Science Whole School Progression Grid

2019 - 2020

Year 1 – Progression in Science grid								
Topic	**Plants**		**Animals, including humans**		**Everyday materials**		**Seasonal change**	
Prior knowledge	Children will have made observations of plants and will be able to explain why some things occur and talk about changes.		Children will have made observations of animals and will be able to explain why some things occur and talk about changes.		Children know about some similarities and differences between objects and materials.		Know and name the 4 seasons and associate different types weather with the seasons	
Prior knowledge for working scientifically	Explore plants in their natural environment. Observe differences and similarities between different types of plants.		Explore creatures in their natural environment. Observe differences and similarities between different animals. Use their senses to identify the differences and similarities between different animals through sight, touch and sound.		Children explore creatures, people, plants and objects in their natural environments. Observe and manipulate objects and materials to identify differences and similarities. Ask questions about why things happen and how things work		Observe and talk about changes in their local environment over time Make recordings of their observations through the use of drawings or taking photographs	
Key vocabulary	common plants wild plants garden plants deciduous evergreen trunk bulb seed vegetables fruit	branches leaf root leaves bud flowers stem blossom petals	fish amphibians reptiles birds mammals carnivores herbivores omnivores touch taste hear feel see	elbows legs knees face neck head arms ears eyes hair mouth teeth	material properties wood plastic glass metal rock water hard/ soft stretchy/ stiff shiny / dull	absorbent/ not absorbent brick paper fabric elastic foil rough / smooth bendy / not bendy waterproof / not waterproof	autumn winter spring summer day night wind rain light dark sunrise sunset	hot warm cold snow hail sleet fog sun
Statutory Requirements	• 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.		• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals • Identify and name a variety of common animals that are carnivores, herbivores and omnivores describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. •		• 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.		• Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies.	

Key Performance Indicators	Name the main parts of plants and trees Identify deciduous and evergreen trees	Name the main parts of the body, including those related to the 5 senses Identify which animals are fish, amphibians, reptiles, birds and mammals	Distinguish between an object and the material from which it is made Describe the simple physical properties of a variety of everyday materials Organise objects or materials into groups	Describe how the weather varies with the season
Investigations and working scientifically to be covered	Investigation - How can we grow the best plant? The children will carry out an investigation to find out what plants need to grow healthy and make observations about how a plant grows over a number of weeks • Performing simple tests • Gathering and recording data to help in answering questions • Using their observations and ideas to suggest answers to questions	Investigation – Are older children taller? • Gathering and recording data to help in answering questions • Observing closely, using simple equipment (tape measure)	An investigation to find out which material will make the best waterproof coat for teddy – • Fair testing • Identifying, sorting and grouping materials.	Termly visits to Marshall's Arms to make observations on the Seasons ▪ observe changes across the four seasons ▪ observe and describe weather associated with the seasons and how day length varies.
Key Performance Indicators for working scientifically	• Use different approaches to answer scientific questions • Carry out simple tests			

Year 2 – Progression in Science grid								
Topic	**Plants**		**Living things and their habitats**		**Animals, including humans**		**Uses of everyday materials**	
Prior knowledge	From Y1 ○ Name the main parts of plants and trees ○ Identify deciduous and evergreen trees		Reception?		From Y1 ○ Name the main parts of the body, including those related to the 5 senses ○ Identify which animals are fish, amphibians, reptiles, birds and mammals		From Y1 ○ Distinguish between an object and the material from which it is made ○ Describe the simple physical properties of a variety of everyday materials ○ Organise objects or materials into groups	
Prior knowledge for working scientifically	From Y1 • Use different approaches to answer scientific questions • Carry out simple tests							
Key vocabulary	water light temperature grow healthy germination reproduction trunk branches stem	seeds bulbs mature plants nutrients leaves flowers blossom petals fruit roots	living dead non-living habitat micro habitat food chain field hedgerow, pond heat warmth	woodland seashore ocean rainforest arctic desert, air food water shelter sun	offspring grow adult water food air exercise hygiene nutrition reproduce egg child teenager	chick chicken caterpillar pupa butterfly spaw tadpole frog lamb sheep baby toddler adult	wood plastic glass metal water rock brick paper card rubber fur fleece cotton wool polyester cotton wool	squash bend twist stretch Words to describe the properties of materials (e.g. soft, hard, rough, smooth, translucent, transparent, opaque).
Statutory Requirements	• 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.		• Explore and compare the differences between things that are living, dead, and things that have never been alive • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including microhabitats • Describe how animals obtain their food from plants and other animals, using the		• Notice that animals, including humans, have offspring which grow into adults • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.		• Identify 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.	

