	Science Long Term Plan Cycle A									
Year group	Autumn	Spring	Summer							
Nursery (3-4)	Understanding the World Exploring natural and manmade materials. Talk about natural materials using a wide vocabulary linked to all my senses.	 Understanding the World Children will talk about natural materials using a wide vocabulary linked to all their senses. Learn about some of the ways they have changed over their life. Learn how to care for their environment and plant and care for plants. 	 Understanding the World Learn to care for their environment and plant and care for plants. Children will discuss the key features of life cycles using key vocabulary Learn about the world around them observing animals and plants. 							
Reception	Understanding the World Children will understand the terms 'same' and 'different'. Children will explore and ask questions about the natural world around them.	 Understanding the World Children will talk about features of the environment they are in and learn about the different environments. Children will make observations about plants discussing similarities and differences. 	Understanding the World Children will make observations about animals discussing similarities and differences. Children will know some important processes and changes in the natural world, including states of matter.							
Y1	<u>Local Detective Heroes</u> Materials (identifying) Materials (comparing)	We do like to be beside the seaside Animals including humans (parts) Animals including humans (types)	Where would you prefer to live- England or <u>Africa?</u> Plants Seasonal change							
Y2	<u>Local Detective Heroes</u> Materials (uses) Materials (changing shape)	We do like to be beside the seaside Living things and their habitat Plants	Where would you prefer to live- England or <u>Africa?</u> Animals including humans							
Y3/4 (Y3)	`		Go Greece Lightning Light Plants- parts of plants							
Y5/6	War child Animals including humans (Y6) Properties and changes of materials (properties of materials) (Y5)	<u>Trailblazers</u> Forces (Y5) Animals including humans (Y5)	Smashing Saxons Light (Y6) Earth and Space (Y5)							

Science Long Term Plan Cycle B								
Year group	Autumn	Spring	Summer					
Nursery (3-4)	Understanding the World Exploring natural and manmade materials. Talk about natural materials using a wide vocabulary linked to all my senses.	 Understanding the World Children will talk about natural materials using a wide vocabulary linked to all their senses. Learn about some of the ways they have changed over their life. Learn how to care for their environment and plant and care for plants. 	Understanding the World Learn to care for their environment and plant and care for plants. Children will discuss the key features of life cycles using key vocabulary Learn about the world around them observing animals and plants.					
Reception	 Understanding the World Children will understand the terms 'same' and 'different'. Children will explore and ask questions about the natural world around them. 	 Understanding the World Children will talk about features of the environment they are in and learn about the different environments. Children will make observations about plants discussing similarities and differences. 	Understanding the World Children will make observations about animals discussing similarities and differences. Children will know some important processes and changes in the natural world, including states of matter.					
Y1	Great and ghastly events Materials (identifying) Materials (comparing)	Unbelievable UK Animals including humans (parts) Animals including humans (types)	Memory Box Plants Seasonal change					
Y2	<u>Local Detective Heroes</u> Materials (uses) Materials (changing shape)	We do like to be beside the seaside Living things and their habitat Plants	Where would you prefer to live- England or <u>Africa?</u> Animals including humans					
Y3/4 <mark>(Y4)</mark>	Stones and Bones Animals including humans States of matter	<u>Land of the Pharaohs</u> Sound Electricity	Incredible Italia Living things and their habitat					
Y5/6	Rags to Riches Living things and their habitats (Y5) Electricity (Y6)	Raid, invade, stayed Living things and their habitats (Y6) Evolution and inheritance (Y6)	Amazing Amazon Properties and changes of materials (changes of materials)					

Working Scientifically/Disciplinary Knowledge

Working Scientifically/Disciplinary Knowledge	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plan	Choose the resources they need for their chosen activities and say when they do or don't need help.	Ask simple questions. With support, suggest ways of answering a question.	Ask simple questions. Recognise that questions can be answered in different ways.	Ask relevant questions when prompted and use different types of scientific enquiry to answer them. Set up simple and practical enquiries, comparative and fair tests with some support.	Ask relevant questions. Use different types of scientific enquiries to answer their questions. Set up simple and practical enquiries, comparative and fair tests. Select appropriate equipment (from a selection).	Plan different types of scientific enquiries to answer a variety of scientific questions. With prompting, recognise and control variables where necessary. With support, select appropriate measuring equipment.	Plan different types of scientific enquiries to answer a variety of scientific questions. Recognise and control variables where necessary. Select all equipment needed. Consider alternative investigations and explain why they have chosen to complete their investigation.
Do	Know about similarities and differences in relations to places, objects, materials and living things. Make observations of animals and plants. Explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.	Make relevant observations using simple equipment. Follow steps to conduct a simple test. Measure using uniform, non-standard units. Identify and classify with guidance.	Observe closely, using simple equipment. Perform simple tests. Measure using simple standard units and measuring equipment. Identify and classify.	Make systematic and careful observations, using simple equipment. With support, take accurate measurements using standard units, where appropriate.	Make systematic and careful observations using a range of equipment, including thermometers and data loggers. Take accurate measurements using standard units, where appropriate.	Use a range of scientific equipment to take measurements with increasing accuracy and precision. Begin to understand the need for repeat readings.	Use a range of scientific equipment to take measurements with increasing accuracy and precision. Identify when to take repeat readings

