



JOURNEY CURRICULUM

Science

Our Ultimate End Goal:

What will our scientists be able to do when they leave us?

- By the end of their time at Sharley Park Community Primary School our Year 6 scientists will have built up a body of knowledge which will enable them to understand how science can be used to explain what is occurring around them, predict how things will behave and analyse causes.
- They will recognise the power of a rational explanation and be able to articulate scientific concepts clearly and precisely using accurate technical terminology.
- Scientific learning experiences will have developed an excitement and curiosity about natural phenomena and the world around them. This will prompt the asking of their own questions and the use of the relevant skills needed to work out and explain their answers.
- They will have an understanding that scientific ideas change and develop over time and how this has and continues to change our lives and futures.
- This full and rounded understanding of the world around them will impact their lives, influencing the choices that they make so that through their actions they are able to make the world a better place

Curriculum Coverage (NC)

What are the most basic requirements from the National Curriculum?

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
<p>Me and my community -Harvest festival -Special people to us -Similarities and differences between us</p> <p>Once upon a time -Diwali -Bonfire Night -Christmas -Woodland animal facts -Hibernation -Observations -Growth, decay and changes over time</p> <p>Starry Night -Chinese New Year -People who help us -Observations of day and night</p> <p>Ready, steady, grow -Mother's day -Easter -Special events -Exploring materials for building models -Life cycles</p> <p>Animal safari -Special times -Talking about why things happen and how they work</p> <p>On the beach</p>	<p>Animals including humans *Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <p>* Identify and name a variety of common animals that are carnivores, herbivores and omnivores</p> <p>* Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</p> <p>* Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p>Animals including humans * Notice that animals, including humans, have offspring which grow into adults</p> <p>* Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).</p> <p>* Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p>Living things and their habitats *Explore and compare the differences between things that are living, dead, and things that have never been alive.</p>	<p>Animals including humans *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</p> <p>*Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<p>Animals including humans * Describe the simple functions of the basic parts of the digestive system in humans</p> <p>* Identify the different types of teeth in humans and their simple functions.</p> <p>* Construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>Living things and their habitats * Recognise that living things can be grouped in a variety of ways</p> <p>* Explore and use classification keys to help group, identify and</p>	<p>Animals including humans * Describe the changes as humans develop to old age.</p> <p>Living things their habitats * Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p>	<p>Animals including humans * Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>* Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p> <p>* Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Living things and their habitats * Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences,</p>

<p>-Family holidays -Where we belong -Observations and discussions about things they have observed like plants, animals, natural objects.</p>		<p>* 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.</p> <p>* Identify and name a variety of plants and animals in their habitats, including microhabitats.</p> <p>* Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain. Within these identify and name different sources of food.</p>		<p>name a variety of living things in their local and wider environment</p> <p>* Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>* Describe the life process of reproduction in some plants and animals.</p>	<p>including microorganisms, plants and animals.</p> <p>* Give reasons for classifying plants and animals based on specific characteristics.</p>
	<p><u>Everyday Materials</u> *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 every day materials. *Compare and group together a variety of every day materials on the basis of their simple physical properties.</p>	<p><u>Use of everyday materials</u> *Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>* Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</p>			<p><u>Properties and changes of materials</u> * 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.</p> <p>* Know that some materials will dissolve in liquid to form a solution, and describe how to recover a</p>	

					<p>substance from a solution.</p> <p>* Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p>* Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p> <p>* Demonstrate that dissolving, mixing and changes of state are reversible changes.</p> <p>* 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.</p>	
	<p>Plants *Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees.</p>	<p>Plants *Observe and describe how seeds and grow into mature plants. *Find out and describe how plants need water, light and a suitable</p>	<p>Plants * Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p>			

	<p>* Identify and describe the basic structure of a variety of common flowering plants, including trees.</p>	<p>temperature to grow and stay healthy.</p>	<p>* 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.</p> <p>* Investigate the way in which water is transported within plants.</p> <p>* Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>			
				<p>Electricity</p> <p>*Identify common appliances that run on electricity.</p> <p>* Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.</p> <p>* 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.</p> <p>* Recognise that a switch opens and closes</p>		<p>Electricity</p> <p>* Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>* 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.</p> <p>* Use recognised symbols when representing a simple circuit in a diagram</p>

