, cotton, plastic, paper. wood, shell, stone, straw **properties of materials -** rough, smooth, hard, soft, shiny, dull, bendy, stretchy, strong, stiff, waterproof, natural, non-natural, etc.	Feathers, scales, gills, fins, hair, land, water, backbone, skeleton Carnivores, herbivores, omnivores Meat, plants (Common parts/structures of animals) (Names of animals that can be found in the school grounds) (Names of animals that the children keep as pets)	**Types of minerals** – Calcite, feldspar, topaz, diamond, talc, corundum **Properties of rocks** – Hard/soft, permeable/impermeable **Size of rocks** – Grain, pebbles	Describing words: brighter, duller, slow, fast, quiet, loud Conductor, insulator Resistance Effects of electricity: Light, sound, movement, heat
Key Scientific Enquiry questions	Can you name the animals? Can you name the body parts? How are these animals similar? And different? Can you group the animals? What facts do you know about each animal? What was your favourite living thing from the story? Can you make a model? What are the features of this creature? How is your animal different to the other animals in the story? How is your animal the same as the other animals in the story?	Identifying – What are the names of the different parts of our bodies? Simple test – What can our different senses do? Research – How good are the senses of other animals? Naming and classifying – Which animals are herbivores, carnivores and omnivores? Survey – How many animals can be found in the school grounds that are carnivores, herbivores and omnivores?	Observation – What do the different rocks look like? Survey - Which are the rocks near our school? Comparative test – Which rock is the most permeable? How hard are different rocks?	Illustrative fair-test – How will the number of batteries (amounts of Volts) affect the brightness of the bulb? Investigative Fair-test – What affects the brightness of a bulb in a circuit?
Scientist/Influential Role Model	-	Carl Linnaeus (1707-1778) Amy Vedder (1951 -)	Friedrich Mohs (1773-1839) Inge Lehmann (1888-1993) Alfred Wegener (1880 – 1930) Tuzo Wilson (1908- 1993) Marie Tharp(1920 – 2006) Dorothea Bate (1878 – 1951)	Thomas Edison (1847-1931). Benjamin Franklin (1706-90). Charles Augustine Coulomb (1736-1806). Alessandro Volta (1745-1827). Andre-Marie Ampere (1775-1836)

Cycle A Spring Term 3	Superheroes Humanities - Weather and Seasons	Superheroes Humanities - Weather and Seasons		Belonging to a community		Swords and Sandals	
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World** **Seasonal Changes** **Expressive Arts and Designs** **People, Culture and Communities** *The Gingerbread Man and Winter/Spring - Primary Science Teaching Trust*	**Uses of Everyday Materials – Year 2** *Kent Primary Science*		**Rocks and Soils – Year 3** *ASE / Kent Primary Science*		**Forces – Year 5** *Kent Primary Science*	
Early Learning Goals (EYFS) **National Curriculum**	Pupils will be learning to: • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Make use of props and materials when role playing characters in narratives and stories. • Share their creations, explaining the process they have used. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Pupils should be taught to: • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		Pupils should be taught to: • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter.		Pupils should be taught to: • Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. • Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	
Key Concepts	Seasons and weather, Suitability of materials	Suitability of materials, comparative and fair testing		types of soil, fossils, pattern seeking, research		Forces, gravity and resistance, mechanisms, pattern seeking	

Substantive and Disciplinary Knowledge	• Can recognise some environments that are different to the one in which they live. • Can recognise some similarities and differences between life in this country and life in other countries. • Can use relevant, specific vocabulary to describe what they see when learning about contrasting locations. • Can observe and interact with natural processes, such as ice melting, a sound • causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water.	• Can name an object, say what material it is made from, identify its properties and make a link between the properties and a particular use. Can label a picture or diagram of an object made from different materials. • For a given object can identify what properties a suitable material needs to have. • Whilst changing the shape of an object can describe the action used. • Can use the words flexible and/or stretchy to describe materials that can be changed in shape and stiff and/or rigid for those that cannot. • Can recognise that a material may come in different forms, which have different properties. • Can sort materials using a range of properties. • Can explain using the key properties why a material is suitable or not suitable for a purpose. • Can begin to choose an appropriate method for testing a material for a particular property.	• Can explain how a fossil is formed. • Can explain that soils are made from rocks and also contain living/dead matter. • Can present in different ways their understanding of how fossils are formed e.g. in role play, comic strip, chronological report, stop-go animation etc. • Can identify plant/animal matter and rocks in samples of soil. • Can devise a test to explore the water retention of soils.	• Can demonstrate the effect of gravity acting on an unsupported object. • Can give examples of friction, water resistance and air resistance. • Can give examples of when it is beneficial to have high or low friction, water resistance and air resistance. • Can demonstrate how pulleys, levers and gears work. • Can explain the results of their investigations in terms of the force, showing a good understanding that as the object tries to move through the water or air or across the surface, the particles in the water, air or on the surface slow it down. • Can demonstrate clearly the effects of using levers, pulleys and gears.

		• Can use their test evidence to select appropriate material for a purpose.		
End Points	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design and texture Know vocabulary related to finding similarities and differences of different materials.	How do we choose the best material?	Are all rocks the same?	How do things move?
Vocabulary **KS1** **KS2**	material, solid, liquid, absorb properties of materials - dry, wet, soggy, waterproof, float, sink, strong, stretchy animal body parts - legs, body, head, ears, tail, mane, fur, udder, etc.	**Types of materials**: wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil **Properties of materials:** hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, transparent/not transparent, sticky/not sticky **Verbs associated with materials:** crumble, squash, bend, stretch, twist **Senses:** touch, see, hear, smell and taste	**Processes** – Heat, pressure, erosion, transportation, deposition, melt, solidify **Rock describing words –** Crystals, layers **Early areas of land** – Gondwana, Pangea **Land formations** – Plates, volcanoes, mountains, valleys	**Types of forces:** gravity, friction, air resistance, upthrust, weight **Measuring forces:** Newton meter, Newtons (N) Particles Surface area Push, pull Balance **Mass** – grams and kilograms **Mechanical devices** – gears, levers, pulleys, springs
Key Scientific Enquiry questions	Can you use the different lolly sticks and pegs to make a bridge for the gingerbread man to cross the river? Which types of clothes pegs work best? Can you improve your design to make it stronger? How many toy animals can it hold? Which material will keep him dry from the rain?	Simple test– Which material is best for the bottom of children's school shoes? Simple test – How well do different materials bounce? Survey – what are the uses of wood? Exploring – How well can we change the shapes of some solid objects	Modelling - How are fossils made? What are soils made from? Classifying – Which types of soil do you have? Problem-solving – How can we separate the different parts that make up a soil? Comparative test – How much water do different soils absorb?	Illustrative fair-test – How does the surface area of a piece of paper affect how quickly it falls? Investigative fair-test– What affects how well a parachute falls? Problem-solving – How can we slow down the tub when it is travelling? Comparative test – How does the shape of an object affect how it moves through water?

	Which material would make the worst roof? Can you make a floating boat for the gingerbread man? Which materials will you use? Does it matter what shape or size your boat is? How many gingerbread men/pebbles/cubes can it hold before it sinks?			Problem-solving 2 – Make a submarine that will transport a person to the bottom of the cylinder in … seconds. Pattern-seeking – How does the mass of a boat affect the depth it travels below the water surface? Explore – How can you change the direction of turn and the speed of the gears?
Scientist/Influential Role Model	-	Leo Hendrik Baekeland (1863 - 1944) Charles Goodyear (1800 – 1860) Dr Alex King (contemporary materials scientist) Dr Frances Ross (contemporary materials scientist)	Professor Ian Stewart (contemporary geologist) Adriana Ocampo (1955 -) Space geologist Friedrich Mohs (1773-1839) Inge Lehmann (1888-1993)	Sir Isaac Newton (1642 – 1727) Christopher Cockerell (1910- 1999) Archimedes (c.287 - c.212 BC)

Cycle A Spring Term 4	**The Enchanted Forest Humanities Hot and Cold Places**	**The Enchanted Forest Humanities Hot and Cold Places**		**Romans Rule!**		**By Royal Appointment**	
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World Seasonal Changes** *Supertato and Spring - Primary Science Teaching Trust*	**Plants – Year 1** *Kent Primary Science*		**Living Things and their Habitats – Year 4** *Kent Primary Science*		**Living Things and their Habitats – Y5** *Kent Primary Science*	
Early Learning Goals (EYFS) **National Curriculum**	Pupils will be learning to: • Explore the natural world around them, making observations and drawing pictures of animals and plants.	Pupils should be taught to: • Identify and name a variety of common plants, including garden plants, wild plants and trees, and those		Pupils should be taught to: • Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in		Pupils should be taught to: • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.	

	• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers.	their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things.	• Describe the life process of reproduction in some plants and animals.
Key Concepts	Names of plants and trees, Groups of plants, identifying, classifying and grouping	Names of plants and trees, Groups of plants, identifying, classifying and grouping	Living things and their habitats, classification key, classification by grouping	Adaptations for survival, life cycles of animals classes, pattern seeking
Substantive and Disciplinary Knowledge	• Can recognise some environments that are different to the one in which they live. • Can recognise some similarities and differences between life in this country and life in other countries. • Can use relevant, specific vocabulary to describe what they see when learning about contrasting locations. • Can observe and interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water.	• Can name trees and other plants that they see regularly. • Can name some of the key features of these trees and plants e.g. shape of the leaves, colour of the flower/blossom. • Can point to and name parts of a plant, recognising that they are not always the same, e.g leaves and stem may not be green. • Can sort and group parts of a plant using similarities and differences. • Can use simple charts etc. to identify plants.	• Can name living things living in a range of habitats, giving the key features that helped them to identify them. • Can give examples of how an environment may change both naturally and due to human impact. • Can keep a careful record of living things found in different habitats throughout the year (diagrams, tally charts etc.). • Can use classification keys to identify unknown plants and animals. • Can present their learning about changes to the environment in different ways e.g. campaign video, persuasive letter	• Can draw the life cycle of a range of animals identifying similarities and differences between the life cycles. • Can explain the difference between sexual and asexual reproduction and give examples of how plants reproduce in both ways. • Can present their understanding of the life cycle of a range of animals in different ways e.g. drama, pictorially, chronological reports, creating a game. • Can identify patterns in life cycles. • Can compare two or more animal life cycles studied. • Can explain how a range of plants reproduce asexually.

		• Can use photographs to talk about how plants change over time.		
End Points	Know the names of some common plants in the local environment and use associated vocabulary, know the importance of caring for the environment.	How many types of plant are there?	Are living things in danger?	Do all life cycles look the same?
Vocabulary **KS1** **KS2**	Names of vegetables - potato, cabbage, carrot, celery, etc. texture, mash, cut properties of materials - rough, smooth, soft, hard, sticky, slippery, spiky ice, water, freeze, frozen, melt, salt plant, stem, leaf, root, flower, tuber, seed, shoot, grow camouflage	**Trees** - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc **Wild flowering plants** - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants** – crocus, daffodil, bluebells, etc **Parts of plants** – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs	Habitat, micro habitat Pond, meadow, log pile, woodland, river, lake, beach, cliff Organism – plant, animal **Trees** - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc **Wild flowering plants** - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants –** crocus, daffodil, bluebells, etc **Parts of plants –** roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs **Invertebrates –** snail, slug, woodlouse, spider, beetle, fly, etc **Pond animals –** pond skater, water slater, ramshorn snail, pond snail, leech, common frog, smooth newt, etc	**Animals** – amphibians, reptiles, birds, mammals, insects, fish **Animal development** – egg, larva, pupa, nymph, adult, metamorphosis **Parts of a flower** – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule) **Processes** – pollination, fertilisation, germination
Key Scientific Enquiry questions	Do you know the names of the vegetables?	Observing – How many different roots can be found?	Survey – How many different animals can we find in the wildlife area?	Survey – At what part of their life cycle are the animals in the school grounds?

	Have you tasted them? What do they taste like? Which vegetables do you like? What do the vegetables feel like? What texture does your playdough vegetable need? How can we make it rough/smooth? How do we plant/care for our potatoes? How have they changed? Can we measure how much they have grown? Where are the potatoes? How are we going to cook and eat them?	Can we describe what they look like close-up? Observing – How many different types of flowers can be found? Can we use the flower to work out the name of the plant? Measuring – How tall are the trees? How far is it around the trunk of the trees? Identifying and classifying – What are the leaves like on the different trees? Pattern-seeking investigations – How are the same parts on different plants the same and different?	Classifying – How can we classify different animals? Observation enquiry – How are the animals suited to where they live? Identifying - Can you use the flower to identify the plant? Can you use the leaves to identify the name of the tree? Deep thinking time – How does a change in the environment affect the things that live there? Research – What changes have affected environments throughout the world?	Research – What can you find out about the different stages of life cycles of different animals? Observations over time – How does the small mammal change over time? Using secondary sources research – How do different mammals develop as they get older? Observations over time – How do bird eggs change over time? Comparative test – At what distance can different flowers be seen? Investigation over time – Can we artificially pollinate plants?
Scientist/Influential Role Model	-	Barbara McClintock (1902 – 1992) Joseph Banks (1743 – 1820) Gregor Mendel (1822 -1884) Carl Linnaeus (1707 – 1778) George Forrest (1873 – 1932)	Carl Linnaeus (1707 – 1778)	Kansas State University is currently investigating how to shut down the reproductive ability and desire in pest insects – *see link in planning document.* Berry J. Brosi, an assistant professor at Emory University in Atlanta, and Heather M. Briggs, a graduate student at the University of California, Santa Cruz found that a loss of bees affects a plant's ability to reproduce - *see link in planning document*

Cycle A Summer Term 5	**Towers, Tunnels and Turrets** Humanities Sarah Forbes Bonetta – a significant individual	**Towers, Tunnels and Turrets** Humanities Sarah Forbes Bonetta – a significant individual		**Cracking Contraptions**		**Up the chimney**	
	YR	Y1	Y2	Y3	Y4	Y5	Y6

Unit of Learning	**The Natural World** **Seasonal Changes** **Expressive Arts and Designs** **People, Culture and Communities** *Christopher Nibble and Summer - Primary Science Teaching Trust*	**Plants – Year 2** *Kent Primary Science*	**Electricity – Year 4** *Kent Primary Science*	**Animals inc Humans – Year 6** *Kent Primary Science*
Early Learning Goals (EYFS) **National Curriculum**	Pupils will be learning to: • Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. • Explore the natural world around them, making observations and drawing pictures of animals and plants • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Pupils should be taught to: • Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	Pupils should be taught to: • Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. • Recognise some common conductors and insulators, and associate metals with being good conductors.	Pupils should be taught to: • Identify and name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood. • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. • Describe the ways in which nutrients and water are transported within animals, including humans.
Key Concepts	Plant growth, life cycles, basic needs of plants, observing over time,	Plant growth, basic needs of plants, observing over time	Electricity, simple circuits, Insulators and conductors, comparative and fair testing	Circulatory system, observing over time, research
Substantive and Disciplinary Knowledge	• Can describe how we care for the natural world around us. • Can observe and describe the process of planting and growing seeds.	• Can describe how plants have grown from seeds and bulbs have developed over time.	• Can name the components in a circuit. • Can make electric circuits. • Can control a circuit using a switch.	• Can draw a diagram of the circulatory system and label the parts and annotate it to show what the parts do.

