Life in all its fullness John 10:10

Compassion Belonging Resilience

Science Year A

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Y 1/2	Plants Seasonal Changes	Everyday Materials Humans Y1	Working Scientifically 1 Working Scientifically 2	Animals 1 Animals 2	Everyday Materials	Plants
Y 3/4	States of Matter	Rocks	Water Cycle	Living things and their habitats -Plants- Food Chains and ecosystems	Living things and their habitats- Animals- Food Chains and ecosystems	Plants- Structure
Y 5/6	Properties of materials	Changing materials	Earth and Space	Forces	Living things and their Habitats- Lifecycles	Living things and their Habitats- Classification (2023 Onward) Animals Including Humans- Circulatory system (2021 only)

Science Year B

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Y 1/2	Animals 1 Animals 2 & woodland habitats – food chains	Living things and Habitats – 1 Animals 1 (human bodies & senses)	Seasonal Changes (but also across the year)	Humans Y2 Everyday Materials	Working Scientifically 1 Working Scientifically 2	Living things and their habitats- 2
Y 3/4	Forces and Magnets	Light	Electricity	Sound	Animals Including Humans -Skeletons	Animals Including Humans- Digestive system
Y 5/6	Light	Electricity	Living things and their habitats- Common Characteristics	Evolution and Inheritance	Animals including Humans- Development to old age	Animals Including Humans- Circulatory system

National Curriculum Content Key

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6

Progression in Knowledge and Working Scientifically skills (from the National Curriculum, grouped by Science subject and theme).

	Ks1	LKS2	UKS2
Biology	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. 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	
	Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils might keep records of how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants. Pupils might work scientifically by: observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy.	Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser. They might 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.	
	Humans and other animals		
	identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	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 and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood describe the ways in which nutrients and water are transported within animals, including humans.
	Pupils might work scientifically by: using their senses to compare different textures, sounds and smells.	Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. Pupils might work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.	

	Exercise and diet		
	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 the different types of teeth in humans and their simple functions	recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
	asking questions about what things animals need for survival and what humans need to stay healthy	They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.	
	Classification		
	identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) identify and name a variety of common animals that are carnivores, herbivores and omnivores	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	describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals give reasons for classifying plants and animals based on specific characteristics.
	Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat;	Pupils might work scientifically by: identifying and grouping animals with and without skeletons	
	Habitats and Food Chains		

	explore and compare the differences between things that are living, dead, and things that have never been alive 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. 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	describe in simple terms how fossils are formed when things that have lived are trapped within rock construct and interpret a variety of food chains, identifying producers, predators and prey. recognise that environments can change and that this can sometimes pose dangers to living things.	recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
			Pupils might work scientifically by: observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.
	Life Cycles		
	notice that animals, including humans, have offspring which grow into adults observe and describe how seeds and bulbs grow into mature plants	explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	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 the changes as humans develop to old age recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
	Pupils might work scientifically by: observing, through video or first-hand observation and measurement, how different animals, including humans, grow;and suggesting ways to find answers to their questions.	Pupils might work scientifically by: discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed	Pupils might work scientifically by: observing and comparing 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. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow. Pupils could work scientifically by researching the gestation

			periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.
Chemistry	Properties of Materials		
	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	compare and group together different kinds of rocks on the basis of their appearance and simple physical properties recognise that soils are made from rocks and organic matter compare and group materials together, according to whether they are solids, liquids or gases	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 give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
	Pupils might work scientifically by: performing simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?' Pupils might work scientifically by: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.	Pupils might work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using 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. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could 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. Pupils might work scientifically by: grouping and classifying a variety of different materials;	Pupils might work scientifically by: carrying 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?'
	Changing Materials		

	find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	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)	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 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 demonstrate that dissolving, mixing and changes of state are reversible changes
		Pupils might work scientifically by: exploring 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). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might 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.	Pupils might work scientifically by observing and comparing the changes that take place, for example, when burning different materials or baking bread or cakes. They might 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.
Physics	Sun, Moon and Earth		
	observe and describe weather associated with the seasons and how day length varies.		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.
	Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change		Pupils might work scientifically by: comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks
	Forces		

		compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing.	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
		Pupils might work scientifically by: comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic 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 these properties make magnets useful in everyday items and suggesting creative uses for different magnets.	Pupils might work scientifically by: exploring falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.
	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 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.	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.
		Pupils might work scientifically by looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.	Pupils might work scientifically by: deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).