				<p>a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>* Recognise some common conductors and insulators, and associate metals with being good conductors.</p>		
			<p>Light</p> <p>*Recognise that they need light in order to see things and that dark is the absence of light.</p> <p>* Notice that light is reflected from surfaces.</p> <p>* Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.</p> <p>* Recognise that shadows are formed when the light from a light source is blocked by an opaque object.</p> <p>* Find patterns in the way that the size of shadows change.</p>			<p>Light</p> <p>* Recognise that light appears to travel in straight lines.</p> <p>* 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.</p> <p>* 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.</p> <p>* Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them..</p>
			<p>Forces and Magnets</p> <p>*Compare how things move on different surfaces.</p> <p>* Notice that some forces need contact</p>		<p>Forces</p> <p>* Explain that unsupported objects fall towards the Earth because of the force of gravity acting between</p>	

			<p>between two objects, but magnetic forces can act at a distance.</p> <ul style="list-style-type: none"> * 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. 		<p>the Earth and the falling object.</p> <ul style="list-style-type: none"> * 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. 	
<p><u>Seasonal Changes</u> *Observe changes across the four seasons.</p> <p>* Observe and describe weather associated with the seasons and how day length varies</p>		<p><u>Rocks</u> *Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <p>* Describe in simple terms how fossils are formed when things that have lived or trapped within rock.</p>	<p><u>States of matter</u> * Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>* 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).</p>	<p><u>Earth and Space</u> * Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.</p> <p>* Describe the movement of the Moon relative to the Earth.</p> <p>* Describe the Sun, Earth and Moon as approximately spherical bodies.</p>	<p><u>Evolution and inheritance</u> * Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>* Recognise that living things produce offspring of the same kind, but normally offspring vary</p>	

			<p>* Recognise that soils are made from rocks and organic matter.</p>	<p>* Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>* Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	<p>and are not identical to their parents.</p> <p>* Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>
				<p>Sound</p> <p>*Identify how sounds are made, associating some of them with something vibrating,</p> <p>* Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>* Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>* Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>* Recognise that sounds get fainter as the distance from the sound source increases.</p>		

PROCEDURAL KNOWLEDGE –

- What skills do we want our scientists to have?
- Analyse, evaluate and solve problems.
- How will these skills build on what went before and help prepare our children for what is coming next?

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
<p>Show curiosity about objects, events and people.</p> <p>Question why things happen.</p> <p>Take a risk, engage in new experiences and learn by trial and error.</p> <p>Find ways to solve problems / find new ways to do things / test their ideas.</p> <p>Develop ideas of grouping, sequences, cause and effect.</p> <p>Know about similarities and differences in relation to places, objects, materials and living things.</p> <p>Comment and ask questions about aspects of their familiar world such as the place where they live or the natural world.</p> <p>Closely observe what animals, people and vehicles do.</p> <p>Use senses to explore the world around them.</p> <p>Make links and notice patterns in their experience.</p> <p>Answer how and why questions about their experiences.</p> <p>Make observations of animals and plants and explain why some things occur, and talk about changes.</p>	<p>Ask questions and recognise that they can be answered in different ways</p> <p>Observe closely, using simple equipment</p> <p>Perform simple tests</p> <p>Identifying and classifying</p> <p>Using observations and ideas to suggest answers to questions</p> <p>Gathering and recording simple data to help in answering questions.</p>	<p>Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests</p> <p>Making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Reporting on findings from enquiries including oral and written explanations, displays or presentations of their results and conclusions.</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Using straightforward scientific evidence to answer questions or to support their finding.</p>	<p>Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Set up simple practical enquiries, comparative and fair tests</p> <p>Making systematic and careful observations and where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Reporting on findings from enquiries including oral and written explanations, displays or presentations of their results and conclusions.</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>Using straightforward scientific evidence to answer questions or to support their finding.</p>	<p>Planning different types of scientific enquiries to answer their own questions, including recognising and controlling variables where necessary.</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Using test results to make predictions to set up further comparative and fair tests.</p> <p>Reporting and presenting findings from enquiries, including conclusions, casual relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</p> <p>Identify and evaluate scientific evidence that has been used to support or refute ideas or arguments.</p>		

