



SHOBNALL PRIMARY & NURSERY SCHOOL

SCIENCE PROGRAMME OF STUDY



LONG TERM OVERVIEW FOR SCIENCE

KEY: PHYSICS STRAND BIOLOGY STRAND CHEMISTRY STRAND

NURSERY			
Curriculum Goal	Autumn (Milestone 1)	Spring (Milestone 2)	Summer (Milestone 3)
PRIMARY LINK Sow a Seed	Children explore seeds, soil and planting materials through their senses, developing early scientific enquiry by observing, comparing and asking questions. They begin to understand that plants need water, sunlight and care to grow and notice seasonal changes during outdoor learning. Vocabulary such as <i>seed, soil, water, sun</i> , and <i>grow</i> is introduced.	Children plant seeds and bulbs, care for living things and observe growth and decay over time. They explore plants and animals using their senses and begin learning about simple life cycles through seasonal walks, Forest School and observing minibeasts.	Children describe simple plant life cycles and are introduced to animal life cycles. They compare living things, observe growth and decay, discuss how plants change over time and recognise that living things need care.
Create a Picture	Children investigate the properties of different materials, noticing textures, colours and how materials behave. They experiment with colour mixing and begin to understand that different tools and materials have different purposes. This links to exploring and comparing materials.	Children continue investigating materials, selecting resources for a purpose and using observations from the world around them to inspire creative work. This supports enquiry into materials and their properties.	Children use careful observation to represent objects with increasing detail, applying close looking and noticing features of the world around them. This supports the scientific skill of observation
Build a Busy Body	Children begin learning about their own bodies and healthy lifestyles. They explore healthy eating, handwashing, tooth brushing and physical activity, developing early understanding of how to keep themselves healthy	Children deepen their understanding of healthy lifestyles by discussing why exercise, healthy food and hygiene are important. Outdoor learning develops awareness of movement, the body and physical wellbeing.	Children explain how to keep their bodies healthy and make simple choices to support a healthy lifestyle. They understand the importance of exercise, hygiene and healthy eating.
Bury a Time Capsule	Children explore and describe everyday objects using scientific vocabulary such as <i>big, small, shiny</i> and <i>soft</i> . They notice patterns, textures and quantities while investigating objects through play.	Children sort and classify objects according to simple criteria such as colour, size and type. They compare quantities using language such as <i>more, less</i> and <i>same</i> , developing early scientific skills of classification and comparison	Children investigate change over time through discussions about the past and future. They explore scientific language relating to measures and properties such as <i>heavy/light, full/empty</i> and positional vocabulary while handling objects.
Vocabulary			
Tier 1	Tier 2	Tier 3	
plant flower tree leaf seed grow water rain sun bug worm bird body bones teeth eyes ears soft hard wet dry hot old alive	observe notice compare describe investigate explore predict identify classify sort change similar different measure care protect	habitat life cycle roots stem petals soil compost minibeast healthy skeleton muscles exercise nutrition seasonal change living non-living	