		idea of a simple food chain, and identify and name different sources of food.		
Key Performance Indicators	Describe the basic needs for plant growth (light, water, appropriate temperature).	Describe how some plants and animals are suited to different habitats. Describe how animals obtain food by eating plants or other animals.	Describe the basic needs of humans and other animals (water, food, air). Describe the importance of exercise, eating the right amounts of different foods and hygiene for humans.	Describe different uses of materials according to their properties.
Investigations and working scientifically to be covered	What does cress need to grow?	Foodchains-What do I eat? What food do snails prefer? Who does Rudolph most like to feed him?	What happens to our heart during exercise? Why do we need to wash our hands?	What will melt first, chocolate in the hand or mouth? John McAdam ?
Key Performance Indicators for working scientifically	• Use simple equipment for observations • Link ideas and answers to observations • Collect information to help answer scientific questions			

Year 3 – Progression in Science grid										
Topic	**Plants**		**Animals, including humans**		**Rocks**		**Light**		**Forces and magnets**	
Prior knowledge	From Y1 ○ Name the main parts of plants and trees ○ Identify deciduous and evergreen trees From Y2 – ○ Describe the basic needs for plant growth (light, water, appropriate temperature).		From Y1 ○ Name the main parts of the body, including those related to the 5 senses ○ Identify which animals are fish, amphibians, reptiles, birds and mammals From Y2 – ○ Describe the basic needs of humans and other animals (water, food, air). ○ Describe the importance of exercise, eating the right amounts of different foods and hygiene for humans.							
Prior knowledge for working scientifically	From Y1 • Use different approaches to answer scientific questions • Carry out simple tests From Y2 • Use simple equipment for observations • Link ideas and answers to observations • Collect information to help answer scientific questions									
Key vocabulary	Structure – flowering plants, roots, stem/trunk, leaves and flowers Function – nutrition, support, reproduction	Requirements for growth – air, light, water, nutrients, room, fertiliser Life cycle – flowers pollination, seed formation, seed dispersal	Nutrition Vitamins Minerals fat protein carbohydrates fibre water skeletons support protection skull	brain ribs heart lungs movement joint muscles pull contract relax diet	appearance physical properties hard/soft shiny/dull rough/smooth absorbent/not absorbent	fossils sedimentary rock soils organic matter buildings gravestones grains crystals igneous metamorphic	light see dark reflect surface natural star Sun Moon protect eyes	shadow blocked solid artificial torch candle lamp sunlight dangerous	force push pull open surface magnet magnetic attract	repel magnetic poles North South

Statutory Requirements	• 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.	• 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.	• 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.	• 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.	• 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.
Key Performance Indicators	Describe main requirements for plant growth (air, light, water, nutrients from soil and room to grow). Explain the main stages of plant reproduction (pollination, fertilisation, seed dispersal).	Explain some functions of skeletons and muscles in animals Identify that animals need the right types and amount of nutrition	Identify the three main rock types and describe their properties	Notice that light is reflected from surfaces Find patterns in the way that the sizes of shadows change Understand how to protect eyes from the sun	Group materials according to their magnetic properties
Investigations and working scientifically to be covered	Do plants need soil to grow? What happens when we change the type of liquid we use to water the plant? What conditions affect plant growth? How is water transported? Identifying different types of plants	How do our muscles work? (Running and jumping)	How can we group rocks? What is soil made of? How easily does water drain through soil?	What affects how easily light passes through different materials? How well does light reflect from different surfaces? Colours? How do shadows change during the day? Why do cat's eyes glow at night?	Which is the strongest magnet? How can we propel toy cars? Where are magnets used everyday? What does friction do?
Key Performance Indicators for working scientifically	• Set up simple fair tests • Collect and present data from scientific experiments • Use results from experiments to draw simple conclusions or suggest improvements				