Develop their own narratives and explanations by connecting ideas or events.			
Build up vocabulary that reflects the breadth of their experience			

PROPOSITIONAL KNOWLEDGE –

- What key concepts or knowledge will our scientists have?
- What knowledge do we want to emphasise?
- How will knowledge be built on what went before and prepare our children for what is coming next?

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
<p>Me and my community -Harvest festival (To understand what harvest festival is, why and how it is celebrated). -Special people to us (Identify people who are special to us and explain why they are special to us) -Similarities and differences between us (Identify similarities and differences in our bodies, faces and features).</p> <p>Once upon a time -Diwali (To understand what Diwali is, why and how it is celebrated). -Bonfire Night (To understand what Bonfire Night is, why and how it is celebrated).</p>	<p>Animals including humans Vertebrates are animals that have a backbone. There are five groups of vertebrates: mammals, fish, birds, reptiles, amphibians. Mammals give birth to live young, usually have hair or fur, warm-blooded, cannot breathe underwater. Some common mammals are: pets such as dogs, cats, hamsters, farm animals such as cows, sheep and horses, wild animals such as foxes, hedgehogs, lions and giraffe. Fish have fins and scales, breathe underwater using gills, lay eggs in water, and are coldblooded. Some common fish are salmon, cod and tuna. Birds are warm-blooded, have wings and beaks,</p>	<p>Animals including humans Animals, including humans have offspring that grow into adults. This is called a life cycle. There are different stages to life cycles including the human life cycle. All animals need water, air and food to survive. To keep healthy, humans need: to eat a balanced diet and healthy food, exercise to keep their muscles and bones healthy, to keep good hygiene by washing regularly, having clean clothes, brushing teeth and hair. Humans cannot make their own food like plants do - we need to eat plants and animals to get our energy. Healthy, balanced diets lead to</p>	<p>Animals including humans Animals including humans need the right type and amount of nutrition. They get their nutrition from what they eat. Carnivores eat only other animals. Herbivores eat only plants. Omnivores eat a mixed diet that contains food from plants and animals. Humans and some other animals have skeletons and muscles which protect and support their vital organs and allow them to move successfully. Vertebrates are animals that have a backbone. These skeletons are called endoskeletons - this means that the skeletons are on the inside of the bodies. These skeletons grow</p>	<p>Animals including humans Teeth are used for cutting and chewing food. Humans look after their teeth by brushing and flossing and ensuring that they do not eat foods high in sugar. Not looking after teeth can lead to an increase in plaque and tooth decay. Canines are pointed for tearing and ripping food - these are usually used when chewing. Incisors are shovel shaped and help bite lumps out of and cutting food. Premolars and molars are flat and they grind and crush food. The smell of food triggers saliva to be produced. The digestive system begins with the mouth and teeth where food is ingested and</p>	<p>Animals including humans The main stages of the human life cycle: Foetus - an unborn animal or human being in the very early stages of development Newborn - this is a baby that has just been born. Infancy - this is a period of rapid change. Many toddlers learn to walk and talk at this stage. Childhood - children learn new things as they grow. They become more independent. Adolescence - this is when the body starts to change and prepare itself for adulthood. Hormonal changes take place over a few years – known as puberty. Early adulthood - this is when humans are</p>	<p>Animals including humans Some choices, such as smoking and drinking alcohol can be harmful to our health. Tobacco can cause short-term effects such as shortness of breath, difficulty sleeping and loss of taste and long-term effects such as lung disease, cancer and death. Alcohol can cause short-term effects such as addiction and loss of control and long-term effects such as organ damage, cancer and death Exercise can: tone our muscles and reduce fat, increase fitness, make you feel physically and mentally healthier, strengthens the heart, improves lung function, improves skin. The circulatory system</p>