	Electricity		
		identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors.	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.
		Pupils might work scientifically by observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.	Pupils might work scientifically by systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.
	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 find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases.	
		Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.	

Working Scientifically

	Ks1	LKS2	UKS2
Questioning	asking simple questions and recognising that they can be answered in different ways	asking relevant questions and using different types of scientific enquiries to answer them	planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
Observing and Collecting evidence	observing closely, using simple equipment performing simple tests identifying and classifying	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	taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
Recording	gathering and recording data to help in answering questions.	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	recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
Reporting	using their observations and ideas to suggest answers to questions	using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	using test results to make predictions to set up further comparative and fair tests
Concluding		reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations
Understanding Scientific Evidence		identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings.	identifying scientific evidence that has been used to support or refute ideas or arguments

KS1 – Significant Scientists

Humans	Animals	Plants	Habitats	Seasonal Change	Materials
Louis Pasteur Louis Pasteur discovered that germs are living things that can be spread by touch or through the air. Elizabeth Garrett Anderson Elizabeth was the first woman to qualify as a doctor. She qualified in 1865.	Linda Brown Buck Linda Brown Buck is an American biologist. She discovered that mammals have odorant receptors in their noses. This means they can smell over 10,000 different smells. She won the Nobel Prize in 2004 George Mottershead George Mottershead founded	Tim Smit Tim Smit had the idea to build the Eden Project. Nicholas Grimshaw Nicholas Grimshaw designed the biomes for the Eden Project. Jane Colden Jane Colden was a botanist. She is thought to be America's first	Rachel Carson Rachel Carson was a scientist who studied ocean habitats. She discovered that pollution from farms was affecting the oceans and the animals in them.	George James Symons George James Symons invented his own version of the rain gauge that is still used by meteorologists today. James Blyth James Blyth invented the wind turbine in 1887. He used it to power the lights in his holiday home.	Ole Kirk Christiansen Ole Kirk Christiansen invented Lego in 1949. Charles Macintosh Charles Macintosh invented the first waterproof fabric.

	Chester Zoo in 1931. This zoo was unusual at the time as the animals did not live in cages. They lived in larger enclosures.	woman botanist.		Mae Jemison In 1992, Mae Jemison became the first African American woman in space. She was a scientist.	

KS2 Year A – Significant Scientists

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Y 3/4	States of Matter	Rocks Mary Anning (1799-1847) Mary Anning was an English palaeontlogist and fossil collecter. She became known around the world for important finds she made in Jurassic fossil beds in Dorset. Holly Betts PhD student, University of Bristol Holly is a palaeobiologist. She is researching whether fossils are best for establishing a timescale for recent and ancient episodes in our evolutionary history.	Water Cycle Bernard Palissy (1510-1590) Bernard Palissy was a French potter and scientist. He is often credited as the man who 'discovered' the modern theory of the water cycle. He asserted that rainfall alone was sufficient for the maintenance of rivers.	Plants- Structure Professor Monique Simmonds Monique Simmonds is the deputy director of science at the Royal Botanic Gardens, Kew. She researches traditional and commercial uses of plants and fungi. Her work involves her promoting plant and fungal based solutions to global challenges.	Living things and their habitats -Plants- Food Chains and ecosystems Joseph Dalton Hooker (1817-1911) Joseph Hooker was a doctor and travelled to many places. He was a plant collecter and botanist and brought many plants back to the UK. Joseph was interested in finding out why plants grow in the locations they do.	Living things and their habitats- Animals- Food Chains and ecosystems Jane Goodall (Born 1934) Jane Goodall is an expert on wild chimpanzees. She is known for her ground breaking discoveries about their behaviour. She has shown us the urgent need to protect chimpanzees from extiction. Seirian Sumner Dr Seirian Sumner is an evolutionary biologist and behavioural ecologist. She specialises in social evolution and behaviour in insects (bees, wasps and ants).

