ALL SAINTS CE JUNIOR ACADEMY
LONG TERM SUBJECT OVERVIEW
SCIENCE 2023-24

Key: **bold** = statutory requirement *italic* – non-statutory

National Curriculum	Strand	Term 1			
		Year 3 – Light	Year 4 – Animals including humans	Year 5 – Properties and changes of materials	Year 6 – Light
The principal focus of science teaching in **lower key stage 2** is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions The principal focus of science teaching in **upper key stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world	Substantive knowledge	• **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 an opaque object.**	• **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.**	• **know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution** • **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.** • **give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic**	• **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.**

operates. They should also begin to recognise that scientific ideas change and develop over time.	Methods to answer scientific questions Asking simple questions. Identifying and classifying.	• **find patterns in the way that the size of shadows change.** • *look for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.*	• *explore questions that help them to understand the special functions of the mouth, tongue, teeth, oesophagus, stomach, and small and large intestine.*	• **demonstrate that dissolving, mixing and changes of state are reversible changes.** • *compare materials in order to make a switch in a circuit* • *observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes.*	• *explore the way that light behaves, including light sources, reflection and shadows, talk about what happens and make predictions.*
	Apparatus and techniques, including measurement Gathering and recording data. Observing closely using simple equipment e.g. hand lens	• *look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change.*	• *compare the teeth of carnivores and herbivores and suggest reasons for differences* • *find out what damages teeth and how to look after them.*	• **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** • **use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.**	• *use the idea that light appears to travel in straight lines to explain how it works.*

				• *explore and compare the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4* • *explore reversible changes, including evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes* • *explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda* • *research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials.*	

	Analysis, presentation and evaluation of scientific data to draw valid conclusions Using observations and ideas to suggest answers to questions.	• *explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves.*	• **construct and interpret a variety of food chains, identifying producers, predators and prey** • *draw and discuss their ideas about the digestive system and compare them with models or images.*	• *find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton* • *observe that some conductors will produce a brighter bulb in a circuit than others and that some materials will feel hotter than others when a heat source is placed against them* • *carry out tests to answer questions, for example, 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?'.*	• *investigate the relationship between light sources, objects and shadows by experimentation* • *extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, and coloured filters (they do not need to explain why these phenomena occur).*
Exceeding the National Curriculum	Vocabulary	Light, light source, dark, reflection, reflect, reflective, ray, pupil, retina, shadow, opaque, translucent, transparent	Digest, oesophagus, stomach, small intestine, large intestine, rectum, herbivore, carnivore, omnivore, producer, predator, prey	Materials, solids, liquids, gases, melting, freezing, evaporating, condensing, conductor, insulator, transparency	Light, light source, reflection, incident ray, reflected ray, the law of reflection, refraction, visible spectrum, shadow, transparent, translucent, opaque

	Suitable Suggested Texts	• The Black Rabbit by Philippa Leathers • Can't you sleep, Little Bear? by Martin Waddell • The Firework Maker's Daughter by Philip Pullman	• Why Should I Eat Well by Claire Llewellyn • The Little Mole Who Knew It Was None of His Business by Werner Holzwarth and Wolf Erlbruch	• Burn by Darcy Pattison • Itch by Simon Mayo • Kensuke's Kingdom by Michael Morpurgo	• Flashlight by Lizi Boyd
	Enhancements and enrichment		Digestion in a bag.		

National Curriculum	Strand	Term 2			
		Year 3 - Forces and Magnets	Year 4 - States of Matter	Year 5 - Earth & Space	Year 6 - Electricity
The principal focus of science teaching in **lower key stage 2** is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions The principal focus of science teaching in **upper key stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time.	Substantive knowledge	• **notice that some forces need contact between 2 objects, but magnetic forces can act at a distance** • **describe magnets as having 2 poles.**	• **identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.**	• **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.**	• **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.**
	Methods to answer scientific questions Asking simple questions. Identifying and classifying.	• **compare how things move on different surfaces** • **observe how magnets attract or repel each other and attract some materials and not others**	• **compare and group materials together, according to whether they are solids, liquids or gases** • **observe that some materials change state**	• *compare the time of day at different places on the Earth through internet links and direct communication.*	• *systematically identify the effect of changing one component at a time in a circuit.*