<p>-Christmas (To understand what Christmas is, why and how it is celebrated). -Woodland animal facts (To identify woodland animals and describe their key features and habitats). -Hibernation (To discuss what hibernation is and identify animals that hibernation) -Observations (make observations of things around us) -Growth, decay and changes over time (observe items, including fruit, and describe the changes that take place).</p> <p>Starry Night -Chinese New Year (To understand what Chinese New Year is, why and how it is celebrated). -People who help us (Identify those people that help us and what they do to help us) -Observations of day and night (describe the key features of day and night).</p> <p>Ready, steady, grow -Mother's day (To understand what Mother's Day is, why</p>	<p>have feathers, lay eggs. Some common birds are ducks, chickens, penguins and pigeons. Reptiles are cold-blooded, lay eggs, have scales, and cannot breathe underwater. Some common reptiles are snakes and lizards. Amphibians are cold-blooded, lay eggs, live on land and water - can breathe underwater through gills. Some common amphibians are frogs and toads. Invertebrates are animals that do not have a backbone. They include: insects such as flies, ladybirds and bees, arachnids such as spiders, molluscs such as snails. Animals that only eat meat (other animals) are called carnivores examples include lions and eagles. Animals that only eat plants are called herbivores (examples include cows and giraffes) Animals that eat plants and meat are called omnivores (examples include humans and squirrels) The different parts of the body. Hair - this grows on our head and helps to protect our skull. The skull is the bone that protects our</p>	<p>healthy, active people. The different food types are: Fruit and vegetables; Bread, rice, potatoes, pasta and other starchy foods; Milk and, oils and spreads; Meat, fish, eggs, beans and other non-dairy sources of protein. The different types of nutrients: Proteins help your body to grow and repair itself, examples include red meat, yogurt, and beans. Carbohydrates give you energy, examples include bread, potatoes, pasta. Fats give you energy, examples include nuts, oils, and avocados. Vitamins keep your body healthy, examples of foods high in vitamins include oranges, carrots and nuts. Minerals keep your body healthy, examples of foods high in minerals include milk, sweetcorn, and spinach. Fibre helps you to digest the food that you have eaten, examples of foods high in fibre include wholegrain bread, cereals and lentils. Water helps to move nutrients in your body and get rid of waste that you don't</p>	<p>with the bodies. When the skeleton exists outside the body, it is called an exoskeleton. An exoskeleton is a covering that supports and protects animals. These have to be shed and a new skeleton is grown. The three most important functions of a skeleton are: provide support and shape to an animal's body. Allow movement through the joints. Protect organs (e.g. the skull protects the brain) Joints are where bones meet - they allow our bodies to move. Muscles contract and relax. If you place an elbow on a desk and lift your arm up, muscles in your upper arm (biceps) contract while muscles behind the upper arm (triceps) relax. The muscles work together and in opposition to allow your arm to move. Muscles are connected to bones by tendons.</p>	<p>chewed. Saliva is mixed with the food which helps to break it up. When the food is small enough to be swallowed, it is pushed down the oesophagus by muscles to the stomach. In the stomach, food is mixed further. The mixed food is then sent to the small intestine which absorbs nutrients from the food. Any leftover, broken down food then moves on to the large intestine. The food minus the nutrients arrives in the rectum where muscles turn it into faeces. It is stored here until it is pushed out by the anus. This is called excretion.