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RECEPTION			
Curriculum Goal	Autumn (Milestone 1)	Spring (Milestone 2)	Summer (Milestone 3)
Primary link Nature detective	Children explore the natural world through first hand experiences linked to Wonderful Me and Once Upon a Wardrobe . They observe seasonal changes, investigate leaves, trees, weather and natural materials using their senses and begin to understand that living things need food, water and shelter. Children compare materials, explore how weather influences clothing, identify animal body coverings and begin sorting objects by their properties. They ask simple questions, make observations and use increasingly confident scientific vocabulary to describe the world around them.	Through Lights, Sirens, Action! and Ready, Steady, Grow! , children deepen their scientific understanding by investigating plants, animals, habitats and life cycles. They observe growth over time, plant seeds, care for living things and compare different environments during Forest School and outdoor learning. Children begin recording observations through drawings, photographs and simple charts, make predictions and explain findings using increasingly accurate scientific vocabulary.	During Going Places and Time Travellers , children apply their scientific knowledge independently through investigations of habitats, minibeasts, seasonal change and life cycles. They compare environments, explain how living things depend on suitable conditions for survival and confidently observe, classify and communicate findings using scientific vocabulary. Children reflect on change over time, preparing them for Year 1.
Supporting link Shine like an artist	Children closely observe natural objects, colours, textures and patterns, using these observations to represent the natural world through drawing, painting and transient art. They begin to understand that careful observation is important in both science and art.	Children investigate natural materials during Forest School, using observations of plants, seeds, animals and habitats to inspire increasingly detailed artwork while developing scientific observation skills.	Children confidently combine observation with creativity by representing habitats, life cycles and the natural world through a range of media, explaining both their artistic choices and scientific understanding.
Supporting link Developing healthy habits	Children learn about their bodies, healthy eating, hygiene and the importance of exercise through everyday routines and investigations linked to themselves. They begin to understand how healthy choices help them grow and stay well.	Children develop a deeper understanding of healthy lifestyles by exploring how doctors, dentists, opticians and vets help us stay healthy. They learn about nutrition, exercise, rest, hygiene and caring for living things.	Children explain how healthy choices support growth and wellbeing, discussing balanced diets, oral health, physical activity and how healthy lifestyles affect their bodies as they prepare for Year 1.
Supporting link Following a recipe	Children begin following simple instructions during practical investigations, learning that scientific activities require steps to be completed in the correct order. They count, measure and organise resources with support.	Children increasingly follow instructions independently while planting, cooking and carrying out investigations. They measure, compare, predict and discuss the changes that happen during practical activities.	Children independently plan and carry out practical investigations by organising resources, following sequential instructions and applying measuring, counting and observational skills to reach simple conclusions.
Vocabulary			
Tier 1	Tier 2	Tier 3	
plant, flower, tree, leaf, seed, roots, stem, soil, grass, water, rain, sun, weather, wind, snow, ice, season, spring, summer, autumn, winter, animal, bird, insect, bug, worm, butterfly, minibeast, habitat, home, alive, grow, change, body, bones,	observe, notice, explore, compare, describe, investigate, identify, predict, record, sort, group, classify, measure, test, explain, care, protect, collect, discover, question, evidence, similar, different, pattern, change, survive	habitat, life cycle, living, non-living, evergreen, deciduous, germinate, roots, stem, petals, pollination, offspring, lifecycle, environment, camouflage, adaptation, seasonal change, waterproof, absorbent, transparent, opaque, waterproof, waterproofing, nutrition, hygiene, microorganism	

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muscles, teeth, eyes, ears, healthy, exercise, fruit, vegetables, food		
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	NATIONAL CURRICULUM					
	AUTUMN TERM (1 st HALF)	AUTUMN TERM (2 nd HALF)	SPRING TERM (1 st HALF)	SPRING TERM (2 nd HALF)	SUMMER TERM (1 st HALF)	SUMMER TERM (2 nd HALF)
YEAR 1	In Year 1, we study the national curriculum and Developing Experts to ensure that knowledge and skills build on what has been taught before and towards our curricular goals outlined above. Please refer to <u>Science programmes of study: key stages 1 and 2:</u> - Key stage 1 – year 1 (pages 7 – 9) - Developing Experts Year 1 Curriculum Map					
	<u>EVERYDAY MATERIALS</u> To investigate materials To identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. Distinguish between an object and the material it is made from. 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. Compare and group together a variety of everyday materials on	<u>EVERYDAY MATERIALS</u> <u>The Three Little Pigs</u> To investigate materials and apply knowledge To build a structure strong enough to withstand wind. To build a waterproof structure. To understand the properties of glass and its uses. To understand that materials are used to create a variety of furniture. To explore a variety of fabrics and understand their different properties.	<u>ANIMALS, INCLUDING HUMANS - All about me</u> To understand animals and humans To identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. To learn about eyes and sight To learn about ears and hearing To explore the tongue and taste To explore the sense of touch To discover how your nose smells	<u>ANIMALS, INCLUDING HUMANS – All about animals</u> To understand animals and humans To identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals To describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) To learn about the differences Between amphibians, reptiles and fish To identify and name a variety of common animals that are	<u>SEASONAL CHANGES</u> To understand seasonal changes To understand there are four seasons To understand the changes that take place in autumn To understand the changes that take place in winter To understand the changes that take place in spring To understand the changes that take place in summer To observe and describe weather associated with	<u>PLANTS</u> To understand plants To become familiar with common names of flowers and plant structures including seeds To identify and describe the basic structure of a variety of common flowering plants, including trees To identify and name a variety of common wild and garden plants To identify and name a variety of deciduous and evergreen trees To understand how plants change over time To observe the growth of planted flowers