		• **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** • **predict whether 2 magnets will attract or repel each other, depending on which poles are facing.** • *observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing)* • *comparing how different things move and grouping them* • *sorting materials into those that are magnetic*	**when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)** • *group and classify a variety of different materials.*		

		and those that are not • *looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another* • *identifying how their properties make magnets useful in everyday items and suggesting creative uses for different magnets.*			
	Apparatus and techniques, including measurement Gathering and recording data. Observing closely using simple equipment e.g. hand lens	• *explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe)* • *exploring the strengths of different magnets and finding a fair way to compare them.*	• *explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container)* • *observe water as a solid, a liquid and a gas and*	• create simple models of the solar system • construct simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day	• *construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors* • *design and make a set of traffic lights, a burglar alarm or some*

			should note the changes to water when it is heated or cooled • *explore the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party)* • observe and *record evaporation over a period of time, for example, a puddle in the playground or washing on a line, and investigate the effect of temperature on washing drying or snowmen melting.*		*other useful circuit* • *design a festival piece (Victorians).*
	Analysis, presentation and evaluation of scientific data to draw valid conclusions Using observations and ideas to suggest answers to questions.	• *raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording*	• *research the temperature at which materials change state, for example, when iron melts or when oxygen*	• *find out about the way that ideas about the solar system have developed, understanding how the geocentric*	• *learn how to represent a simple circuit in a diagram using recognised symbols.*

		data to find answers to their questions.	*condenses into a liquid.*	*model of the solar system gave way to the heliocentric model by considering the work of scientists such as Ptolemy, Alhazen and Copernicus* • *find out why some people think that structures such as Stonehenge might have been used as astronomical clocks.*	
Exceeding the National Curriculum	Vocabulary	Forces, friction, surface, magnet, magnetic, magnetic field, poles, repel, attract	States of matter, solids, liquids, gases, water vapour, melt, freeze, evaporate, condense, precipitation	Sun, star, moon, planet, sphere, spherical bodies, satellite, orbit, rotate, axis, geocentric model, heliocentric model, astronomer	Circuit, symbol, cell/battery, current, amps, voltage, resistance, electrons,
	Suitable Suggested Texts	• Magnet Max by Monica Lozano Hughes • The Iron Man by Ted Hughes	• A Drop Around the World by Barbara Shaw McKinney • Charlie and the Chocolate Factory by Roald Dahl	• Look Up by Nathan Bryon • George's Secret Key to the Universe by Lucy and Stephen Hawking	• Goodnight Mister Tom by Michelle Magorian
	Enhancements and enrichment			Planetarium	

National Curriculum	Strand	Term 3			
		Year 3 - Animals including Humans	Year 4 - Electricity	Year 5 - Forces	Year 6 - All Living things and their Habitats
The principal focus of science teaching in **lower key stage 2** is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions The principal focus of science teaching in **upper key stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time.	Substantive knowledge	• **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.**	• **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**	• **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.**	• **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.**

			with being good conductors.		
	Methods to answer scientific questions Asking simple questions. Identifying and classifying.	• *identify and group animals with and without skeletons* • *explore ideas about what would happen if humans did not have skeletons* • *compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat.*		• *explore falling objects and raise questions about the effects of air resistance* • *explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall.*	• *build on their learning about grouping living things in year 4 by looking at the classification system in more detail* • *use classification systems and keys to identify some animals and plants in the immediate environment.*
	Apparatus and techniques, including measurement Gathering and recording data. Observing closely using simple equipment e.g. hand lens	• *observe and compare the movement of animals with and without skeletons.*	• *construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices* • *observe patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of*	• *experience forces that make things begin to move, get faster or slow down* • *explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel* • *explore the effects of levers, pulleys and*	• *through direct observations where possible, they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals).*

			electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.	*simple machines on movement* • *explore falling paper cones or cupcake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective* • *explore resistance in water by making and testing boats of different shapes* • *design and make products that use levers, pulleys, gears and/or springs and explore their effects.*	
	Analysis, presentation and evaluation of scientific data to draw valid conclusions Using observations and ideas to suggest answers to questions.	• *research different food groups and how they keep us healthy, and design meals based on what they find out.*	• *draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage.*		• *discuss reasons why living things are placed in one group and not another* • *find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification*

					• *research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.*
Exceeding the National Curriculum	Vocabulary	Vertebrate, invertebrate, muscles, tendons, joints, healthy, nutrients, energy, saturated fats, unsaturated fats	Electricity, appliances, battery, circuit, cell, bulb, buzzer, wires, motor, switch, mains electricity, electrical conductor, electrical insulator	Forces, gravity, Earth's gravitational pull, weight, mass, friction, air resistance, water resistance, buoyancy, streamlined, mechanism, upthrust	Characteristics, classify, taxonomist, key, bacteria, microorganism, species
	Suitable Suggested Texts	• Vegetable Glue by Susan Chandler • Good Enough to Eat by Lizzy Rockwell. • Oliver's Vegetables by Vivien French	• Oscar and the Bird: A Book About Electricity by Waring Geoff	• The Tin Snail by Cameron McAllister	• Beetle Boy by MG Leonard (insects)
	Enhancements and enrichment				