</p>	<p>usually at their fittest and strongest. Middle adulthood - changes such as hair loss may happen. There are also some hormonal changes again and the ability to reproduce decreases. Late adulthood - there is a decline in fitness and strength. Puberty is the change that happens in late childhood and adolescence where the body starts to change because of hormones - changes include growth in height, more sweat, hair growth on arms and legs, under the armpits and on genitals, and growth in parts of the body such as male genitals and breasts. Females begin to menstruate.</p>	<p>is made of the heart, lungs and the blood vessels. Arteries carry oxygenated blood from the heart to the rest of the body. Veins carry deoxygenated blood from the body to the heart. Nutrients, oxygen and carbon dioxide are exchanged via the capillaries. The heart is composed of four chambers; the right atrium, the right ventricle, the left atrium and the left ventricle. How often your heart pumps is called your pulse. 1. Deoxygenated blood is sent to the heart from the rest of the body. 2. This is then sent from the heart to the lungs. Here, the blood picks up oxygen and disposes of carbon dioxide. 3. Oxygenated blood is then sent back to the heart. 4. The heart sends the oxygenated blood back to the rest of the body.</p>
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<p>and how it is celebrated). -Easter (To understand what Easter is, why and how it is celebrated). -Special events (Identify special events in our lives) -Exploring materials for building models (Use different materials to build models). -Life cycles (discuss the life cycle of a butterfly and identify/observe the main parts).</p> <p>Animal safari -Special times (Identify special times in our lives and describe them). -Talking about why things happen and how they work.</p> <p>On the beach -Family holidays (Discuss our family holidays and what we do on them) -Where we belong (Discuss the communities we belong to and identify why we belong to them). - Take part in observations and discussions about things they have observed like plants, animals, natural objects.</p>	<p>brain. Eyes - these help us see. Ears - these help us hear. Mouth - we use our mouth to eat and talk. Inside our mouths are tongues which help us taste and teeth Shoulders - these help our arms to lift up Hands - these help us grab things and write Knees - these help us bend our legs Feet - these help us stay balanced and upright. Elbows - these help our arms to bend Neck - connects the head to the rest of the body Nose - helps us smell Eyebrows - these protect our eyes We have five senses. 1) We smell using our nose. 2) We taste using our tongue. 3) We touch using parts of our body, like our hands. 4) We see using our eyes. 5) We hear using our ears</p>	<p>need, examples of foods high in water include celery, cucumber, tomatoes.</p>				
		<p><u>Living things and their habitats</u> Some objects/things are living, some are dead and some things have never been alive. A habitat is a place where living things, such as animals and plants, can find all of the things they need to survive. This includes food, water, air, space to</p>		<p><u>Living things and their habitats</u> Living things can be grouped in a variety of different including by what they eat, where they live and certain characteristics they have. For example, they can be grouped based on their diet. Carnivores eat only other animals. Herbivores eat only</p>	<p><u>Living things their habitats</u> Vertebrates are animals that have a backbone inside their body. The major groups include fish, amphibians, reptiles, birds and mammals. Invertebrates don't have a backbone. They either have a soft body, like worms and jellyfish, or a hard outer</p>	<p><u>Living things and their habitats</u> All living things, which can also be called organisms, have to do certain things to stay alive. These are the life processes: movement, respiration, sensitivity, growth, reproduction, excretion and nutrition Living things can be grouped according to</p>