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	the basis of their simple physical properties. Describe the simple physical properties of a variety of everyday materials.	Explain the uses of materials and why they are suitable.		carnivores, herbivores and omnivores To explore the difference between wild animals and pets To explain the characteristics of an animal	the seasons and how day length varies	Become familiar with plant structures Keep records of how plants change over time
Working Scientifically	During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions					
Rocket Words	material, fabric, wood, plastic, metal, object, glass, property, brick, elastic, opaque, transparent, dull, stiff, natural, manmade, factory, rubber, polyester, predict, float, sink, submerge, buoyant	solid, strong, brick, clay, wind, waterproof, absorbent, non-absorbent, roof, slate, transparent, opaque, suitable windowpane, window frame, fabric, furniture, cotton, mattress soft, wool, weather, jumper suitable, evaluate, material, properties, tile, garden	head, body, skeleton, limb, joint, brain, eyelash, eye, sight, pupil, sound, ear sign language, vibration, deafness, tongue, mouth, taste, flavour, sweet, touch, fingertips, skin, organ, brain smell, odour, nose, nostril, nose hair	fish, amphibian, reptile, mammal, bird, feather, warm-blooded, characteristic, backbone, hatchling, reptile, gills, scale, cold-blooded, herbivore, carnivore, omnivore, predator, canines, pet, wild, shelter, veterinary, natural, similarities, differences, compare, unsuitable, climate	season, spring, summer, autumn, winter, weather, protect, harvest, frost, sleet, temperature, compare, changes, grow, chick, warm, sun protection, temperature, heatwave, rainfall, measuring, record, results, graph	seed, plant, tree, soil, predict, stem, petal, leaf, root, flower, environment, weed, daisy, dandelion, wild, deciduous, evergreen, seasons, branch, bush, supermarket, fruit, vegetable, farm, tractor
YEAR 2	In Year 2, we study the national curriculum and Developing Experts to ensure that knowledge and skills build on what has been taught before and towards our curricular goals outlined above. Please refer to Science programmes of study: key stages 1 and 2: • Key stage 1 – year 2 (<i>pages 10 – 12</i>) • Developing Experts Year 2 Curriculum Map					

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	<u>USES OF EVERYDAY MATERIALS</u>	<u>ANIMALS, INCLUDING HUMANS – Growth</u>	<u>ANIMALS, INCLUDING HUMANS – Life Cycles</u>	<u>LIVING THINGS AND THEIR HABITATS</u>	<u>LIVING THINGS AND THEIR HABITATS – Habitats around the world</u>	<u>PLANTS</u>
	To investigate materials To identify different materials and their uses To understand how to select the right materials to build a bridge To find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching To understand that materials can change their shape by twisting, bending, squashing or stretching To find out about Charles Macintosh and explore how materials are suitable for different purposes To discover which materials change shape when making a road with John McAdam	To understand animals and humans To describe the needs of animals for survival To describe the needs of humans, for survival To explore the importance of eating the right food To describe what a healthy, balanced diet looks like To investigate the impact of exercise on our bodies To investigate the importance of hygiene	To understand life cycles of different mammals To order the stages of the human life cycle To describe the stages of a human life cycle To identify the offspring and parent of an animal To explore the life cycle of a chicken To describe the life cycle of a butterfly To explore the life cycle of a frog	To investigate living things To explore and compare the differences between things that are living, dead, and things that have never been alive To identify and name a variety of plants and animals in a microhabitat Design a suitable microhabitat where living things could survive Find out what animals eat to survive in their habitats Understand a food chain Understand the journey food makes from the farm to the supermarket	To investigate habitats To learn about habitats To appreciate that environments are constantly changing To explore the rainforest and its problems To describe life in the Ocean To discover the Arctic and Antarctic habitat To create a model of a habitat	To understand plants To know the difference between seeds and bulbs To design an experiment to find out what plants need to grow To describe what plants need to grow and stay healthy To understand the requirements of plants for germination, growth and survival, as well as, the processes of reproduction and growth in plants To observe and record the growth of plants overtime To understand that plants adapt to suit their environment
Working Scientifically	During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying					