Y 5/6	Properties of materials Joe Keddie Joe Keddie is a professor of Soft Matter Physics at the University of Surrey. He is interested in the fundamental processes of soft matter, especially polymer thin films and nanoparticles	Changing materials Spencer Silver (born 1941) Spencer Silver is an American scientist who together with Arthur Fry was the inventor of Post-it notes in 1974. At the time, he was working to develop new classes of adhesives.	Earth and Space Nicolaus Copernicus (1473-1543) Nicolaus was a Polish astronomer and mathematician who formulated the heliocentric model of the solar system that placed the Sun rather than the Earth at the centre of the universe. Maggie Aderin-Pocock (born 1968) Maggie is a British space scientist and science educator. She is working on the observation instruments for the Aeolus satellite, which will measure wind speeds to help the investigation of climate change.	Forces Galileo Galilei (1564-1642) He was an Italian scientist. He discovered that if two objects of similar shape and size are dropped, they will fall at the same rate. Sir Isaac Newton (1642-1726) He was an English scientist and mathematician. He 'discovered' the concept of gravity when sitting under a tree and an apple fell to the ground near him. Emma England - Aeronautical engineer Emma works as part of a team designing the wings of aircrafts.	Living things and their Habitats- Lifecycles David Attenborough (born 1926) Sir David is an English broadcaster and naturalist. He has made many famous wildlife programmes. He was knighted in 1985. Lucy Evelyn Cheesman (1881-1969) Lucy Cheesman was a British entomologist (someone who studies insects) and traveller. She collected over 70,000 specimens of insects, plants and other animals.	Living things and their Habitats- Classification (2023 Onward) Carl Linnaeus (1707-1778) Carl Linnaeus was a Swedish scientist who developed the modern system of classifying and naming organisms. Before this the names of living things were often very long. He gave them a two-part name. Chris Nelson Chris Nelson is a horticulturist and a director of Growing Underground which uses hydroponic techniques to grow pesticide-free crops in a former London underground air-raid shelter.

KS2 Year B – Significant Scientists

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Y 3/4	Forces and Magnets Michael Faraday (1791-1867) Michael Faraday was an English scientist. In 1831, he discovered electromagnetic induction. This was a very important discovery for the future of science and technology.	Light Justus von Liebig (1803-1873) Justus von Liebig was a German chemist. In 1835 he developed a process for applying a thin layer of metallic silver to one side of a pane of clear glass. This technique was soon adapted and improved, allowing for the mass production of mirrors.	Electricity Thomas Edison (1847-1931) Thomas Edison was an American inventor. He is sometimes described as America's greatest inventor. He invented the first practical incandescent light bulb	Sound Christian Doppler (1803-1853) Christian Doppler was an Austrian mathematician and physicist. He is celebrated for his principle known as the Doppler effect. This describes how noises sound different as you move toward or away from a noisy object.	Animals Including Humans -Skeletons Wilhelm Conrad Rontgen (1845-1923) Wilhelm Rontgen was a German physicist who discovered X-rays in 1895. He was awarded many honours and won the Nobel Prize for physics.	Animals Including Humans- Digestive system William Beaumont (1785-1853) William Beaumont was a surgeon in the U.S. Army. He carried out lots of experiments and research on human digestion. As a result, he provided the world with new information about the digestive process in living human beings.