move and grow and some shelter. Some habitats are large, like the ocean, and some are very small, such as under a log. Our local habitats include the fields around the back of the school building. Other habitats include the beach/coast which we visit during our first topic of the year and a forest. Microhabitats are very small habitats where minibeasts may live. Examples of microhabitats include under stones, in grass, under fallen leaves and in the soil. Minibeasts that can be found there include worms, snails, ants, centipedes, millipedes, and butterflies and they help to keep the microhabitat healthy. Minibeasts are able to survive in their habitats because they can find the things they need to survive there, such as food and water. Animals and plants depend on each other to survive.. A food chain is a simple way to show the direction in which energy moves from the producer to the various consumers to the top or tertiary consumer. The producer (a plant) gets

plants. Omnivores eat a mixed diet that contains food from plants and animals. Classification keys can be used to identify and group animals. Environmental changes can affect environments in positive and negative ways. Humans can impact environments and make them better through the creation of nature reserves and parks. They can also impact environment in negative ways through litter, residential developments and deforestation.

cases covering their body, like spiders and crabs. The characteristics of the different types of animals should be discussed. Fish belong to a class of creatures called aquatic vertebrates. Their combination of gills, fins and the fact that they live only in the water make fish different from all other animals. Most fish have a skeleton made of bone but some, like sharks, have a skeleton made of cartilage. Mammals have hair, lungs and are warm blooded. Mammals can live on land or in water. Most mammals give birth to live babies. But there are a few mammals who lay eggs. Amphibians are cold-blooded, live on land and lay eggs to reproduce their species (nearly all amphibians lay their eggs in or near water). They have moist skin, do not have scales and have webbed feet. Reptiles have neither fur nor feathers, but scales. Reptiles cannot be confused with amphibians because reptiles have dry, water-

different criteria (where they live, what type of organism they are, what features they have) A classification key is a tool that is used to group living things to help us identify them using recognisable characteristics. Habitats can change throughout the year and this can have an effect on the plants and animals that live there. Humans can have positive and negative effects on the environment: positive effects: nature reserves, ecological parks. Negative effects: litter, urban development The Linnaean system, named after Carl Linnaeus, has different levels where the number of living things in each group gets smaller and smaller, until there will just be one type of animal in the species group. Microorganisms are very tiny organisms where a microscope has to be used to see them. Examples of microorganisms include dust mites, bacteria and fungi, such as mould. Some microorganisms can be helpful in certain situations. Others can be harmful, and their

its energy from the Sun. An example: the producer (wheat), gets its energy from the Sun. The mouse (primary consumer) eats the wheat and gets its energy from it. The mouse is then eaten by the owl (secondary consumer). The owl gets its energy from the mouse. The owl is the predator and the mouse is the prey. The owl is then eaten by the wolf (tertiary consumer). The wolf gets its energy from the owl. The arrows show the direction in which the energy travels. When part of the food chain is removed, this has an impact on the other parts of the food chain.

proof skin and eggs, as well as more advanced bodily systems. Reptiles evolved from amphibians 300 million years ago. Birds are warm-blooded vertebrates that evolved from dinosaurs. They're identifiable by feathers, toothless beaked jaws and laying of hard-shelled eggs. They also have a high metabolic rate, a four-chambered heart and strong but light skeletons. Birds have wings that are more or less developed between species. The life cycles of mammals, birds, amphibians and insects have similarities and differences. One difference is that amphibians and insects go through the process of metamorphosis. This is when the structure of their bodies changes significantly as they grow (for example, from tadpole to frog or caterpillar to butterfly).
Plants reproduction -
Male gametes can be found in the pollen.
Female gametes can be found in the ovary (they are called ovules).
Pollination occurs when pollen from the anther

spread needs to be controlled or contained.

					is transferred to the stigma by bees and other insects. The pollen then travels down and meets the ovule. When this happens, seeds are formed - this is called fertilisation. Seeds are then dispersed so that germination can begin again. Some plants, such as daffodils and potatoes, can also produce offspring using asexual reproduction	
	<p>Everyday Materials Objects are things that you can touch or see. Objects are made from materials. These materials include wood, plastic, glass, metal, water and rock. Objects can be described as hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, waterproof, absorbent, opaque and transparent. Objects can be grouped dependent on their simple physical properties including the material they are made out of.</p>	<p>Use of everyday materials Objects are things that you can touch or see. Objects are made from materials. Some materials are natural while others are man-made. Natural materials are materials which are found in nature. Man-made materials are materials which have been produced by humans. Materials are used for different purposes based on their properties. Glass can be used to make windows because it is transparent. If an object is transparent, you can see through it. If an object or substance is opaque, you cannot see through it. Rulers can be made from wood, plastic or rubber</p>			<p>Properties and changes of materials Everyday materials can be grouped and compared dependent on their hardness, solubility, transparency, conductivity and their response to magnets. Certain items are made from specific materials as that is what is most suitable in order for it to perform its task most effectively. Materials that dissolve are soluble. Materials that do not dissolve are insoluble. Some materials can be separated after they have been mixed based on their properties - this is called a reversible change. Some methods of separation include the use of a magnet, a filter (for insoluble</p>	