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	• using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions					
Rocket Words	material, property, suitable, object, brick, bridge, triangle, obstacle, structure, construction, stretchy, elastic, floppy, hinder, limit, bend, twist, squash, stretch, force, mackintosh, protective, fluorescent, safety, waterproof, merchant, bound, highway, road	survival, shelter, nutrition, oxygen, essential, vital, non-essential, survive, grow, healthy, protein carbohydrate, dairy, vitamins, calcium, fat, balanced diet, nutrients, fresh food, pre-cooked, processed food, exercise, strength, flexibility, balance, coordination, hygiene, prevent, germs, bacteria, virus	adult, foetus, womb, helpless, toddler develop, offspring, inherit, gene resemble, differences, reproduction hatchling, chick, bar chart, predict, caterpillar, transformation, larva, chrysalis, metamorphosis, frog, amphibian, frogspawn, tadpole, froglet	survive, shelter, antennae, suitable, condition, colony, insect, producer, consumer, herbivore, carnivore, omnivore, food chain, life cycle, nutrients, rot, caterpillar, automated, frozen food, forklift truck, refrigerated, lorry, canned	organism, environment, mate, rainforest, moisture, extinct, climate, endangered, biodiversity, deforestation, poaching, pollution, rainforest, plankton, ocean, ecosystem coral reef, trench, Antarctic, Arctic, caribou, narwhal tundra, earthworm, desert lizard, cactus, pond	seeds, bulbs, growth, plant, compare predict, investigate, control, experiment, method, photosynthesis, carbon dioxide, oxygen, glucose, energy, pollination life cycle, germination, reproduction, seedling, manure, crop, insulate, thrive, healthy, forest, desert, adapt, condition, survive
YEAR 3	In Year 3, we study the national curriculum and Developing Experts to ensure that knowledge and skills build on what has been taught before and towards our curricular goals outlined above. Please refer to <u>Science programmes of study: key stages 1 and 2:</u> • Lower key stage 2 – year 3 (<i>pages 16 – 19</i>) • Developing Experts Year 3 Curriculum Map					
	<u>ROCKS</u> To understand rocks Explore the formation and properties of igneous rocks Explore the formation and properties of sedimentary and metamorphic rocks Weathering and the suitability of rocks for different purposes	<u>ANIMALS, INCLUDING HUMANS</u> To understand animals and humans Explore the 5 key food groups Learn about the nutrition in the food we eat Learn about the different types of skeletons Learn about the human skeleton	<u>FORCES AND MAGNETS</u> To understand movement, forces and magnets Explore contact and noncontact forces Compare how things move on different surfaces Explore different types of magnets	<u>LIGHT</u> To understand light and seeing Identify the difference between light sources and non-light sources Explore the light that comes from the sun and how to stay safe Explore materials which are reflective	<u>PLANTS</u> To understand plants Compare the effect of different factors on plant growth Identify and describe the functions of different parts of a flowering plant and how they are used in photosynthesis Investigate the way in which water is transported within plants	<u>SCIENTIFIC ENQUIRY</u> How can a solar oven be made more effective: posing questions and writing predictions How can a solar oven be made more effective: recording and presenting results Cleaning coins: writing a method and carrying out a practical test Cleaning coins: writing a conclusion

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	Explore how water contributes to the weathering of rocks Understand how fossils are formed Explore different types of soil	Learn about animals and their skeletons Explore the role of muscles	Explore the properties of magnets and everyday objects that are magnetic Understand that magnetic forces can act at a distance Explore the everyday uses of magnets	Discover how shadows are formed Investigate how shadows change throughout the day Investigate how you can change the size of a shadow	Explore the part that flowers play in the life cycle of flowering plants Understand the pollination process and the ways in which seeds are dispersed Compare the effect of different factors on plant growth	Making a cake: fair testing, controls and variables Making a cake: scientific enquiry
Working Scientifically	During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.					
Rocket Words	igneous rocks, intrusive igneous rock, extrusive igneous rock, crystals, magma, sedimentary rock, metamorphic rock, limestone, marble, sandstone, weathering, chemical weathering, physical weathering, biological weathering, acid rain, appearance, texture, submerged, erosion, receding fossil, extinct, sediment embedded, amber, decompose,	nutrition carbohydrate, protein, vitamin, mineral, nutrition label, portion, energy, balanced diet, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic, skeleton, humerus, ulna, radius, tibia, fibula, endoskeleton, vertebrate, skull, rib, cage, spine, muscle, contract, hamstrings, biceps, diaphragm	force, contact, force, non-contact, forces, air, resistance, friction, motion, surface, resistance, texture, tilt, magnet, attract, repel, bar, magnet, horseshoe, magnet, magnetism, magnetic, field, iron, steel, non-contact, forces, magnetism, attract, non-magnetic, materials, recycle, compass, magnetic, needle	light, source, natural, artificial, reflect, vitamin D, ultraviolet, rays, sunburn, exposure, protection, fluorescent, high visibility, reflective, surface, materials, shadow, opaque, sundial, rays, blocks, position, cast, opposite, direction, length, size, shape, closer, further, puppet	nutrients, fertiliser, nursery, potassium, stunted, chlorophyll, stomata, xylem, photosynthesis, UV light, xylem, phloem, absorb, stomata, transpiration, anther, stigma, style, filament, reproduction, pollination, pollen, nectar, seed, dispersal, pollinator, germination, vulnerable, anchor, sapling, formation	solar, renewable, energy, scientific, investigation, prediction, plausible, table, record, results, data, graph, acid, alkali, PH, method, practical, conclusion, evidence, explanation, compare, enquiry, baking, measurements, fair, test, control, experiment, variable, conclusive, scientific, knowledge, equipment, diagram, collated