Y 5/6	Light Abu Ali al-Hasan (Alhazen) (965-1040) Alhazan was an Iranian mathematician, astronomer and physicist. He was the pioneer of modern optics. He carried out experiments with pinhole cameras and candles and explained how the image is formed by rays of light travelling in straight lines. Ben Jensen Ben Jensen is an inventor at Surrey NanoSystems Ltd and developed Vantablack, a super-black coating that holds the world record as the darkest human-made substance.	Electricity Nicholas Tesla (1856-1943) Nicholas Tesla was a Serbian/American engineer and physicist. He invented the first alternating current (AC) motor and developed AC generation and transmission technology. He worked for Thomas Edison when he first moved to New York. Peter Rawlinson Peter Rawlinson is a British engineer based in California. He is working on the development of electric vehicles, providing clear vision for a next generation product.	Living things and their habitats- Common Characteristics Sarah Fowler Sarah Fowler (OBE) is a marine biologist. She is the principal scientist of the Save Our Seas Foundation. Her research has identified the global threat to sharks and she shares strategies of how we can protect them.	Evolution and Inheritance Charles Darwin (1809-1882) Charles Robert Darwin was born in Shrewsbury and was an English naturalist and biologist. His scientific theory of evolution by natural selection became the foundation of modern evolutionary studies. Alfred Wallace (1823-1913) Alfred Russel Wallace was an explorer, naturalist and anthropologist. He independently proposed the theory of evolution by natural selection. He worked around the world gathering evidence to support his theory.	Animals including Humans- Development to old age	Animals Including Humans- Circulatory system William Harvey (1578-1657) William Harvey was an English physician and the first person to correctly describe blood's circulation in the body. He showed that arteries and veins form a complete circuit.

Robins Year A (Year ½)

Discipline	Theme	National Curriculum	Assessment Statements	NC Working Scientifically ideas	Key Vocabulary
Biology	Plants (Y1)	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.	I can name a variety of common wild and garden plants I can name the petals, stem, leaf and root of a plant I can name the roots, trunk, branches of a tree	Pupils might work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees.	Leaf Flower petal fruit root seed trunk branch stem bark
Physics	Seasonal Change	observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies.	I can observe and comment on changes in the seasons I can name the seasons and suggest the type of weather in each season	Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change. Pupils might keep records of how plants have changed over time, for example the	Season Autumn Winter Spring Summer Weather Sunrise

				leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants.	sunset
Chemistry	Everyday Materials	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.	I can distinguish between an object and the material it is made from. I can explain the materials that an object is made from. I can name wood, plastic, glass, metal, water and rock. I can describe the properties of everyday materials, I can group objects based on the materials they are made from.	Pupils might work scientifically by: performing simple tests to explore questions, for example: 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'	hard soft stretchy stiff bendy floppy waterproof absorbent breaks tears rough smooth shiny dull see through not see through
Biology	Humans	identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	I can name the parts of the human body I can see. I can link the correct part of the human body to each sense	Pupils might work scientifically by: using their senses to compare different textures, sounds and smells.	head body eyes ears mouth teeth leg hair
Biology	Animals	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)	I can name a variety of animals including fish, amphibians, reptiles, birds and mammals. I can classify and name animals by what they eat (carnivore, herbivore and omnivore). I can sort animals into categories (including fish, amphibians, reptiles, birds and mammals). I can sort living and non-living things.	Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat.	tail wing claw fin scales feathers fur beak paws hooves omnivore herbivore carnivore fish bird mammal reptile amphibian
Chemistry	Everyday Materials	identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock,	I can identify and name a range of materials, including wood, metal, plastic, glass, brick, rock,	Pupils might work scientifically by: comparing the uses of everyday materials in	transparent translucent

		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.	paper, cardboard. I can suggest why a material might or might not be used for a specific job. I can explore how shapes can be changes by squashing, bending, twisting and stretching.	and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.	opaque flexible rigid reflective nonreflective absorbent
Biology	Plants	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.	I can describe how seeds and bulbs grow into plants I can describe what plants need in order to grow and stay healthy (water, lights and suitable temperature)	Pupils might work scientifically by: observing and recording, with some accuracy, the growth of a variety of plants as they change over time from a seed or bulb, or observing similar plants at different stages of growth; setting up a comparative test to show that plants need light and water to stay healthy	seed bulb germinate seedling bud flower fruit berry root

Owls Year A (Year ¾)