		<p>because these materials are smooth and can be cut straight. Spoons are made from metal, because it is waterproof and can be cleaned easily. Plastic can also be used as it is light and it cannot hurt children's growing teeth. Waterproof does not let water pass through it. Absorbent materials soak up liquid easily. The shape of some materials can be changed when they are stretched, twisted, bent and squashed. Some materials are recyclable this means that waste materials can be processed and used again. Dependent on what they are made from, some solid objects can be squashed, bent,</p>			<p>materials), a sieve (based on the size of the solids) and evaporation. When a mixture cannot be separated back into the original components, this is called an irreversible change. Examples of this include when materials burn or mixing bicarbonate of soda with vinegar.</p>	
	<p>Plants People may grow plants in their gardens and care for them. They may grow flowering plants which are beautiful to look at or beans and seeds to grow plants for food. The names of some common garden plants are: rose, poppy, sunflower. Some common wild plants are: dandelion, daisy and buttercup. Deciduous</p>	<p>Plants People grow plants from bulbs and seeds. Germination is the growth of a plant contained within a seed. In order for their growth into mature plants, to be successful they need to be grown in suitable conditions. They start as seeds and bulbs and then grow into mature plants. The right conditions must include a suitable</p>	<p>Plants Flowering plants have roots, stems/trunk, leaves and flowers. In order for plants to grow and survive they need air, light, water, nutrients from soil and room to grow. These can vary from plant to plant. Roots absorb water from the soil where the plant is planted. Then, the water travels through the plant to the stem.</p>			

	<p>trees lose their leaves in the autumn every year. Their leaves are generally broad, flat and have veins running through them. Evergreen trees have green leaves all year round. Their leaves are generally thick, waxy and narrow like needles</p>	<p>temperature and a suitable amount of water and light. This may vary from plant to plant. Parts of common plants: roots, stem, leaf, flower, seed.</p>	<p>Water is sucked up through the stem and then the stem passes water on to the leaves. Water evaporates from the leaves into the atmosphere. This process is called transpiration. The plant then sucks up more water with its roots, to replace the water it has lost. As a result, water is constantly moving through plants. Plants really need a constant flow of water because it's how they get nutrients from the soil. If a plant doesn't get enough water, it will droop, wilt, and possibly die. Water helps keeps plants upright.</p>			
				<p>Electricity Electricity is generated using energy from natural sources such as the Sun, oil, water and wind. These can also be called fuel sources. Some appliances use batteries and some use mains electricity. Batteries come in different sizes depending on how much and for how long the appliance is used. A complete circuit is a loop that allows electrical current to flow</p>		<p>Electricity We can use scientific symbols to represent the components (parts) of a circuit. The brightness of a bulb or the loudness of a buzzer is affected by the number of cells in a circuit. The brightness of a bulb or the loudness of a buzzer is affected by the voltage of cells in a circuit. The number of components in a circuit can affect how they function. The arrangement of</p>