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	fragments, clay, soil, chalky, soil sandy soil		magnetic north direction orienteeering			
YEAR 4	In Year 4, we study the national curriculum and Developing Experts to ensure that knowledge and skills build on what has been taught before and towards our curricular goals outlined above. Please refer to <u>Science programmes of study: key stages 1 and 2:</u> - Lower key stage 2 – year 4 (pages 20 – 23) - Developing Experts Year 4 Curriculum Map					
	<u>ELECTRICITY</u> To understand electrical circuits Explore electrical appliances and electrical safety Learn about electrical components in a series circuit Investigate electrical circuits Explore conductors and insulators Learn about electrical switches Investigate how electrical components can change within a circuit	<u>ANIMALS, INCLUDING HUMANS</u> To understand animals and humans Identify the organs in the digestive system Describe the functions of the main organs in the digestive system Identify the types of human teeth and their functions Investigate the effects of different liquids on the teeth Understand food chains Explore food webs	<u>STATES OF MATTER</u> To investigate materials Compare and group the 3 states of matter Explore how particles behave in solids, liquids, and gases Investigate melting points Explore freezing and boiling points Explore evaporation and condensation Understand the water cycle	<u>SOUND</u> To investigate sounds and hearing Identify how sounds are made Explore how vibrations from sounds travel through a medium to the ear Explore sound insulation Explore volume Explore pitch Explore sounds from near and from far	<u>LIVING THINGS AND THEIR HABITATS</u> To investigate living things and their habitats Explore different habitats Research a habitat Explore how animals can be classified Create a classification key Adaptations and classification within species Explore and classify pond plants	<u>LIVING THINGS AND THEIR HABITATS - CONSERVATION</u> To investigate living things and their habitats Describe ecosystems and how they are affected by changes in the seasons Understand human impact on the environment through deforestation Explore air pollution Understand water pollution Explore methods that can be used to conserve water Understand that humans can have a positive impact on nature
Working Scientifically	During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - asking relevant questions and using different types of scientific enquiries to answer them - setting up simple practical enquiries, comparative and fair tests - making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers					