National Curriculum	Strand	Term 4			
		Year 3 - Plants	Year 4 - Living things and their habitats	Year 5 - Living things and their habitats	Year 6 – Build on knowledge through further investigation.
The principal focus of science teaching in **lower key stage 2** is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions The principal focus of science teaching in **upper key stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time.	Substantive knowledge	• **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** • **explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.**	• **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.**	• recognise PH value indicates a material's alkaline or acidity • recognise that finger prints are unique • explore how ink is made up of many different substances
	Methods to answer scientific questions Asking simple questions. Identifying and classifying.	• **investigate the way in which water is transported within plants.** • *explore questions that focus on the*	• *use the local environment throughout the year to raise and answer questions that help them to identify and study plants and*	• *observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and*	• find patterns in results • select equipment to answer a question • use scientific evidence to draw conclusions

		role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction • *explore the idea that plants can make their own food, but at this stage they do not need to understand how this happens.*	*animals in their habitat* • *explore possible ways of grouping a wide selection of living things that include animals, flowering plants and non-flowering plants* • *begin to put vertebrate animals into groups, for example: fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects.*	*animals in the local environment* • *observe and compare the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent questions and suggesting reasons for similarities and differences.*	• make accurate measurements • use knowledge to solve a problem • understand that substances can be classified as alkaline/acid • use observation to match foot impressions • use chromatography to identify the key features of different ink • find patterns in results and observations • observe pH levels in soil samples • observe patterns and distinguish differences
	Apparatus and techniques, including measurement Gathering and recording data. Observing closely using simple equipment e.g. hand lens	• *compare the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser* • *discover how seeds are formed by observing the different stages of plant life cycles over a period of time.*		• *grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs* • *observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how*	• select correct equipment to help find solutions

				different animals reproduce and grow.	
	Analysis, presentation and evaluation of scientific data to draw valid conclusions Using observations and ideas to suggest answers to questions.	• *look for patterns in the structure of fruits that relate to how the seeds are dispersed* • *observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.*	• *identify how the habitat changes throughout the year* • *explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation* • *use and make simple guides or keys to explore and identify local plants and animals* • *make a guide to local living things* • *raise and answer questions based on their observations of animals and what they have found out about other animals*	• *find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall* • *find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.*	• identify changes of pH in soil to identify the source

			that they have researched.		
Exceeding the National Curriculum	Vocabulary	Roots, stem, leaves, flowers, nutrients, evaporation, fertilisation, petal, stamen, carpel (pistil), sepal, pollination, pollinator, germination, seed dispersal	Organisms, life processes, respiration, sensitivity, reproduction, excretion, nutrition, habitat, environment, endangered species, extinct, classification, vertebrates, invertebrates, specimen, characteristics	Asexual reproduction, fertilisation, gestation, life cycle, metamorphoses, pollination, reproduction, sexual reproduction	Alkaline, acid, pH levels
	Suitable Suggested Texts	• It Starts With a Seed by Laura Knowles • A Seed Is Sleepy by Dianna Huts Aston • The Story of Frog Belly Rat Bone by Timothy B. Ering	• The Vanishing Rainforest by Richard Platt and Rupert van Wyk • Wolves by Emily Gravett	• Lost Words by Robert Macfarlane • Charlotte's Web by E.B White	• DNA Detectives by Dr Mandy Hartley
	Enhancements and enrichment				CSI Day

National Curriculum	Strand	Term 5			
		Year 3 - Build on knowledge through further investigation.	Year 4 - Sound	Year 5 - Build on knowledge through further investigation.	Year 6 - Animals including humans
The principal focus of science teaching in **lower key stage 2** is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions The principal focus of science teaching in **upper key stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time.	Substantive knowledge	• recognise that they need light in order to see things and that dark is the absence of light • recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Explore the requirements if plants for life and growth (air, light, water, nutrients form soil, and room to grow)	• **identify how sounds are made, associating some of them with something vibrating** • **recognise that vibrations from sounds travel through a medium to the ear** • **recognise that sounds get fainter as the distance from the sound source increases.**	• 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	• **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.**
	Methods to answer scientific questions Asking simple questions. Identifying and classifying.	• find patterns in the way that the size of shadows change. • look for patterns in what happens to shadows when the light source moves or the distance	• **find patterns between the pitch of a sound and features of the object that produced it** • **find patterns between the volume of a**	• explore falling objects and raise questions about the effects of air resistance • explore the effects of air resistance by observing how	• *build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system)*

		between the light source and the object changes.	**sound and the strength of the vibrations that produced it.** • *explore and identify the way sound is made through vibration in a range of different musical instruments from around the world* • *find patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses.*	different objects such as parachutes and sycamore seeds fall	*to explore and answer questions that help them to understand how the circulatory system enables the body to function.*
	Apparatus and techniques, including measurement Gathering and recording data. Observing closely using simple equipment e.g. hand lens	• look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change. • compare the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser	• *make earmuffs from a variety of different materials to investigate which provides the best insulation against sound* • *make and play their own instruments by using what they have found out about pitch and volume.*	• design and make a variety of parachutes and carrying out fair tests to determine which designs are the most effective	