Discipline	Theme	National Curriculum	Assessment Statements	NC Working Scientifically ideas	Key Vocabulary
Chemistry	States of Matter	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)	I can group materials based on their state of matter (solid, liquid, gas) I can describe how some materials can change their state I can explore how materials change state I can measure the temperature at which materials change state	Pupils might work scientifically by: grouping and classifying a variety of different materials; exploring 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). They could research the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. They might 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.	State melting freezing melting point boiling point evaporation condensation
Chemistry	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	I can compare and group rocks based on their appearance and physical properties, giving a reason I can describe how fossils are formed. I can describe how soil is made I can describe and explain the difference between sedimentary and igneous rock	Pupils might work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using 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. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could 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.	Rock Fossil Soil metamorphic, igneous, sedimentary
Chemistry	Water Cycle	identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	I can describe the water cycle I can explain the part played by evaporation and condensation in the water cycle		evaporation precipitation condensation water cycle

Biology	Living things and their habitats - Plants- Food Chains and ecosystems	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.	I can group living things in different ways I can use classification leys to group, identify and name living things I can create classification keys to group, identify and name living things (for others to use) I can describe how changes to an environment could endanger living things	Pupils might work scientifically by: using and making simple guides or keys to explore and identify local plants and animals; making a guide to local living things; raising and answering questions based on their observations of animals and what they have found out about other animals that they have researched.	classification classification key environment climate habitat migrate hibernate vertebrates Fish amphibians reptiles birds mammals invertebrates
Biology	Living things and their habitats- Animals- Food Chains and ecosystems	Construct and interpret a variety of food chains, identifying producers, predators and prey.	I can use food chains to identify producers, predators, and prey. I can construct food chains to identify producers, predators, and prey.	Pupils might work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences.	herbivore carnivore omnivore producer consumer predator prey food chain
Biology	Plants- Structure	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.	I can describe the function of different plants and trees I can explore and describe the needs of different plants for survival. I can explore and describe how water is transported within plants I can describe the plant life cycle, especially the importance of flowers	Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might 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.	roots stem/trunk leaves photosynthesis pollen pollination seed formation seed dispersal germination

Red Kites Year A (Year 5/6)

Discipline	Theme	National Curriculum	Assessment Statements	NC Working Scientifically ideas	Key Vocabulary
Chemistry	Properties of materials	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 give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	I can compare and group materials based on tier properties (e.g. hardness, softness, solubility, transparency, conductivity (electrical and thermal) and response to magnets. I can give evidenced reasons why materials should be used for specific purposes.	Pupils might work scientifically by: carrying 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?' They might compare materials in order to make a switch in a circuit.	thermal insulator thermal conductor electrical insulator
Chemistry	Changing materials	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 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 demonstrate that dissolving, mixing and changes of state are reversible changes	I can describe how a material dissolves to form a solution; explain the process of dissolving I can describe and show how to recover a substance from a solution I can describe how some materials can be separated I can demonstrate how materials can be separated (e.g. through filtering, sieving and evaporating) I know and can demonstrate that some changes are reversible and some are not. I can explain how some changes result in the formation of a new material that is irreversible I can discuss reversible and irreversible changes	Pupils might work scientifically by: observing and comparing and the changes that take place, for example, when burning different materials or baking bread or cakes. They might 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.	dissolve solution soluble insoluble sieve evaporation reversible change irreversible change
Physics	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.	I can describe and explain the movement of the Earth and other planets relative to the sun I can describe and explain the movement of the Moon relative to the Earth I can explain and demonstrate how night and day are created I can describe the Sun, Earth and Moon (using the term spherical)	Pupils might work scientifically by: comparing the time of day at different places on the Earth through internet links and direct communication; creating simple models of the solar system; constructing simple shadow clocks and sundials, calibrated to show midday and the start and end of the school day; finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks.	Earth Sun Moon planets solar system star rotate orbit
Physics	Forces	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	I can explain what gravity is and its impact on our lives I can identify and explain the effect of air resistance I can identify and explain the effect of water resistance I can identify and explain the effect of friction I can explain how leavers, pulleys and gears allows a smaller force to have a greater effect.	Pupils might work scientifically by: exploring falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.	force gravity forcemeter Newton (N) air resistance water resistance friction. Mechanism simple machines