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	- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions - recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions - identifying differences, similarities or changes related to simple scientific ideas and processes - using straightforward scientific evidence to answer questions or to support their findings.					
Rocket Words	electricity batteries mains electricity appliance socket circuit series circuit component cell voltage current power battery wire bulb conductor insulator metal copper rubber switch current control complete circuit incomplete circuit non-renewable energy renewable energy wind turbines solar panels hydropower	digestive system oesophagus stomach small intestine large intestine saliva peristalsis absorb liver gall bladder incisors canines molars jaw gum enamel plaque tooth decay cavity fluoride ecosystem producer consumer prey predator food web tundra hide interdependence threatened	matter solid liquid gas volume particle bond arranged cooled heated particle melting point temperature thermometer freezing reverse boiling sublimation deposition evaporation condensation absorb water vapour process water cycle precipitation surface runoff transpiration groundwater	vibration medium waves eardrum signals source energy particles echo vacuum materials reflect absorb insulate defenders' volume decibels decibel metre amplitude power pitch high pitch low pitch instruments orchestra energy particles travel sound source fade	habitat microhabitat conditions adapted camouflage coastal grassland environment climate exposure classify characteristics vertebrate invertebrate species sub-groups identify criteria classification keys organism adapted region features colouring blubber ecosystem oxygenised flowering plant non-flowering plant pond dipping	ecosystem Northern Hemisphere Southern Hemisphere migrate monsoon rainforest deforestation drought biodiversity recycling fossil fuels pollution greenhouse gases emissions climate change chemicals sewage contaminate pesticides water treatment plant conserve drought freshwater pure water butt endangered marine sanctuaries protect conservation areas recycling
YEAR 5	In Year 5, we study the national curriculum and Developing Experts to ensure that knowledge and skills build on what has been taught before and towards our curricular goals outlined above. Please refer to <u>Science programmes of study: key stages 1 and 2:</u> - Upper key stage 2 – year 5 (<i>pages 27 – 30</i>) - Developing Experts Year 5 Curriculum Map					
	<u>PROPERTIES OF MATERIALS</u> To investigate materials Exploring properties of materials Explore thermal conductors and thermal insulators	<u>CHANGE OF MATERIALS</u> To investigate materials Use evaporation to recover the solute from a solution Recognise and describe reversible changes	<u>FORCES</u> To understand movement, forces and magnets Explore gravity and the life and work of Isaac Newton	<u>EARTH AND SPACE</u> To understand the Earth's movement in space Explore the solar system and its planets Understand the heliocentric model of the solar system	<u>ANIMALS, INCLUDING HUMANS</u> To understand animals and humans Identify the key stages of a mammal's life cycle Explore the gestation periods	<u>LIVING THINGS AND THEIR HABITATS</u> To understand living things and their habitats Understand the life process of a plant Understand the life cycles of mammals

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	Explore the hardness of materials Discover materials that become soluble in water Investigate the solubility of materials Explore how mixtures could be separated by filtering, sieving, evaporating or magnets	Observe chemical reactions and describe how we know new materials are made Investigate rusting reactions Investigate burning reactions Investigate chemical reactions - acids and bicarbonate of soda	Examine the connection between air resistance and parachutes Explore factors which affect an object's ability to resist water Investigate the effects of friction on different surfaces Investigate mechanisms - levers and pulleys Investigate mechanisms - gears	Explain the Earth's movement in space Explain the Earth's rotation and night and day Explain the movement of the Moon Design a planet using knowledge gained	of mammals Learn about foetal development Investigate the hand span of different aged children Learn about the changes experienced during puberty Describe the changes humans may experience during adulthood and old age	Compare the life cycles of insects and amphibians Understand the life cycle of birds and reptiles Know about the life and work of Jane Goodall and David Attenborough Research and present the life cycle of a creature
Working Scientifically	During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: - planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary - taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate - recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs - using test results to make predictions to set up further comparative and fair tests - reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations - identifying scientific evidence that has been used to support or refute ideas or arguments					
Rocket Words	conductive magnetic durable transparent versatile thermal conduction molecules degrees Celsius (°C) insulator hardness force iron steel stone dissolve solute insoluble soluble solvent solute solvent solution substance saturation pure substance mixture filtering sieving evaporation	pure substance solute solvent solution evaporate reversible mixture physical change melting evaporate irreversible chemical change compare effervescence product fair test variable control variable corrosion rusting combustion fuel oxygen extinguish smother reaction predict	Sir Isaac Newton gravity astronomy weight mass Galileo Galilei air resistance opposing streamlined parachute water resistance streamlined upthrust buoyant sink friction resistance lubricant Newton meter Newton lever load pivot fulcrum pulley mechanism gear	terrestrial planet gas giant planets Solar System spherical orbit astronomy heliocentric geocentric dwarf planet orbit axis poles season hemisphere orbit sundial time zone gnomon dial shadow moon phase waxing waning eclipse rocky planet gas planet moon orbit solar system	foetus dependent adolescent puberty reproduce gestation pregnant duration extreme breeding womb umbilical chord embryo trimester midwife growth spurt childhood motor skills milk teeth constant adolescence puberty hormones mood swing develop lifestyle keratin elasticity cataracts neurodegenerative	reproduction asexual fertilisation tuber genes pouch mammary glands placental mammal monotreme mammal marsupial metamorphosis caterpillar amphibian larva pupa egg fledgling egg tooth hatch embryo documentary naturalist primatologist endangered natural