	• Can sing songs and join in with rhymes and poems to learn about the natural world. • Can draw pictures of the natural world, including animals and plants. • Can explain the life cycle of human or animal studied e.g. tadpole, chick, caterpillar.	• Can identify plants that grew well in different conditions. • Can spot similarities and difference between bulbs and seeds. • Can nurture seeds and bulbs into mature plants identifying the different requirements of different plants.	• Can name some metals that are conductors. • Can name materials that are insulators. • Can communicate structures of circuits using drawings, which show how the components are connected. • Use classification evidence to identify that metals are good conductors and non-metals are insulators. • Can incorporate a switch into a circuit to turn it on and off. • Can connect a range of different switches identifying the parts that are insulators and conductors. • Can add a circuit with a switch to a DT project and can demonstrate how it works. • Can give reasons for choice of materials for making different parts of a switch • Can describe how their switch works.	• Produces a piece of writing that demonstrates the key knowledge e.g. explanation text, job description of the heart. • Use the role play model to explain the main parts of the circulatory system and their role. • Can use subject knowledge about the heart whilst writing conclusions for investigations. • Can explain both the positive and negative effects of diet, exercise, drugs and lifestyle on the body. • Present information e.g. in a health leaflet describing impact of drugs and lifestyle on the body.
End Points	Know the names of some common plants in the local environment, know and use vocabulary associated to plant life cycles e.g. seed, seedling, flower, leaf, soil, grow, water die.	What should I do to grow a healthy plant?	Can we control electricity?	How do our choices affect how our bodies work?
Vocabulary **KS1** **KS2**	**parts of a plant** - stem, leaves, roots, flower, seeds water, light, compost/soil textures - rough, smooth, hard, soft, fluffy, hairy, furry	**Trees -** deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc	Electricity **Appliances:** fridge, freezer, TV, computer, iron, kettle, etc Series circuit	**Circulatory system** – heart, blood, veins, arteries, pulse, clotting **Diet** – balanced, vitamins, minerals, proteins, carbohydrates, sugars, fats

	other properties of materials - shiny, waterproof, float, sink **vegetables -** potato, carrot, pea, bean, cabbage, lettuce, cucumber, etc.	**Wild flowering plants -** cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants** – crocus, daffodil, bluebells, etc **Parts of plants** – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs **Need of plants** – water, light, heat, temperature	**Components:** battery, bulb (lamp), bulb (lamp) holder, buzzer, crocodile clip, leads, wires, switch **Describing words:** brighter, duller, slow, fast, quiet, loud Conductor, insulator **Effects of electricity:** Light, sound, movement, heat Switches – open, close	**Drugs** – caffeine, nicotine, alcohol, cannabis, cocaine, heroine
Key Scientific Enquiry questions	Which plants do we like to eat? How do we plant our seeds? Will they grow quickly or will it take a long time? How can we take care of our plants? Which part of the plant do we eat? Can you make a dandelion plant? What can you use for the flower/stem/leaves etc? Do flowers float? Can you make a paper flower to float on the water? If you fold its petals in, what happens when you put it on the water?	Observing - What are different seeds like? Sorting - How many ways can we sort seeds? Comparative test - What do bulbs need so that can grow healthily? Simple test – My woolly socks are covered with seeds from outside. How could we find out if they will grow? Investigation over time – Do seeds need water so that they can grow?	Classifying – What can electricity do? Problem-solving – Which circuits will work? Can you repair the ones that do not work? Observation – What can we find inside a torch? Classifying - Which materials are conductors/insulators?	Explore - What is the function of the heart? Comparative test – What happens to the rate at which our hearts beat when we perform different exercises? Observation – How many times does your heat beat every minute? Pattern-seeking – Is there a relationship between the type of exercise that you do and the number of heart beats per minute? Researching using secondary sources – What are the functions of blood?
Scientist/Influential Role Model	-	Barbara McClintock (1902 – 1992) Joseph Banks (1743 – 1820) Gregor Mendel (1822 -1884) Carl Linnaeus (1707 – 1778)	Benjamin Franklin (1706-90). Charles Augustine Coulomb (1736-1806). Alessandro Volta (1745-1827). Andre-Marie Ampere (1775-1836)	William Harvey (1578 – 1657)

		George Forrest (1873 – 1932)		

Cycle A Summer Term 6	**Know Your Place - local history (Whole school topic)**						
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World** **People, Culture and Communities** **Seasonal Changes** *Animals in My Garden and Summer - Primary Science Teaching Trust*	**Second Look Science Scientific Enquiry**		**Second Look Science Scientific Enquiry**		**Second Look Science Scientific Enquiry**	
Early Learning Goals (EYFS) **National Curriculum**	Pupils will be learning to: • Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Pupils should be taught to: • Ask simple questions and recognise that they can be answered in different ways. • Observing closely, using simple equipment. • Perform simple tests. • Identify and classify. • Use observations and ideas to suggest answers to questions. • Gather and record data to help in answering questions.		Pupils should be taught to: • Ask relevant questions. • Gather, record, classify and present data. • Draw simple conclusions, make predictions, suggest improvements and raise further questions. • Identify differences, similarities or changes related to simple ideas and processes. • Use straightforward scientific evidence to answer questions or support findings.		Pupils should be taught to: • Plan different types of scientific enquires to answer questions, including recognising and controlling variable where necessary. • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Use test results to make predictions to set up further comparative and fair tests. • Report and present findings from enquires, including	

				conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms. • Identify scientific evidence that has been used to support or refute ideas or arguments.
Key Concepts	Seasons and weather, species of animals, naming body parts and senses, habitats	Revision of enquiry skills: Understanding Questioning and researching Observing over time Comparative fair testing Pattern seeking Classifying and grouping	Revision of enquiry skills: Understanding Questioning and researching Observing over time Comparative fair testing Pattern seeking Classifying and grouping	Revision of enquiry skills: Understanding Questioning and researching Observing over time Comparative fair testing Pattern seeking Classifying and grouping
Substantive and Disciplinary Knowledge	• Can describe how we care for the natural world around us. • Can observe and describe the process of planting and growing seeds. • Can sing songs and join in with rhymes and poems to learn about the natural world. • Can draw pictures of the natural world, including animals and plants. • Can explain the life cycle of human or animal studied e.g. tadpole, chick, caterpillar.	• Ask simple questions and recognise that they can be answered in different ways • Observe closely, using simple equipment • Perform simple tests • Identify and classify • Use their observations and ideas to suggest answers to questions • Gather and record data to help in answering questions.	• Ask relevant questions and use different types of scientific enquiries to answer them • Set up simple practical enquiries, comparative and fair tests • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • Gather, record, classify and present data in a variety of ways to help in answering questions • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	• Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • Use test results to make predictions to set up further comparative and fair tests • Report and present findings from enquiries, including conclusions, causal relationships and explanations

			• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Identify differences, similarities or changes related to simple scientific ideas and processes • Use straightforward scientific evidence to answer questions or to support their findings.	of and degree of trust in results, in oral and written forms such as displays and other presentations • Identify scientific evidence that has been used to support or refute ideas or arguments.
End Points	Know how to explore the environment with 5 senses. know the names of some common animals and their habitats in the local environment, know and use vocabulary associated to animal life cycles e.g. egg, chick, chicken	In conjunction with KS1 NC objectives covered this year: Being curious and ask questions about what they notice. Developing their understanding of scientific ideas. Using different types of scientific enquiry to answer their own questions, Observe changes over a period of time, notice patterns, group and classify things, carry out simple comparative tests, and find things out using secondary sources of information. Use simple scientific language to talk about what they have found out.	In conjunction with LKS2 NC objectives covered this year: Ask questions about what they notice. Developing their understanding of scientific ideas Observe changes over a period of time, notice patterns, group and classify things, carry out simple comparative tests, and find things out using secondary sources of information. Use scientific language to talk about what they have found out and communicate their ideas in a variety of ways. Use scientific equipment and resources in a safe and knowledgeable way.	In conjunction with UKS2 NC objectives covered this year: Ask questions to extend their current scientific knowledge. Developing their understanding of scientific ideas Observe changes over a period of time, notice patterns, group and classify things, carry out simple comparative tests, and find things out using secondary sources of information. Use a range ofscientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Use scientific equipment and resources in a safe and knowledgeable way. Understand resilience in Science.