Biology	Living things and their habitats- Life Cycles	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.	I can describe the life cycle of different living things e.g. mammal, amphibian, insect, bird I can describe the differences between different life cycles I can describe the process of reproduction in animals I can describe the process of reproduction in plants	Pupils might work scientifically by: observing and comparing 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. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.	life cycle reproduction sexual reproduction asexual reproduction fertilise metamorphosis runner bulb cutting tuber
Biology	Living things and their Habitats- Classification	describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals give reasons for classifying plants and animals based on specific characteristics.	I can classify living things into broad groups according to observable characteristics and based on similarities and differences I can describe how living things have been classified I can give reasons for classifying animals in a specific way.	Pupils might work scientifically by: using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.	vertebrate fish amphibian reptile bird mammal invertebrate microorganism

Robins Year B (Year ½)

Discipline	Theme	National Curriculum	Assessment Statements	NC Working Scientifically ideas	Key Vocabulary
Biology	Animals	explore and compare the differences between things that are living, dead, and things that have never been alive identify and name a variety of plants and animals in their habitats, including microhabitats explore and compare the differences between things that are living, dead, and things that have never been alive identify and name a variety of plants and animals in their habitats, including microhabitats	I can sort living and non-living things I can name a variety of animals including fish, amphibians, reptiles, birds and mammals. I can sort animals into categories (including fish, amphibians, reptiles, birds and mammals). I can identify things that are living, dead and never lived	Pupils might work scientifically by: using their observations to compare and contrast animals at first hand or through videos and photographs, describing how they identify and group them; grouping animals according to what they eat. Pupils might work scientifically by: sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using charts. They should describe how they decided where to place things, exploring questions for example: 'Is a flame alive? Is a deciduous tree dead in winter?' and talk about ways of answering their questions.	head body eyes ears mouth teeth leg tail wing claw fin scale feathers fur beak paws hooves hair living dead never been alive
Biology	Habitats	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.	I can classify and name animals by what they eat (carnivore, herbivore and omnivore). I can describe how animals find their food I can name some different sources for food for different animals I can explain a simple food chain	Pupils might work scientifically by: constructing a simple food chain that includes humans (e.g. grass, cow, human).	habitat microhabitat food chain omnivore herbivore carnivore
Biology	Seasonal Change	observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies.	I can observe and comment on changes in the seasons I can name the seasons and suggest the type of weather in each season	Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change.	Season Autumn Winter Spring Summer Weather sunrise sunset
Biology	Humans	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.	I can explain the basic stages in a life cycle for animals including humans I can describe what animals and humans need to survive I can describe why exercise; a balanced diet and good hygiene are important for humans.	Pupils might work scientifically by: observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.	offspring reproduction growth exercise breathing hygiene germs disease

Chemistry	Everyday Materials	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.	I can identify and name a range of materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard. I can suggest why a material might or might not be used for a specific job. I can explore how shapes can be changes by squashing, bending, twisting and stretching.	Pupils might work scientifically by: comparing the uses of everyday materials in and around the school with materials found in other places (at home, the journey to school, on visits, and in stories, rhymes and songs); observing closely, identifying and classifying the uses of different materials, and recording their observations.	transparent translucent opaque flexible rigid reflective nonreflective absorbent
Biology	Habitats	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	I can describe how a specific habitat provides for the basic needs of things living here (plants and animals) I can identify and name plants and animals in a range of habitats I can match living things to their habitats	Pupils might work scientifically by: describing the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.	habitat microhabitat food chain

Owls Year B (Year ¾)

Discipline	Theme	National Curriculum	Assessment Statements	NC Working Scientifically ideas	Key Vocabulary
Physics	Forces and Magnets	compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing.	I can explore and describe how objects move on different surfaces I can explain how some forces require contact and some do not, giving examples I can explore and explain how objects will be magnetic and carry out an enquiry to test this out I can describe how magnets work I can predict whether a magnet will attract or repel and give a reason	Pupils might work scientifically by: comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic 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 these properties make magnets useful in everyday items and suggesting creative uses for different magnets	force magnetic force magnet attract repel contact force
Physics	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 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.	I can describe what the dark is (the absence of light) I can explain that light is needed in order to see I can explain that light is reflected from a surface I can explain and demonstrate how a shadow is formed I can explore shadow size and explain I can explain the danger of direct sunlight and describe how to keep protected	Pupils might work scientifically by: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.	light dark light source transparent translucent opaque shadow reflect mirror
Physics	Electricity	identify common appliances that run on electricity construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit recognise some common conductors and insulators, and associate metals with being good conductors.	I can identify and name appliances that require electricity to function I can construct a series circuit I can identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers) I can draw a circuit diagram I can predict and test whether a lamp within a circuit will light I can describe the function of a switch in a circuit I can describe the difference between a conductor and insulators, giving examples of each	Pupils might work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit.	electricity electrical appliance electrical circuit cell and battery electrical component switch conductor insulator