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		acid bicarbonate of soda carbon dioxide	mesh rack and pinion bevel gear			sciences living organism reproduction life cycle vertebrate warmblooded
YEAR 6	In Year 6, we study the national curriculum and Developing Experts to ensure that knowledge and skills build on what has been taught before and towards our curricular goals outlined above. Please refer to Science programmes of study: key stages 1 and 2: - Upper key stage 2 – year 6 (<i>pages 31 – 34</i>) - Developing Experts Year 6 Curriculum Map					
	<u>LIGHT</u> To investigate light and seeing Explore how light travels Explore reflection Explore reflection and explain how it can be used to help us see Investigate how shadows can change Investigate how we can show why shadows have the same shape as the object that casts them Investigate how we see objects	<u>ELECTRICITY</u> To understand electrical circuits Describe the parts of an electric circuit Explore voltage and its effect on an electrical circuit Apply knowledge to identify and correct problems in a circuit Investigate what affects the output of a circuit Build a set of traffic lights Apply knowledge of conductors and insulators	<u>EVOLUTION AND INHERITANCE</u> To understand evolution and inheritance Understand how offspring vary and are not identical to their parents Learn about animal adaptations Learn about plant adaptations Explore what we can learn from fossils Explore the theory of evolution Explore human evolution	<u>LIVING THINGS AND THEIR HABITATS</u> To understand plants Classify living organisms Understand the kingdoms of life Classify living things using the Linnaean system Identify the characteristics of different types of microorganisms Investigate asexual reproduction through spore dispersal Classify and describe a living organism	<u>ANIMALS, INCLUDING HUMANS</u> To understand animals and humans Understand the function of the heart and its role in the circulatory system Identify and compare blood vessels Explore blood Learn how the body transports water and nutrients Investigate what affects your heart rate Learn about the impact of drugs and alcohol on the body	<u>LOOKING AFTER THE ENVIRONMENT</u> To understand animals and humans Learn about climate change Explore ways to reduce how much rubbish is sent to landfill Explore ways to reduce energy consumption Explore what happens when fuels are burnt Explore the outcomes of COP26 Compare data associated with the weather

LONG TERM OVERVIEW FOR SCIENCE

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Working Scientifically	During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • using test results to make predictions to set up further comparative and fair tests • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • identifying scientific evidence that has been used to support or refute ideas or arguments Developing Experts working scientifically in Year 6: Design an investigation to test hypothesis. Predict what will happen explaining why E.g. If my hypothesis is true, then I predict we will... Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. Make the test fair (dependent and independent variables). Write an effective conclusion using PEEL.					
Rocket Words	light eye light source symbol scientific diagram reflected prediction fair test variable table periscope angle mirror line of sight utilise shadow block opaque transparent translucent plan sun shade real life problem rotate direction optical phenomena disperse spectrum refraction	symbol circuit circuit diagram battery wires electricity current voltage voltmeter brightness blown resistor variable resistor LED dimmer switch output variable fair test control test systematically synchronised traffic light signal sensor timer- based closed electric circuit indicating conductor insulator resistor	offspring characteristics inherit variation environmental adaptation habitat climate nutrition feature nutrients epiphytes toxic predators pollinate fossil Mary Anning Palaeontologist ichthyosaurus Jurassic coast Charles Darwin evolved extinct natural selection theory ancestor tools primate Homo sapien Neanderthal	classify microorganism fern living organism conifer kingdom mrs gren cell multicellular unicellular Carl Linnaeus classification Latin species domain microorganism bacteria fungi virus protozoa plant microscopic fungi mycelium ecosystem classify microorganism living organism habitat reproduction	circulatory system atrium ventricle vessel valves vessel artery vein capillary microscope blood plasma platelet white blood cell red blood cell absorb diffusion osmosis concentration nutrients diet exercise heart rate BPM pulse drug painkiller stimulant depressant hallucinogens	weather climate prevent global warming climate change recycle landfill rubbish biodegrade council net zero renewable nonrenewable greenhouse gases emissions industrial revolution fossil fuel coal combustion fuel COP sustainability conference pledge subsidy species sensitive natural disaster habitat vulnerable

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ENQUIRY SKILLS

Asking questions

Asking questions that can be answered using a scientific enquiry.



Making predictions

Using prior knowledge to suggest what will happen in an enquiry.



Setting up tests

Deciding on the method and equipment to use to carry out an enquiry.



Observing and measuring

Using senses and measuring equipment to make observations about the enquiry.



Recording data

Using tables, drawings and other means to note observations and measurements.



Interpreting and communicating results

Using information from the data to say what you found out.



Evaluating

Reflecting on the success of the enquiry approach and identifying further questions for enquiry.