Vocabulary **KS1** **KS2**	body parts - tail, claws, fins, gills, wings, etc. large animals (mammals) – frog, squirrel, cat, mouse, rat, rabbit, fox, badger birds – blackbird, robin, sparrow, blue tit, crow, etc. minibeasts – worm, beetle, insect, spider, woodlouse, caterpillar, butterfly, etc. life cycle, frog, frogspawn, tadpole, froglet, grow, change	Question, answer Observe, observing equipment identify, classify, sort, group record diagram, chart map data compare, contrast, describe biology, chemistry, physics	research- relevant questions scientific enquiry comparative and fair test systematic careful observation accurate measurements equipment – thermometer, data, logger data- gather, record, classify, present record- drawings, labelled diagrams, keys, bar charts, tables oral and written explanations predictions, conclusion differences, similarities, change evidence improve secondary sources guides, keys construct interpret	plan variables measurements, accuracy, precision repeat repeats record data scientific diagrams, labels classification keys tables, scatter graphs, bar graph line graph predictions further comparative and fair tests report and present conclusions, explanations casual relationships degree of trust oral and written display, presentation evidence, support refute ideas arguments identify, classify and describe patterns, systematic quantitative measurements
Key Scientific Enquiry questions	Do you know the names of these animals/plants? How many legs/wings do they have? How are these animals similar? And different? Can you sort these animals? What animals might we find in a garden pond? What makes these animals able to live in water? How are these animals similar/different? How could we sort them?	Identifying, Classifying and Grouping: How can we sort the leaves that we collected on our walk? Pattern seeking: Is there a pattern in where we find moss growing in the school grounds? Pattern seeking: Do you get better at smelling as you get older? Comparative and Fair Testing: Is our sense of smell better when we can't see?	Comparative and fair testing: Does seawater evaporate quicker than fresh water? Identifying, classifying and grouping: How would you sort these objects/materials based on their temperature? Comparative and fair teating: How does adding different amounts of sand to soil affect how quickly water drains through it? Research: Who was Mary Anning and what did she discover?	Pattern seeking: Do all stretchy materials stretch in the same way? Research: What are microplastics and why are they harming the planet? Observation over time and pattern seeking: Does the temperature of a light bulb go up the longer it is on? Comparative and fair testing: Which make of battery lasts the longest? Research: How do submarines sink if they are full of air?

	Have you ever seen a worm/beetle/caterpillar/ woodlouse? How are their bodies different to ours? Where might we find these animals outside? Shall we look under stones? Why do you think they like living in these habitats? How could we build them a bug hotel?	Observation over time: How long do bubble bath bubbles last for? Comparative and fair testing: Which shapes make the strongest paper bridge? Research: How does a cactus survive in a desert with no water? Pattern seeking: Do bigger seeds grow into bigger plants?	Pattern seeking: How has the use of insecticides affected bee population? Observation over time: How long does a battery light a torch for?	Observation over time: How long does a pendulum swing for before it stops? Comparative and fair testing: Who grows the fastest, girls or boys? Research: Why do people get grey/white hair when they get older? Pattern seeking: Is there a pattern between what we eat for breakfast and how fast we can run? Comparative and fair testing: How does the temperature affect how much gas is produced by yeast? Identify, Classify and grouping: How would you make a classification key for vertebrates/ invertebrates or microorganisms?
Scientist/Influential Role Model	-	-	-	-

Cycle B **Autumn Term 1**	**Marvellous Me!** Humanities -My family history *Whole School Topic*						
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World** **Seasonal Changes** **Past and Present** **People, Culture and Communities** *Ourselves - Primary Science Teaching Trust*	**Animals including Humans (human body focus) – Year 2** *Kent Primary Science*		**Animals inc Humans – Year 3** *Kent Primary Science*		**Animals inc Humans – Year 5** *Kent Primary Science*	
Early Learning Goals (EYFS)	Pupils will be learning to:	Pupils should be taught to:		Pupils should be taught to:		Pupils should be taught to:	

National Curriculum	• Talk about the lives of the people around them and their roles in society. • Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps. • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	• 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 different types of food, and hygiene.	• 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. • Identify that humans and some animals have skeletons and muscles for support, protection and movement.	• Describe the changes as humans develop from birth to old age.
Key Concepts	Seasons and weather, species of animals, naming body parts and senses,	Naming body parts and senses, healthy lifestyle, observe over time	Importance of diet and nutrition, pattern seeking	Classification by characteristics, research, observation over time
Substantive and Disciplinary Knowledge	• Can name and identify key parts of the body which relate to our senses. • Can describe the functions of key parts of the body e.g. eyes, ears etc. • Can name the 5 senses. • Can relate to their own lives and describe what they and their families do to look after their bodies. E.g. brushing teeth, eating a range of foods etc, washing, sleeping etc.	• Can observe that animals including humans have offspring, which grow into adults. • Can find out about and describe basic needs of animals, including humans, for survival. • Can describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene. • Can measure/observe how animals, including humans, grow and can	• Can name the nutrients found in food. • Can state that to be healthy we need to eat the right types of food to give us the correct amount of these nutrients. • Can name some bones that make up their skeleton giving examples that support, help them move or provide protection. • Can describe how muscles and joints help them to move. • Can classify food into those that are high or low in particular nutrients.	• Can explain the changes that takes place in boys and girls during puberty. • Can explain how a baby changes physically as it grows and also what it is able to do.

		name and describe distinct stages of growth. • Can use diagrams to describe the life cycle of an animal, e.g. chicken/sheep/frog. • Can make predictions about how growth from a particular stage might progress. • Can make predictions about how growth and health might be affected by conditions.	• Can answer their questions about nutrients in food based on their gathered evidence. • Can talk about the nutrient content of their daily plan. • Use their data to look for patterns (or lack of) when answering their enquiry question. • Can give similarities e.g. they all have joints to help the animal move, and differences between skeletons.	
End Points	Know the effect of changing seasons on the natural world and associated vocabulary, Know how to make observations and create simple drawings.	Do living things change or stay the same?	How do living things work?	How do our bodies change as we get older?
Vocabulary **KS1** **KS2**	body parts - head, arms, leg, hand, foot, thigh, elbow, calf, earlobe, etc. internal body parts – heart, lungs, brain, stomach, muscles, etc. senses – smell, taste, see, hear, listen, touch, feel sounds - loud, quiet, high pitch, low pitch, ear baby, toddler, child, teenager, adult, grow, change properties of materials - soft, hard, rough, smooth, prickly, spiky, fluffy, smelly, salty, etc. height, tall, taller, short, shorter	**Stages of life** –baby, toddler, child, teenager, adult **Life processes –** growth, nutrition (feeding), respiration (breathing is part of this) **Hygiene –** clean, wash, germs **Foods –** healthy, grow, strong, energy	Nutrition Diet Vitamins, minerals, fats, proteins and carbohydrates Functions of skeletons – protect, support and aid movement	Gestation Fetus Fertilisation Species Baby Toddler Adolescent Adult Elderly person Puberty Hormones Pituitary gland Testosterone Estrogen
Key Scientific Enquiry questions	Talk about and order photos from baby to elderly. What has changed? What is the same?	Classifying – Which foods make a healthy diet? Explore - What happens when you exercise?	Research - Why do animals need to eat different foods?	Research – How long are the gestation periods of different animals?