Year 4 – Progression in Science grid

Topic	Living things and their habitats	Animals, including humans	States of matter	Sound	Electricity
Prior knowledge	Reception? From Y2 – ○ Describe how some plants and animals are suited to different habitats. ○ Describe how animals obtain food by eating plants or other animals.	From Y1 ○ Name the main parts of the body, including those related to the 5 senses ○ Identify which animals are fish, amphibians, reptiles, birds and mammals From Y2 – ○ Describe the basic needs of humans and other animals (water, food, air). ○ Describe the importance of exercise, eating the right amounts of different foods and hygiene for humans. From Y3 – ○ Explain some functions of skeletons and muscles in animals ○ Identify that animals need the right types and amount of nutrition			
Prior knowledge for working scientifically	From Y1 • Use different approaches to answer scientific questions • Carry out simple tests From Y2 • Use simple equipment for observations • Link ideas and answers to observations • Collect information to help answer scientific questions From Y3 • Set up simple fair tests • Collect and present data from scientific experiments • Use results from experiments to draw simple conclusions or suggest improvements				
Key vocabulary	environment flowering/ non-flowering plants animals vertebrate environment dangers fish amphibians reptiles birds mammals invertebrate	human impact nature reserves ecologically planned parks garden ponds population development litter deforestation snails slugs worms spiders	digestion mouth teeth tongue saliva oesophagus stomach gastric juices enzyme small intestine bile pancreatic juice large intestine,	cut slice canines grip pierce premolars molars crush grind dental dentist disclosing tablets predators	solid solidify iron ice melt/melting freeze/freezing liquid evaporate condense gas container changing state heated	heat cool/cooled degrees celsius thermometer water cycle evaporation condensation temperature water water vapour	vibrate vibration vibrating air medium ear hear sound volume	pitch faint fainter loud louder string percussion woodwind brass insulate	appliances electricity electrical circuit cell wire bulb buzzer danger electrical safety sign	insulators wood rubber plastic glass conductors metal water switch open closed

		insects	rectum. incisors food chain producers	prey herbivore carnivore omnivore						
Statutory Requirements	• 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 simple functions of the basic parts of the digestive system in humans • Identify the different types of teeth in humans and their simple functions • Construct and interpret a variety of food chains, identifying producers, predators and prey		• Compare and group materials together, according to whether they are solids, liquids or gases • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		• 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.		• 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.	
Key Performance Indicators	Use classification key to identify plants or animals		Describe the simple functions of the basic parts of the digestive system in humans Describe the importance of and how to correctly brush their teeth		Explain the main stages of the water cycle Be able to group materials together, according to whether they are solids, liquids or gases		Recognise that vibrates from sounds travel through a medium to the ear		Construct a simple series electrical circuit, identifying and naming its basic parts Name some different ways to enable the children to be safe when using electricity	
Investigations and working scientifically to be covered	How can we group these plants / animals? Do dandelions in the shade have longer leaves than those in the light? Where do woodlice live? How do the trees in the playground change throughout the year?		What happens to teeth when they are exposed to different types of drink? Sorting and classifying animals in a food chain according to diet / teeth How does food travel through our digestive system?		What happens to the ice when salt is added? Can we sort these substances into solids, liquids and gases? Which type of chocolate melts fastest? Do all liquids freeze and boil at the same temperature?		What happens to the volume of the sound when we change the material used to surround it? Sorting sounds using a Carroll diagram (high / low, loud / quiet) Do children hear high pitched sounds better than adults?		Which materials conduct electricity best? What happens to the brightness of the bulb when we change the number of batteries in the circuit? Can you design a pressure pad for a burglar alarm system? Can you design a switch to turn a light on and off?	
Key Performance Indicators for working scientifically	• Take accurate measurements using a range of scientific apparatus • Present finings using tables, graphs and charts as appropriate • Use straightforward evidence in support of ideas									