Physics	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 find patterns between the volume of a sound and the strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases.	I can describe how sound is made I can explain how sound travels from a source to our ears I can explain the place of vibration in hearing I can explore the correlation between the volume of sound and the strength of vibrations that produced it I can describe what happens to a sound as it travels away from its source	Pupils might work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. They might make earmuffs from a variety of different materials to investigate which provides the best insulation against sound. They could make and play their own instruments by using what they have found out about pitch and volume.	Sound sound source vibrations pitch volume insulation
Biology	Animals including Humans - Skeletons	identify that humans and some other animals have skeletons and muscles for support, protection and movement.	I can describe and explain the skeletal system of a human I can describe and explain the muscular system of a human I can describe the purpose of the skeleton in a human	Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons.	skeleton bones muscles joints
Biology	Animals including Humans- Digestive system	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 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	I can explain the importance of a balanced, nutritious diet I can explain how nutrients, water and oxygen are transported within animals and humans I can identify and name the parts of the human digestive system I can describe the functions of the organs in the human digestive system I can identify and describe the different types of teeth in humans I can describe the functions of different human teeth	They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out. Pupils might work scientifically by: finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images	nutrition nutrients carbohydrates proteins vitamins and minerals fibre digestive system digestion herbivore carnivore omnivore

Red Kites Year B (Year 5/6)

Discipline	Theme	National Curriculum	Assessment Statements	NC Working Scientifically ideas	Key Vocabulary
Physics	Light	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.	I can explain how light travels I can explain and demonstrate how we see objects I can explain why shadows have the same shape as the object that casts them I can explain how simple optical instruments work e.g., periscope, telescope, binoculars, mirror, magnifying glass etc.	Pupils might work scientifically by: deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).	light source straight lines reflect shadow
Physics	Electricity	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.	I can explain how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer I can compare and give reasons for why components work and do not work in a circuit I can draw circuit diagrams using correct symbols	Pupils might work scientifically by: systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.	circuit circuit symbol circuit diagram cell battery switch voltage
Biology	Living things and their habitats- common characteristics	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.	I can describe the life cycle of different living things e.g. mammal, amphibian, insect, bird I can describe the differences between different life cycles I can describe the process of reproduction in plants I can describe the process of reproduction in animals	Pupils might work scientifically by: observing and comparing 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.	life cycle reproduction sexual reproduction asexual reproduction fertilise metamorphosis runner bulb cutting tuber
Biology	Living things and their habitats- Evolution and inheritance	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 lead to evolution.	I can describe how the Earth and living things have changed over time I can explain how fossils can be used to find out about the past I can explain about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents) I can explain how animals and plants are adapted to suit their environment I can link adaptation over time to evolution I can explain evolution	Pupils might work scientifically by: observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.	evolution offspring inherited characteristics adapted environment species fossil

Biology	Animals including humans- Development to old age	describe the changes as humans develop to old age	I can create a timeline to indicate stages of growth in humans	Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.	puberty sexual reproduction menstruation sperm egg foetus gestation life expectancy
Biology	Animals including humans- Circulatory system	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.	I can identify and name the main parts of the circulatory system I can describe the function of the heart, blood vessel and blood I can describe the impact of exercise, drugs and life style on health I can describe the ways in which nutrients and water are transported in animals, including humans	Pupils might work scientifically by: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health	heart pulse blood vessels lungs circulatory system diet exercise drugs lifestyle