	How do we protect ourselves from the sun/cold? How does exercise change our breathing and heart rate? What sense are you using? Can you describe what it feels like? Can you guess what is in the pot without looking? How could you describe the sound? Can you find a partner who has the same sound? Are the sounds you can hear loud/quiet/high/low? How many body parts can we label? What do you think is inside you? Where is it? Can you draw it? Who else has one of these?	Investigate – Which exercise makes you puff the most? Survey – How often do we wash ourselves?	Research other animals - Which food do animals need in order to survive? Pattern-seeking; Do people with the longest legs jump the furthest?	Pattern-seeking – Is there a relationship between the mass of adult animal and the length of the gestation period? Data analysis – How does the weight of a baby change? Survey – What is the height of children of different ages?
Scientist/Influential Role Model	-	David Attenborough (1926 -)	Diane France (1954 -)	Professor Robert Winston (1940 -)

Cycle B Autumn Term 2	**Lights, Camera, Action!**	**Lights, Camera, Action!**	**Lights, Camera, Action!**	**Ancient Achievers!**		**All fired up and ready to go**	
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World** **Seasonal Changes** *The Black Rabbit and Autumn - Primary Science Teaching Trust*	**<u>Living things</u> and their habitats – Year 2** *Kent Primary Science*		**Light – Year 3** *Kent Primary Science*		**Light – Year 6** *Kent Primary Science*	
Early Learning Goals (EYFS)	Pupils will be learning to:	Pupils should be taught to:		Pupils should be taught to:		Pupils should be taught to:	

National Curriculum	• Explore the natural world around them, making observations and drawing pictures of animals and plants; • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	• Explore and compare the differences between things that are living, dead, and things that have never been alive. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	• Recognise that they need light in order to see things and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by a solid object. • Find patterns in the way that the sizes of shadows change.	• Recognise that light appears to travel in straight lines. • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
Key Concepts	Animals and living things, habitats, parts of the body, healthy lifestyle	Food chains, animal survival, identify, classify and grouping	Light, shadows, importance of light, reflection of light, pattern seeking, observation over time	Light, behaviour and interaction of light, pattern seeking
Substantive and Disciplinary Knowledge	• Can name and identify key parts of the body which relate to our senses. • Can describe the functions of key parts of the body e.g. eyes, ears etc. • Can name the 5 senses. • Can relate to their own lives and describe what they and their families do to look after their bodies. E.g. brushing teeth, eating a range of foods etc, washing, sleeping etc.	• Can find a range of items outside that are living, dead and never lived. • Can construct a food chain that starts with a plant and has the arrows pointing in the correct direction. • Can sort into living, dead and never lived. • Using a food chain can explain what animals eat.	• Can describe how we see objects in light and can describe dark as the absence of light. • Can state that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses. • Can define transparent, translucent and opaque. • Can describe how shadows are formed by objects blocking light. • Can describe patterns in visibility of different objects in different lighting conditions and predict which will be	• Can describe with diagrams, as appropriate, how light travels in straight lines either from sources or reflected from other objects into our eyes. • Can describe with diagrams, as appropriate, how light travels in straight lines past translucent or opaque objects to form a shadow of the same shape. • Can predict and explain with diagrams or models, as appropriate, how the path of light rays can be directed by reflection to be seen, for example, reflection in car

			more or less visible as conditions change. Therefore can clearly explain that objects are not visible in complete darkness. • Can describe patterns in how shadows vary due to blocking of light and predict what will happen as light source or object are moved.	rear view mirrors or in a periscope. • Can predict and explain with diagrams or models, as appropriate, how the shape and size of shadows can be varied.
End Points	Know how to explore the environment with the 5 senses, know and use vocabulary associated with shadows, know the names of some common animals and habitats in the local environment. Know the main parts of some animals' bodies.	Can living things live forever?	What is a shadow?	Why does my shadow change length over the course of a day?
Vocabulary **KS1** **KS2**	light source, Sun, torch, light, dark, shadow, shade tall, taller, short, shorter, wide, wider habitat, environment, burrow leaves, cones, grass, stones, feathers, fur properties of materials - soft, hard, smooth, rough, smelly, spiky body parts - head, body, legs, ears, tail, eyes mixture	Organism – plant, animal Trees - deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc Wild flowering plants - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. Garden plants – crocus, daffodil, bluebells, etc Parts of plants – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs	**Simple comparisons**: dark, dull, bright, very bright **Comparative vocabulary:** brighter, duller, and darker **Superlative vocabulary:** brightest, dullest, and darkest Opaque, translucent, transparent Shadow – block, absence of light Reflect – bounce, mirror, reflection See – light source Sun – sunset, sunrise, position	**Simple comparisons**: dark, dull, bright, very bright **Comparative vocabulary:** brighter, duller, and darker **Superlative vocabulary:** brightest, dullest, and darkest Opaque, translucent, transparent Shadow – block, absence of light Reflect – bounce, mirror, reflection See – light source Sun – sunset, sunrise, position

		Invertebrates – snail, slug, woodlouse, spider, beetle, fly, etc Pond animals – pond skater, water slater, ramshorn snail, pond snail, leech, common frog, smooth newt, etc		
Key Scientific Enquiry questions	Compare features of rabbits with other animals. What do you know about rabbits? How are their bodies different to ours? Where do they live? What do they eat? Can you build an animal? Can you make an animal shadow using the torch? Can you design and create a home for a rabbit? Why do they live underground? What other animals live underground? How can you make your burrow better/stronger?	Observation enquiry – What are animals eating? Deep thinking time – How do we know that plants are living things? Simple tests – How does a habitat provide for the needs of the plants that live there Secondary sources research – How do plants and animals depend on each other?	Explore – Where can shadows be found? Illustrative fair-test – Which is the darkest shadow? Illustrative fair-test – How does the distance between the puppet and the light source affect the size of the shadow created? Pattern-seeking – How does the angle at which the light source shines on an object affect the length of shadow of that object? Investigation over time – How does the length and place of a shadow change?	Modelling – What evidence would prove that light travels in straight lines? Modelling – How can we show why shadows have the same shape as the object that casts them? Problem-solving – Where would we need to place the umbrellas so that the people around the pool have the most shade? Fair-test investigation – Which materials is best at reflecting light? Pattern-seeking – How can we increase the number of reflections? Comparative test – Which window lets through the most amount of light?
Scientist/Influential Role Model	-	Kate Humble (1968 -) Steve Backshall (1973 -)	James Clerk Maxwell (1831- 1879) Thomas Young (1773 – 1829)	Thomas Young (1773 – 1829) Sir David Brewster (1781 – 1868) Jean-Bernard-Leon Foucault (1819-1868)

Cycle B Spring Term 3	**Topic The Great Fire of London** Humanities - Weather and Seasons	**Topic The Great Fire of London** Humanities - Weather and Seasons	**Topic The Great Fire of London** Humanities - Weather and Seasons	**Under the canopy**	**Frozen Kingdom**

	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World** **Seasonal Changes** **Expressive Arts and Designs** *The Three Little Pigs and Winter - Primary Science Teaching Trust*	**Everyday Materials – Year 1** *Kent Primary Science*		**Sound – Year 4** *Kent Primary Science*		**Earth and Space – Year 5** *Kent Primary Science*	
Early Learning Goals (EYFS) **National Curriculum**	Pupils will be learning to: • Safely use and explore a variety of materials, tools and techniques, • experimenting with colour, design, texture, form and function; • Share their creations, explaining the process they have used. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. • Make use of props and materials when role playing characters in narratives and stories.	Pupils should be taught to: • Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, water and rock. • Describe the simple physical properties of a variety of everyday materials. • Compare and group together a variety of everyday materials on the basis of their physical properties.		Pupils should be taught to: • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from a sound travel through a medium to the ear. • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases.		Pupils should be taught to: • Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth. • Describe the Sun, Earth and Moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky
Key Concepts	Materials, names, properties	Materials, names, properties and suitability of materials, comparative and fair testing		Sound, vibrations of sound, pattern seeking		Earth and space, orbits, Earth, moon and sun, research, observing over time	
Substantive and Disciplinary Knowledge	• Can recognise some environments that are different to the one in which they live. • Can recognise some similarities and differences between life in this country and life in other countries.	• Can label a picture or diagram of an object made from different materials. • Can describe the properties of different materials. • Can sort objects and materials using a range of properties.		• Can describe different types of objects producing different sounds and that the sound is produced by vibration in the object. • Can describe sounds travelling through different mediums such as air, water, metal.		• Can show using diagrams the movement of the Earth and Moon. • Can explain the movement of the Earth and Moon. • Can show using diagrams the rotation of the Earth and how this causes day and night.	