Year 5 – Progression in Science grid

Topic	Living things and their habitats	Animals, including humans	Properties and changes of materials	Earth and space	Forces
Prior knowledge	Reception? From Y2 – ○ Describe how some plants and animals are suited to different habitats. ○ Describe how animals obtain food by eating plants or other animals. From Y4 : • Use classification key to identify plants or animals	From Y1 ○ Name the main parts of the body, including those related to the 5 senses ○ Identify which animals are fish, amphibians, reptiles, birds and mammals From Y2 – ○ Describe the basic needs of humans and other animals (water, food, air). ○ Describe the importance of exercise, eating the right amounts of different foods and hygiene for humans. From Y3 – ○ Explain some functions of skeletons and muscles in animals ○ Identify that animals need the right types and amount of nutrition From Y4 – ○ Describe the simple functions of the basic parts of the digestive system in humans ○ Describe the importance of and how to correctly brush their teeth	From Y1 ○ Distinguish between an object and the material from which it is made ○ Describe the simple physical properties of a variety of everyday materials ○ Organise objects or materials into groups From Y2 ○ Describe different uses of materials according to their properties.	From Y2 topic??	From Y3 ○ Group materials according to their magnetic properties
Prior knowledge for working scientifically	From Y1 • Use different approaches to answer scientific questions • Carry out simple tests From Y2 • Use simple equipment for observations • Link ideas and answers to observations • Collect information to help answer scientific questions From Y3 • Set up simple fair tests • Collect and present data from scientific experiments • Use results from experiments to draw simple conclusions or suggest improvements From Y4				

	• Take accurate measurements using a range of scientific apparatus • Present finings using tables, graphs and charts as appropriate • Use straightforward evidence in support of ideas									
Key vocabulary	Life cycles Mammals Amphibian Insect Bird Reproduction Plants Animals Scales Plants Seeds Stem root cutting tubers bulbs pollen Leaves flowers, blossom petals fruit root bulb seed trunk branches,	Sexual reproduction Asexual reproduction Invertebrates insect babies young grow adult egg caterpillar larva, chrysalis pupa head abdomen thorax wings fur feathers stem stigma style anther ovary ovule seed formation seed dispersal	human development baby toddler child teenager adult puberty gestation length	mass grows grow growing hormones fertilisation prenatal infancy old age	Soft Hard Rough Smooth Stiff Shiny Dull Rough Waterproof Absorbent Opaque Transparent Translucent Texture Conduct Insulate Electrical Thermal Magnetic	Solids Liquids Gases Dissolve Solution Substance Separated Filtering Sieving Evaporating Reversible irreversible burning oxygen acid bicarbonate of soda carbon dioxide	Day Night Light Dark Dim Sunrise Sunset Dusk Earth Moon Reflect Sun Star Rotation Earth's axis	solar system Mercury Venus Mars Jupiter Saturn Uranus Neptune Pluto as a dwarf planet	Force Contact non-contact gravity falling friction air resistance water resistance newton force metre, drag levers	Pulleys Gears Move Surface Material Carpet Tiles Wood Lino bubble wrap sandpaper fleece polythene towel
Statutory Requirements	• 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.		• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets • Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic		• 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		• 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.	

			• Demonstrate that dissolving, mixing and changes of state are reversible changes • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.		
Key Performance Indicators	Describe the life process of reproduction in some plants and animals	Name the phases of human growth and development Recognise that different mammals have different gestation periods Describe some of the changes during puberty	Explain how mixtures can be separated through filtering, sieving and evaporating Explain that some irreversible changes form new materials	Describe the movement of the Earth, and other planets, relative to the sun Explain day and night on earth, and the apparent movement of the Sun	Explain that gravity causes unsupported objects to fall towards the Earth Identify the effects of air resistance, water resistance and friction between moving surfaces
Investigations and working scientifically to be covered	How do plants reproduce? – **identifying, classifying and grouping** Another needed – asexual reproduction? – **observing over time**	What are the stages of the human life cycle? - **research using secondary sources** Does life expectancy differ around the world? – **research using secondary sources**	How can we use properties to group materials? - **identifying, classifying and grouping** How can we separate mixtures? – **looking for patterns** Reversible and irreversible reactions - **identifying, classifying and grouping** How can we get drinking water from salty water? In what conditions does ice melt most quickly? – **fair testing** and **observing over time**	How has our understanding of the solar system developed over time? - **research using secondary sources** How does a sundial work? How can the moon help us to measure time? Researching a planet - **research using secondary sources**	What happens to the length of an elastic band when different weights are suspended from it? Does the size of a parachute effect the speed at which it falls? Does the size of a parachute effect the speed at which it falls?
Key Performance Indicators for working scientifically	• Plan scientific investigations, including controlling variables where appropriate • Record data using diagrams, keys, tables and a range of graphs • Report conclusions and explanations from scientific investigations				