	Select and use technology for						
Record	particular purposes. Represent their own thoughts and feelings through design and technology, art, music, dance, role play and stories.	With support, gather and record data.	Gather and record data to help answer questions. Record and communicate their findings in a range of ways e.g. two column table, block graph etc. and begin to use simple scientific language.	With modelling and guidance, gather, record, classify and present data in a variety of ways to help to answer questions. With some support, record findings using simple scientific language, drawings and labelled diagrams. Record findings using keys and bar charts (with support), and tables.	Gather, record, classify and present data in a variety of ways to help to answer questions. Record findings using simple scientific language, drawings and labelled diagrams. Record findings using keys, bar charts, and tables	Take and process repeat readings. Record data and results. Record data using scientific diagrams and labels, keys, tables, bar charts and line graphs.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar charts and line graphs. Use more complex scales.
Review	Talk about the features of their own immediate environment and how environments might vary from one another. Explain why some things occur and talk about changes.	Recognise findings and describe observations.	Use their observations, ideas and data to suggest answers to simple questions.	Report on findings from enquiries, including oral and written explanations, of results and conclusions. Report on findings from enquiries using displays or presentations. Identify differences, similarities or changes related to simple scientific ideas and processes. Use results to draw simple conclusions.	Report on findings from enquiries, including oral and written explanations, of results and conclusions. Report on findings from enquiries using displays or presentations. Identify differences, similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or	Report and present findings from enquiries, including conclusions and, with prompting, suggest causal relationships. Report and present findings from enquiries in oral and written forms such as displays and other presentation. Identify scientific evidence that has been used to support or refute ideas or arguments. Use test results to suggest further	Report and present findings from enquiries, including conclusions and causal relationships. Report and presents findings from enquiries in oral and written forms such as displays and other presentation. Report and present findings from enquiries, including explanations of the validity of their results. Suggest changes to increase the accuracy.

					to support their	comparative or fair	Identify scientific
					findings.	tests.	evidence that has
							been used to
					Use results to draw		support or refute
					simple conclusions,		ideas or arguments.
					make predictions for		Use test results to
					new values, suggest		make predictions to
					improvements and		set up further
					raise further		comparative and fair
					questions		tests.
	Look closely,	Questions, answers,	Previous vocab plus	Previous vocab plus	Previous vocab	Previous vocab plus,	Previous vocab
	observe, watch,	equipment, gather,	observe changes	scientific enquiry	plus enquiry types	notice patterns,	plus opinion/fact,
	touch, feel, smell,	measure, record,	over time, notice	changes over time,	increase, decrease,	relationships,	confidently name
	listen, same,	results, sort, group,	patterns, secondary	notice patterns,	identify, classify,	independent	scientific enquiry
	different, compare,	test, explore,	sources, hand	secondary sources,	order, notice	variable, dependent	types.
	ask questions,	observe, compare,	lenses, egg timers,	comparative tests,	patterns,	variable, controlled	
	record, sort, group	describe,	identify, classify,	fair tests, careful,	relationships,	variable, accuracy,	
		similar/ities,	data.	accurate,	appearance,	precision, degree of	
		different/ces,		observations,	present results,	trust, classification	
Vocabulary		beaker, pipette,		equipment, gather,	data loggers.	keys, scatter graphs,	
v ocabalal y		syringe.		measure, record,		line graphs, causal	
		3,111,60.		data, evidence,		relationships,	
				results, keys, bar		support/refute, data	
				charts, table,			
						loggers.	
				results,			
				conclusions,			
				predictions,			
				support,			
				thermometers.			

EYFS	3-4 year olds (Development Matters)	Reception (Development Matters)	By the end of Reception (ELG)
	Children will explore natural and manmade materials.	Children will understand the terms 'same' and	Children can explore the natural world around
	Children will talk about natural materials.	'different'.	them, making observations and drawing pictures
	Children will talk about some of the ways they have	Children will explore and ask questions about the	of animals and plants.
	changed over their life.	natural world around them.	Children will know some of the similarities and
	Children will show care for my environment and plant	Children will talk about features of the environment	differences between the natural world around
	and care for plants.	they are in and learn about the different environments.	them and contrasting environments, drawing on
	Children will talk about the key features of life cycles	Children will make observations about plants	their experiences and what has been read in class.
	using key vocabulary.	discussing similarities and differences.	Children will understand some important
	Children will talk about the world around us observing	Children will make observations about animals	processes and changes in the natural world
	animals and plants.	discussing similarities and differences	around them, including the seasons and changing
		Children will know some important processes and	states of matter.
		changes in the natural world, including states of	
		matter.	