	• Can use relevant, specific vocabulary to describe what they see when learning about contrasting locations. • Can observe and interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water.	• Can choose an appropriate method for testing an object for a particular property. • Can use their test evidence to answer the questions about properties e.g. Which cloth is the most absorbent?	• Can find patterns between the pitch and volume of a sound and the features of the object that produced it. • Can recognise that sounds get fainter as the distance from the sound source increases. • Can explain what happens when you strike a drum or pluck a string and use a diagram to show how sounds travel from an object to the ear. • Can demonstrate how to increase or decrease pitch and volume using musical instruments or other objects. • Can explain how loudness can be reduced by moving further from the sound source or by using a sound insulating medium.	• Can explain what causes day and night. • Can use the model to explain how the Earth moves in relation to the Sun and the moon moves in relation to the Earth. • Can demonstrate and explain verbally how day and night occur. • Can explain evidence gathered about the position of shadows in term of the movement of the Earth. Can show this using a model. • Can explain how a sundial works • Can explain verbally using a model why we have time zones. • Can describe the arguments and evidence used by scientists in the past.
End Points	Know vocabulary related to finding similarities and differences of different materials. Know to explore how things work and how things change, safely use and explore a variety of materials, tools and techniques, experimenting with colour, design and texture.	What are the things I use made from?	How can we make different sounds?	Sun, Earth and Moon: what is moving and how do we know?
Vocabulary **KS1** **KS2**	**materials –** straw, sticks, bricks, plastic, paper, metal, fabric	**Types of materials:** wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil	Ways to create sound – bang, blow, shake, and pluck Loudness – quiet, quieter, quietest, loud, louder and loudest	Day and night - Earth, axis, rotate Solar system – Star = Sun, Planets = Mercury, Venus,

	properties of materials – waterproof, strong, stable, rigid, bendy, flexible wind, breeze, blow, flutter, air, move, bend, weather, force	**Properties of materials:** hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, transparent/not transparent, sticky/not sticky **Verbs associated with materials:** crumble, squash, bend, stretch, twist **Senses:** touch, see, hear, smell and taste	Pitch - low, lower, lowest, high, higher, and highest Vibrations Source	Earth, Mars, Jupiter, Saturn, Uranus, Neptune (Pluto was classified as Dwarf planet in 2006) Phases of the Moon - full moon, gibbous moon, half moon, crescent moon, new moon, waxing ,waning Moon's orbit: 29.5 days, lunar month Orbit, planets, revolve, sphere
Key Scientific Enquiry questions	What materials would you choose to make a house for the three little pigs? Why? Which might be the strongest? How will you twist/stretch /snap/cut each material? Build houses from each – Which can you blow down? Can you make a house with a transparent window? Which materials might make the best curtains? Why? How can you test different roof material to see which keep the pig dry? Which materials keep the pig dry? Why?	Observe, identify and classify – What are objects made from? Observation – What are the properties of the different materials? Identifying and classifying – What are the properties of different materials? Simple test – What happens to materials when they are heated and cooled? Explore – Cooking changes – How can we change food materials in the kitchen? Problem-solve/simple test – Which fabric will be best for a jacket for a child? Simple test – Which materials make the best crash mat for Humpty Dumpty?	Survey – What different sounds can be heard? Comparative test – What happens to the sound of the drum when we get further away from it? Problem-solving – Where in the school would be the best places to put fire alarms? Exploration – Where does sound go when it has been made? Comparative test – How can we alter the loudness of a sound? Illustrative fair-test – Does the length of an elastic band affect the pitch of the sound produced?	What is in our solar system? How large are they? How far apart are they? Research - What is it like on the other planets in the solar system? Deep thinking time - How can we prove the shape of the Earth, Sun and Moon? Deep thinking time - How does the shape of the Moon appear to change over time? Modelling- How does the shape of the Moon appear to change over time? Problem-solving – How can we use the Sun to tell the time?
Scientist/Influential Role Model	-	John Boyd Dunlop (1840 – 1921) Charles Macintosh (176 – 1843) John McAdam (1756 – 1836)	Robert Boyle (1627- 1691) Ernst Mach (1838-1916) Heinrich Hertz (1857-94)	Aristarchus (310 – 230 B.C.). Nicolas Copernicus (1473 – 1543). Aristotle Galileo Galilei (1564 – 1642). Edwin Hubble (1889-1953). William Huggins.

				Cecilia Payne-Gaposchkin (1900-79). Arthur Eddington (1882- 1944). Professor Brian Cox (1968 -) Heidi Hammel (1960 -)

Cycle B Spring Term 4	**Topic Carnival of Colour** Humanities Hot and Cold Places	**Topic Carnival of Colour** Humanities Hot and Cold Places	**Topic Carnival of Colour** Humanities Hot and Cold Places	**Traders and Raiders**		**To Infinity and Beyond**	
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World Seasonal Changes People, Culture and Communities** *Dear Zoo, Ugly Five and Spring - Primary Science Teaching Trust*	**Living things and their <u>habitats</u> – Year 2** *Kent Primary Science*		**Forces and Magnets – Year 3** *Kent Primary Science*		**Evolution and Inheritance – Year 6** *Kent Primary Science*	
Early Learning Goals (EYFS) National Curriculum	Pupils will be learning to: Explain some similarities and differences between life in this country and life in other countries, drawing on knowledge from stories, non-fiction texts and – when appropriate – maps. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them,	Pupils should be taught to: • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. • Identify and name a variety of plants and animals in their habitats, including micro-habitats		Pupils should be taught to: • Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • 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.		Pupils should be taught to: • Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. • Identify how animals and plants are adapted to suit their environment in different ways and that	

	including the seasons and changing states of matter.		• Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.	adaptation may lead to evolution.
Key Concepts	Living things and their habitats,	Living things and their habitats, adaptations of habitats, naming habitats. Pattern seeking	Forces, magnetic poles, magnetic materials, comparative and fair testing, identifying, classifying and grouping	Evolution and inheritance, human life cycle, genetic variation, research
Substantive and Disciplinary Knowledge	• Can recognise some environments that are different to the one in which they live. • Can recognise some similarities and differences between life in this country and life in other countries. • Can use relevant, specific vocabulary to describe what they see when learning about contrasting locations. • Can observe and interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object and a boat floating on water.	• Can name a range of animals and plants that live in a habitat and micro-habitats that they have studied. • Can talk about how the features of these animals and plants make them suitable to the habitat. • Can talk about what the animals eat in a habitat and how the plants provide shelter for them. • Can give key features that mean the animal or plant is suited to its micro-habitat. • Can explain in simple terms why an animal or plant is suited to a habitat.	• Can give examples of forces in everyday life. • Can give examples of objects moving differently on different surfaces. • Can name a range of types of magnets and show how the poles attract and repel. • Can draw diagrams using arrows to show the attraction and repulsion between the poles of magnets. • Can use their results to describe how objects move on different surfaces. • Can use their results to make predictions for further tests. • Can use classification evidence to identify that some metals but not all are magnetic. • Through their exploration they can show how like poles repel and unlike poles attract and name unmarked poles. • Can use test data to rank magnets.	• Can explain the process of evolution • Can give examples of how plants and animals are suited to an environment. • Can give examples of how an animal or plant has evolved over time e.g. penguin, peppered moth. • Give examples of living things that lived millions of years ago and the fossil evidence we have to support this. • Can give examples of fossil evidence that can be used to support the theory of evolution. • Can identify characteristics that will make a plant or animal suited or not suited to a particular habitat. • Can link the patterns seen in the model to the real examples.