Year 6 – Progression in Science grid

Topic	Living things and their habitats	Animals, including humans	Evolution and Inheritance	Light	Electricity
Prior knowledge	Reception? From Y2 – o Describe how some plants and animals are suited to different habitats. o Describe how animals obtain food by eating plants or other animals. From Y4 - o Use classification key to identify plants or animals From Y5 – o Describe the life process of reproduction in some plants and animals	From Y1 o Name the main parts of the body, including those related to the 5 senses o Identify which animals are fish, amphibians, reptiles, birds and mammals From Y2 – o Describe the basic needs of humans and other animals (water, food, air). o Describe the importance of exercise, eating the right amounts of different foods and hygiene for humans. From Y3 – o Explain some functions of skeletons and muscles in animals o Identify that animals need the right types and amount of nutrition From Y4 – o Describe the simple functions of the basic parts of the digestive system in humans o Describe the importance of and how to correctly brush their teeth From Y5 – o Name the phases of human growth and development o Recognise that different mammals have different gestation periods o Describe some of the changes during puberty		From Y3 – o Notice that light is reflected from surfaces o Find patterns in the way that the sizes of shadows changes o Understand how to protect eyes from the sun	From Y4 – o Construct a simple series electrical circuit, identifying and naming its basic parts o Name some different ways to enable the children to be safe when using electricity
Prior knowledge for working scientifically	From Y1 • Use different approaches to answer scientific questions • Carry out simple tests From Y2 • Use simple equipment for observations • Link ideas and answers to observations • Collect information to help answer scientific questions From Y3 • Set up simple fair tests • Collect and present data from scientific experiments				

	• Use results from experiments to draw simple conclusions or suggest improvements From Y4 • Take accurate measurements using a range of scientific apparatus • Present finings using tables, graphs and charts as appropriate • Use straightforward evidence in support of ideas From Y5 • Plan scientific investigations, including controlling variables where appropriate • Record data using diagrams, keys, tables and a range of graphs • Report conclusions and explanations from scientific investigations									
Key vocabulary	microorganisms characteristics plants animals classifying invertebrates spiders snails worms	vertebrates fish amphibians reptiles birds mammals	heart lungs liver kidney brain skeletal skeleton muscle muscular lifestyle nutrients water alcohol	digest digestion digestive human circulatory system blood vessels blood diet exercise drugs substances	living things change fossils offspring not identical characteristics variation evolution adaptation inherit inheritance	environment extreme conditions advantageous disadvantageous	light travels straight reflect reflection light source object shadows mirrors periscope rainbow filters		Voltage Brightness Volume Switches Danger Series circuit Electrical safety sign	Switch Bulb Buzzer Motor
Statutory Requirements	• 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.		• 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.		• 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.		• 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.		• 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.	
Key Performance Indicators	Classify some plants, animals or micro-organisms, explaining the choices made		Explain the main parts and functions of the human circulatory system, including heart and blood vessels		Recognise that living things produce offspring which are not usually identical to their parents Identify how adaptation of plants and animals over time may lead to evolution		Explain that we see things which either give out or reflect light		Explain how the number of voltage cells affects bulbs, buzzers or motors in a circuit Use recognised symbols when representing a simple circuit in a diagram	

Investigations and working scientifically to be covered	How many groups can plants be organised into and what care their characteristics?	Investigating nutrition content using food labels – Which is the unhealthiest chocolate bar/snack? How healthy are ready meals? Investigating the effect of exercise on our heart rate How do muscles work? Modelling with paper tubes and rubber bands – investigating muscles in different movements	Investigating cross breeds Investigating variation in the classroom – height, weight, hair colour, shoe size etc Data collection and graph drawing to analyse. What differences are environmental and what differences are inherited from our parents?	What is the relationship between the distance from the object to the shadow and the size of the shadow? What happens to the length and position of a shadow throughout the day Investigating light levels in the school/local environment – identifying sources. Data collection and bar graph analysis	Investigation: How does voltage (number of batteries) affect the brightness of lamps? Investigation: How does voltage (number of batteries) affect the volume of a buzzer?
Key Performance Indicators for working scientifically	• Use test results to design further investigations • Use simple models to describe scientific ideas • Identifying scientific evidence that has been used to support or refute ideas or arguments				