Areas of study/substantive knowledge

Areas of study/substantive knowledge	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals including humans	Identify and name a variety of common animals including fish, amphibians, reptiles, birds 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 (fish, amphibians, reptiles, birds and mammals including pets). Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right amounts of 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 other animals have skeletons and muscles for support, protection and movement.	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.	Describe the changes as humans develop to old age.	Identify and name the main parts of the human circulatory system, and describe 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.
Vocabulary	head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, names of animals experienced first-hand from each vertebrate group, parts of the human body including those within the school's RSE policy, senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ears, tongue	offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, names of animals and their babies (e.g. chick/chicken, kitten/cat, caterpillar/butterfly), survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (e.g. meat, fish, vegetables, bread, rice, pasta, dairy)	nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, large intestine, rectum, anus, incisor, canine, molar, premolar, herbivore, carnivore, omnivore, producer, predator, prey	puberty, the vocabulary to describe sexual characteristics in line with the school's RSE policy	heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, cycle, circulatory system, diet, drugs, lifestyle

Living things and their habitat	Explore and compare the differences between things that are living, dead, and things that have never been alive. 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 microhabitats. 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 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 their local and wider environment. Recognise that environments can change and that this can sometimes pose dangers to living things.	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.	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 animals based on specific characteristics.
Vocabulary	Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, names of local habitats (e.g. pond, woodland etc.), names of micro-habitats (e.g. under logs, in bushes etc.), conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold, names of living things in the habitats and micro-habitats studied	Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, cuttings	Vertebrates, fish, amphibians, reptiles, birds, mammals, warm-blooded, cold-blooded, invertebrates, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers

Plants	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees.	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.	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. Investigate the way in which water is transported within plants. Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.		
Vocabulary	Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud, names of trees in the local area- e,g. oak, chestnut, silver birch, names of garden and wild flowering plants in the local area.	light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling	photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport		
Seasonal change	Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies.				
Vocabulary	weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter,				

		T	1			T
	summer, spring, autumn,					
	Sun, sunrise, sunset, day					
	length					
Materials (including States of Matter)	Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, 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 simple physical properties.	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.		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.	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. Know 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.	

Vocabulary	object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not seethrough	opaque, transparent, translucent, reflective, non-reflective, flexible, rigid, shape, push/pushing, pull/pulling, twist/twisting, squash/squashing, bend/bending, stretch/stretching		solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle	thermal insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	
Rocks			Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. 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.			
Vocabulary			rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorbs water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, types of soil (e.g. peaty, sandy, chalky, clay)			
Light			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			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.

	and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by an opaque object. Find patterns in the way that the size of shadows change.	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.
Vocabulary	light, light source, dark, absence of light, surface, shadow, reflect, mirror, Sun, sunlight, dangerous	Light, absence of light, light source, darkness, shiny, matt, surface, mirror, sunlight, filter, refract, spectrum, wavelength, prism, visible, lens, angle, ray, beam, reflect, reflective, shadow, block, absorb, direction, transparent, opaque, translucent.
Sound	Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between the pitch of a sound and features of the object that produced it. Recognise that sounds get fainter as the distance from the sound source increases.	
Vocabulary	sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, quiet, loud, insulation	

Forces (and magnets Y3)	Compare how things move on different surfaces. Notice that some forces need contact between 2 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. Describe magnets as having 2 poles. Predict whether 2 magnets will attract or		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.	
Vocabulary	force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole		force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	
Electricity		Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying and naming its basic parts, including cells,		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

		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.		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.
		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.		
Vocabulary		electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol		Same as Y4 plus- circuit diagram, circuit symbol, voltage, bright/dim, resistance, terminal.
Earth and Space			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.	
Vocabulary			Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit, heliocentric model, geocentric model, rotation, axis, spin.	
Evolution				Recognise that living things have changed over
and				time and that fossils provide information about
Inheritance				living things that inhabited the Earth millions of years
(note for Year 6 –				ago.
see Plants;				Recognise that living things produce offspring of
Animals, including				the same kind, but normally offspring vary
humans; Living things and their				and are not identical to their parents.
habitats; and Rocks				Identify how animals and
for how some of				plants are adapted to suit their environment in
these aspects have been covered lower				different ways and that adaptation may lead to
down the school)				evolution.
	 	 		offspring, sexual reproduction, vary,
Vocabulary				characteristics, adapted, inherited, species, evolve,
, , ,				evolution, DNA, genes,
				fossils, fossilisation.