				• Can explain why the dominant colour of the peppered moth changed over a very short period of time.
End Points	Know by sight environments other than pupils own and use associated vocabulary, know the importance of caring for the environment.	Why do different animals live in different places?	What can magnets do?	How do living things change over time and place?
Vocabulary **KS1** **KS2**	**animal names -** monkey, lion, giraffe, tiger, snake, hippopotamus, penguin **body parts** - head, body, legs, tail, neck, feathers, wings, fins, gills, eyes, ears **habitats -** grass, desert, rainforest, ice, snow **properties of materials -** soft, hard, smooth, rough	Habitat, micro habitat Pond, meadow, log pile, woodland, river, lake, beach, cliff **Trees -** deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc **Wild flowering plants** - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants** – crocus, daffodil, bluebells, etc	Magnets – bar and horseshoe Attract, repel North and south poles Magnetic Magnetic field	Evolution, evolve Natural selection Survival Reproduction Offspring, parents, siblings Environment Variation Fossils; ammonites, belemnites, micrasters, etc
Key Scientific Enquiry questions	Which animals live in the desert /in water? Can you describe the animals? What similarities and differences do you notice? Why are they well-suited to where they live? Can you make a safe place for the animals to live? How much space does the animal need?	Deep thinking time – Which habitats do you know of on our amazing planet Earth? Survey – How many different living things can we find? Identifying – What are different habitats like? Investigation over time - Do habitats change during a year? Observation enquiry –Why would an animal live in that habitat?	Illustrative fair test – How does the type of surface on the table affect the speed of the tub travelling on it? Classification – Which materials are attracted to magnets? Comparative test – Which materials can magnets attract through? Comparative test - Which magnet is the strongest?	Deep thinking time – How do we know about living things that have lived in the past? Observation – What do you think the fossil is? Model/Experiment – What are different types of beaks suited for? Which shape feet are best for swimming?

	How can we meet its needs for food, exercise, sleep? Where do you think this would animal live in the wild? Which other animals might live in the same place? How are the animals' homes similar/different?	Pattern-seeking enquiry - Which caterpillar will survive? Survey - Where is the most popular place for animals to live? Investigation over time - Does the number of animals found in a habitat change?		Research – How do different animals use camouflage to survive? Observation and measurement - How do plants make sure that they get lots of light?
Scientist/Influential Role Model	-	Kate Humble (1968 -) Steve Backshall (1973 -)	William Gilbert (1544 – 1603) Hans Christian Oersted (1777 – 1851)	Charles Darwin (1809 – 1882) Alfred Russel Wallace (1823 - 1913) Richard Owen (1804 – 1882)

Cycle B Summer Term 5	**Topic- Calling all Explorers** Humanities Sarah Forbes Bonetta – a significant individual	**Topic- Calling all Explorers** Humanities Sarah Forbes Bonetta – a significant individual		**Let's Grow!**		**Footsteps through time**	
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Unit of Learning	**The Natural World** **Seasonal Changes** **Expressive Arts and Designs** *The Very Hungry Caterpillar and Summer - Primary Science Teaching Trust*	**Animals including Humans (animal focus, comparing to humans) – Year 1** *Kent Primary Science*		**Plants – Year 3** *Kent Primary Science*		**Living Things and their Habitats – Year 6** *Kent Primary Science*	
Early Learning Goals (EYFS) **National Curriculum**	Pupils will be learning to: • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.	Pupils should be taught to: • 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 different types of food, and hygiene.		Pupils should be taught to: • Identify and describe the functions of different parts of plants; roots, stem, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, nutrients from soil and room to grow) and how they vary from plant to plant.		Pupils should be taught to: • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. • Give reasons for classifying plants and	

	• Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.		• Investigate the ways in which water is transported within plants. • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	animals based on specific characteristics.
Key Concepts	Species of animals, growth, animal survival, healthy lifestyle	Species of animals, growth, animal survival, healthy lifestyle, research,	Plants, naming parts of a plant and their functions, transpiration, observations over time	classification by characteristics, identify, classify and grouping
Substantive and Disciplinary Knowledge	• Can describe how we care for the natural world around us. • Can observe and describe the process of planting and growing seeds. • Can sing songs and join in with rhymes and poems to learn about the natural world. • Can draw pictures of the natural world, including animals and plants. • Can explain the life cycle of human or animal studied e.g. tadpole, chick, caterpillar.	• Can sort and group animals using similarities and differences. • Can name a range of animals, which includes animals from each of the vertebrate groups. • Can label and describe the key features of these named animals. • Can use secondary resources, including talking to experts, to find out and describe what a range of animals eat. • Can use simple charts etc. to identify unknown animals.	• Can explain the function of the parts of a flowering plant. • Can describe the life cycle of flowering plants, including pollination, seed formation, seed dispersal, and germination. • Can give different methods of pollination and seed dispersal, including examples. • Can explain observations made during investigations. • Can look at the features of seeds to decide on their method of dispersal. • Can draw and label a diagram of their created flowering plant to show its parts, their role and the method of pollination and seed dispersal.	• Can give examples of animals in the five vertebrate groups and some of the invertebrate groups. • Can give the key characteristics of the five vertebrate groups and some invertebrate groups. • Can compare the characteristics of animals in different groups. • Can give examples of flowering and non-flowering plants. • Can use classification materials to identify unknown plants and animals. • Can create classification keys for plants and animals. • Can give a number of characteristics that explain why an animal

				belongs to a particular group.
End Points	Know and use vocabulary associated with animal life cycles e.g. egg, chrysalis, caterpillar, warmth, food, water, die	What are animals like?	Why do plants have flowers?	In what ways can we sort living things?
Vocabulary **KS1** **KS2**	**fruit -** apple, pear, plum, strawberry, orange, watermelon food, healthy, unhealthy **properties of materials** - soft, hard, smooth, rough, hairy, smelly, sticky life cycle, egg, hatch, caterpillar, chrysalis, cocoon, butterfly **body parts:** head, body, leg, wing, antennae camouflage, hide, predator, prey **<u>minibeasts:</u>** worm, spider, fly, woodlouse, etc.	**Classification** - Birds, fish, amphibians, reptiles, mammals and invertebrates **Classification** - Carnivores, herbivores, omnivores **Stages of growth of many insects – egg, larva, pupa, adult** **Names of some invertebrates** – ladybirds, butterflies, dragonflies, etc **Names of some amphibians** – smooth newt, common frog, toad	**Trees -** deciduous, evergreen, ash, birch, beech, rowan, common lime, oak, sweet chestnut, horse chestnut, apple, willow, sycamore, fir, pine , holly, etc **Wild flowering plants** - cleavers, coltsfoot, daisy, dandelion, garlic mustard, mallow, mugwort, plantain, red clover, self heal, shepherd's purse, sorrel, spear thistle, white campion, white deadnettle and yarrow. **Garden plants** – crocus, daffodil, bluebells, etc **Parts of plants** – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs **Parts of a flower** – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule) **Processes** – pollination, fertilisation, germination	Classification Vertebrate, invertebrate Kingdoms: animal, plant, 'micro-organism' Classes: amphibian, reptile, bird, mammal, Scales, feathers Flowering plant, non-flowering plant
Key Scientific Enquiry questions	Where do caterpillars come from? What do caterpillars really eat? How do caterpillars become butterflies?	How can you work out the order of the animals' life cycles? Caterpillar hunt: How many caterpillars? Do any occur on more than one plant?	Observation – What do the roots of plants look like close up? Simple test/modelling – How does the number of roots affect	Classifying – How can we classify living things? Survey over time – Which fungi can you identify during the year?