	Analysis, presentation and evaluation of scientific data to draw valid conclusions Using observations and ideas to suggest answers to questions.		• *find out how the pitch and volume of sounds can be changed in a variety of ways.*		• *learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body* • *explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.*
Exceeding the National Curriculum	Vocabulary	Light, light source, dark, shadow, opaque, translucent, transparent Roots, stem, leaves, flowers, nutrients	Vibration, sound wave, volume, amplitude, pitch, ear, particles, distance, sound proof, absorb sound, vacuum, ear drum	Forces, gravity, Earth's gravitational pull, weight, mass, friction, air resistance, water resistance, buoyancy, streamlined, mechanism, upthrust	Circulatory system, heart , blood vessels, oxygenated blood, deoxygenated blood, drug, alcohol, nutrients
	Suitable Suggested Texts		• Sounds All Around by Susan Hughes • Horrid Henry Rocks by Francesca Simon		• One Smart Fish by Christopher Wormell • Pig Heart Boy by Malorie Blackman
	Enhancements and enrichment				

National Curriculum	Strand	Term 6			
		Year 3 - Rocks and Soil	Year 4 - Build on knowledge through further investigation.	Year 5 - Animals including Humans	Year 6 - Evolution and Inheritance
The principal focus of science teaching in **lower key stage 2** is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions The principal focus of science teaching in **upper key stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to	Substantive knowledge	• **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.**	• recognise that vibrations from sounds travel through a medium to the ear	• **describe the changes as humans develop to old age.**	• **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 adaptation may**

recognise that scientific ideas change and develop over time.					**lead to evolution.**
	Methods to answer scientific questions Asking simple questions. Identifying and classifying.	• **compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.** • *explore different kinds of rocks and soils, including those in the local environment* • *observe rocks, including those used in buildings and gravestones, and explore how and why they might have changed over time* • *explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.*	• compare and group materials together, according to whether they are solids, liquids or gases	• *draw a timeline to indicate stages in the growth and development of humans* • *learn about the changes experienced in puberty.*	• *Build on what they learned about fossils in the topic on rocks in year 3, pupils should find out more about how living things on earth have changed over time* • *observe and raise questions about local animals and how they are adapted to their environment* • *compare how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels.*

	Apparatus and techniques, including measurement Gathering and recording data. Observing closely using simple equipment e.g. hand lens	• *use a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them.*	• explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container) • make earmuffs from a variety of different materials to investigate which provides the best insulation against sound		
	Analysis, presentation and evaluation of scientific data to draw valid conclusions Using observations and ideas to suggest answers to questions.	• *research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed.*	• find out how the pitch and volume of sounds can be changed in a variety of ways	• *research the gestation periods of other animals and comparing them with humans* • *find out and record the length and mass of a baby as it grows.*	• *find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution* • *analyse the advantages and disadvantages of specific adaptations, such as being on*

					2 feet rather than 4, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.
Exceeding the National Curriculum	Vocabulary	Igneous rock, sedimentary rock, metamorphic rock, magma, lava, sediment, permeable, impermeable, fossilisation, palaeontology, erosion.	States of matter, solids, liquids, gases, water vapour, melt, freeze, evaporate, condense, precipitation Vibration, sound wave, volume, amplitude, pitch, ear, particles, distance, sound proof, absorb sound, vacuum, ear drum	Fertilisation, prenatal, gestation, reproduce, asexual reproduction, sexual reproduction, life cycle, adolescence, puberty, menstruation, adulthood, life expectancy	Offspring, inheritance, variations, characteristics, adaptation, habitat, environment, evolution, natural selection, fossil, adaptive traits, inherited traits
	Suitable Suggested Texts	• Pebble in my Pocket by Meredith Hooper • The Streets Beneath my Feet by Charlotte Guillain • A Stone Sat Still by Brenden Wenzel • Empire's End: A Roman Story by Leila Rasheed		• One Smart Fish by Christopher Wormell	• What Mr Darwin Saw by Mick Manning • One Smart Fish by Christopher Wormell
	Enhancements and enrichment	The Fossil Talk - with Phil Hadland (fossilphil83@gmail.com)			