	What happens to the Butterflies? Can you make a model of the egg/caterpillar/chrysalis/butterfly stage? What is the name of this minibeast? How many legs does this minibeast have? Does this minibeast have wings? Can you tell me the names of any body parts? Can you sort and describe these minibeasts? How many caterpillars of each colour did you find? Which colours were easier to find? What colours were more difficult to find? Why do you think some caterpillars are camouflaged? Why are some caterpillars brightly coloured even though they are less camouflaged?	Do they occur on a particular part of a plant? Can anyone find a caterpillar eating? Egg hunt: Are the eggs attached to anything? Are they easy to see? Are they found on their own or in groups? Where in the wildlife area were they found?	the amount of water that is absorbed? Investigation over time – Does the length of roots change over time? Simple test – What happens to the leaves of plants when their roots are placed in dye? Investigation over time – What happens when we deprive the leaf from light? Observation and measurement - How much light does a tree capture at different times in the year? Pattern seeking – Can we predict where the seeds from plants will land? Survey - What type of seeds and fruits can be found?	Classifying – How can plants be placed in different groups? Survey A– Can we find examples of plants from the different plant groups? Classification – How can we classify trees? Classification – How can we classify different flowering plants? Survey – How many different flowering plants can we identify? Problem-solving – How can attract more bees and butterflies into the school grounds? Identifying and classifying - Bio-blitz – How many different things live in the school grounds?
Scientist/Influential Role Model	-	David Attenborough (1926 -)	Barbara McClintock (1902 – 1992) Joseph Banks (1743 – 1820) Gregor Mendel (1822 -1884) Carl Linnaeus (1707 – 1778) George Forrest (1873 – 1932)	Carl Linnaeus (1707-1778) Evelyn Cheesman (1881 – 1969) Sir Hans Sloane (1660 – 1753) Gilbert White (1720 – 1793)

Cycle B Summer Term 6	**A Country Garden (Whole School topic)**						
	YR	Y1	Y2	Y3	Y4	Y5	Y6
Key Concept	**The Natural World Seasonal Changes**	**Second Look Science Scientific Enquiry**		**Animals inc Humans – Year 4**		**Second Look Science Scientific Enquiry**	

	Expressive Arts and Designs *Dinosaurs Day Out and Summer - Primary Science Teaching Trust*		*Kent Primary Science*	
Early Learning Goals (EYFS) **National Curriculum**	Pupils will be learning to: • Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used. • Make use of props and materials when role playing characters in narratives and stories. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Pupils should be taught to: • 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 observations and ideas to suggest answers to questions. • Gathering and recording data to help in answering questions.	Pupils should be taught to: • Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions. • Construct and interpret a variety of food chains, identifying producers, predators and prey.	Pupils should be taught to: • Plan different types of scientific enquires to answer questions, including recognising and controlling variable where necessary • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Use test results to make predictions to set up further comparative and fair tests • Report and present findings from enquires, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms • Identify scientific evidence that has been used to support or refute ideas or arguments.

Key Concepts	Materials, Forces, Weather	Revision of enquiry skills: Understanding Questioning and researching Observing over time Comparative fair testing Pattern seeking Classifying and grouping	Functions of, organs, digestive system, research	Revision of enquiry skills: Understanding Questioning and researching Observing over time Comparative fair testing Pattern seeking Classifying and grouping
Substantive and Disciplinary Knowledge	• Can describe how we care for the natural world around us. • Can observe and describe the process of planting and growing seeds. • Can sing songs and join in with rhymes and poems to learn about the natural world. • Can draw pictures of the natural world, including animals and plants. • Can explain the life cycle of human or animal studied e.g. tadpole, chick, caterpillar.	• Ask simple questions and recognise that they can be answered in different ways • Observe closely, using simple equipment • Perform simple tests • Identify and classify • Use their observations and ideas to suggest answers to questions • Gather and record data to help in answering questions.	• Can sequence the main parts of the digestive system. • Can draw the main parts of the digestive system onto a human outline. • Can describe what happens in each part of the digestive system. • Can point to the three different types of teeth in their mouth and talk about their shape and what they are used for. • Can name producers, predators and prey within a habitat. • Can construct food chains and webs. • Can use diagrams or a model to describe the journey of food through the body explaining what happens in each part. • Can record the teeth in their mouth (make a dental record). • Can explain the role of the different types of teeth. • Can explain how the teeth in animal skulls show they	• Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • Use test results to make predictions to set up further comparative and fair tests • Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations • Identify scientific evidence that has been used to

			are carnivores, herbivores or omnivores. • Can create food chains and webs based on research.	support or refute ideas or arguments.
End Points	Know and use vocabulary associated with forces e.g. push, pull, twist, bend, stretch, snap, move, know and use vocabulary associated with weather e.g. slip, grip, know to explore how things work and how things change, safely use and explore a variety of materials, tools and techniques, experimenting with colour, design and texture.	In conjunction with KS1 NC objectives: Being curious and ask questions about what they notice. Developing their understanding of scientific ideas. Using different types of scientific enquiry to answer their own questions, Observe changes over a period of time, notice patterns, group and classify things, carry out simple comparative tests, and find things out using secondary sources of information. Use simple scientific language to talk about what they have found out.	What do our bodies do with the food we eat?	In conjunction with UKS2 NC objectives covered this year: Ask questions to extend their current scientific knowledge. Developing their understanding of scientific ideas Observe changes over a period of time, notice patterns, group and classify things, carry out simple comparative tests, and find things out using secondary sources of information. Use a range ofscientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Use scientific equipment and resources in a safe and knowledgeable way. Understand resilience in Science.
Vocabulary **KS1** **KS2**	ice, water, salt, melt, freeze, frozen force, push, pull, move, faster, slower direction - up, down, forwards, backwards surface, slope, bumpy, flat, smooth, rough	Question, answer Observe, observing equipment identify, classify, sort, group record diagram, chart map data compare, contrast, describe biology, chemistry, physics	Digestive system –, oesophagus, stomach, acid, small intestine Protein, vitamin, mineral, carbohydrate, fats, energy, growth, repair. Saliva Teeth – Incisors, canines, premolars, molars Function Foodchain – producer, consumer, predator, prey	Plan, variables measurements, accuracy, precision, repeat repeats record data scientific diagrams, labels classification keys tables, scatter graphs, bar graph line graph predictions further comparative and fair tests report and present conclusions, explanations

				casual relationships degree of trust oral and written display, presentation evidence, support refute ideas arguments identify, classify and describe patterns, systematic quantitative measurements
Key Scientific Enquiry questions	Can you retell the story using these vehicles? Which vehicles move fast/slowly? How can you make the cars go faster/slower? How can you make the cars change direction? How does your vehicle move on this surface? Why? Can you make it go faster/slower? How do you do this? How does different weather effect travel? Can we make the dinosaurs a healthy picnic?	Comparative and fair testing: Do amphibians have more in common with reptiles or fish? Comparative and fair testing: Do bananas make us run faster? Pattern seeking: Which habitat do worms prefer – where can we find the most worms? Research: How does the habitat of the Arctic compare with the habitat of the rainforest? Observation over time: What happens to shaving foam over time? Identify, classify and grouping: We need to choose a material to make an umbrella. Which materials are waterproof? Research: Do all animals have the same senses as humans? Research: How are the animals in Australia different to the ones that we find in Britain? Pattern seeking: Does the wind always blow the same way?	Observing – How many different types of teeth have we got? What are their functions? Simple test – What are the functions of the different types of teeth? Simple test – What happens when we chew food? Deep thinking time – What are food-chains? Survey – What do animals in our wildlife area eat? Research – Find out what different animals in the wildlife area eat.	Pattern seeking: Is there a relationship between a mammal's size and its gestation period? Comparative and fair testing: How does the level of salt affect how quickly brine shrimp hatch? Pattern seeking: Is there a pattern to how bright it is in school over the day? And, if there is a pattern, is it the same in every classroom? Observation over time: How does my shadow change over the day? Identify, classify and grouping: How could you organise all the objects in the solar system into groups? Research: How have our ideas about the solar system changed over time? Pattern seeking: Is there a pattern between the size and shape of a bird's beak and the food it will eat? Identify, classify and grouping: Compare the skeletons of apes,

				humans, and Neanderthals – how are they similar, and how are they different? Comparative and fair testing: Which is the most common invertebrate on our school playing field?
Scientist/Influential Role Model	-	-	Al-Jahiz (9th Century) Charles Elton (1900 – 1991)	-