				<p>through wires. A circuit contains a battery (cell), wires and an appliance that requires electricity to work (such as a bulb, motor or buzzer). The electrical current flows through the wires from the battery (cell) to the bulb, motor or buzzer). A switch can break or reconnect a circuit. A switch controls the flow of the electrical current around the circuit. When the switch is off, the current cannot flow. When objects are placed in the circuits, they may or may not allow electricity to pass through. Objects that are made from materials that allow electricity to pass through and create a complete circuit are called electrical conductors. Objects that are made from materials that do not allow electricity to pass through and do not complete a circuit are called electrical insulators. An ammeter measures the current or flow of electricity through a wire or circuit. The voltage is the force of an electric current. It is measured in volts. Materials which</p>		<p>components in a circuit can affect how they function. The length of wires in a circuit can affect how the components function.</p>
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				<p>are good thermal conductors allow heat to move through them easily, such as a saucepan which requires heat to travel through to cook food. Thermal insulators do not let heat travel through them easily. Such as woollen clothes and flasks for hot drinks. Electrical conductors allow electricity to pass through them easily while electrical insulators do not. Electrical insulators have a high resistance which means that it is hard for electricity to pass through these objects. When the particles of a solid mix with the particles of a liquid, this is called dissolving.</p>		
			<p><u>Light</u> A light source is something that emits light by burning, electricity or chemical reactions. We must never look directly at the Sun as the light produced is very bright and can be harmful to our eyes (which is why we wear sunglasses). We need light so that we are able to see in the dark. The Moon is</p>			<p><u>Light</u> We need light so that we are able to see. Dark is the absence of light. A light source can emit light by burning, electricity or chemical reactions, some examples include: Burning – sun, flames from a fire, stars. Electricity – lamps, car headlights, street lights. Chemical Reactions – light is a</p>

not a source of light. The Sun's light reflects on the surface of the Moon making it appear as though the Moon emits light. Shiny things are not light sources - they also reflect the light

product of the reaction e.g. glow sticks. Light travels in straight lines. When light is blocked by an opaque object, a dark shadow is formed. These shadows have the same shape as the objects that cast them. The size of a shadow changes as the light source moves closer or further away. The further away the light source is, the smaller the shadow is. The closer the source of the light, the bigger the shadow. Reflection is when light bounces off a surface - this changes the direction in which the light travels. We can see round corners using mirrors and reflecting light.

Forces and Magnets
Forces are pushes and pulls that can change the motion of an object. It can start to move or speed up, slow it down or even make it stop. Forces act in opposite directions to each other. When an object moves across a surface, friction acts as an opposite force. Friction is a force that holds back the motion of an object. Some surfaces create

Forces
Forces are pushes and pulls. These forces change the motion of an object making it start, speed up, slow down or stop moving. Friction is a force - it is the resistance of motion when one object rubs against another. Other forces that create resistance of motion include water resistance and air resistance. Gravity is the force that

more friction than others which means that objects move across them slower. On a ramp, the force that causes the object to move downwards is gravity. Objects move differently depending on the surface of the object itself and the surface of the ramp. Magnets produce an area of force around them called a magnetic field. When objects enter this magnetic field, they will be attracted to or repelled from the magnet if they are magnetic. When magnets repel, they push each other away. When magnets attract, they pull together. Objects that are magnetic, are attracted to magnets. Iron and steel are magnetic. Aluminium and copper are non-magnetic. The ends of a magnet are called poles. One end is called the north pole and the other end is called the south pole. Opposite poles attract, similar poles repel.

pulls objects to the centre of the Earth. Air resistance pushes up on the parachute, opposing the force of gravity. This makes the parachute land more slowly. Water resistance is the friction that is created between water and an object that is moving through it. Some objects can move through water with less resistance if they are streamlined. Levers and Pulleys allow us to do heavy work with less effort. Gears are toothed wheels. Their 'teeth' can fit into each other so that when the first wheel turns, so does the next one. This allows forces to move across a surface.

Seasonal Changes
There are four seasons:
Autumn - September,
October, November

Rocks
There are three types of rocks that are formed naturally. Igneous:

States of matter
Particles are what materials are made from. They are so small

Earth and Space
The Earth rotates on its axis anti-clockwise and makes a complete

Evolution and inheritance
Evolution is a process of change that takes place

	<p>Winter - December, January, February Spring - March, April, May Summer - June, July, August. In Autumn - The temperature beings to fall. The leaves on deciduous trees change colour and begin to fall to the ground. The days get shorter and the nights get longer. In the autumn, there are events such as Halloween and Bonfire Night. The weather may be slightly sunny, windy or rainy. There are more clouds in the sky during autumn compared to the summer. The clothes you might wear include t-shirts and shorts on sunnier and warmer days, and woolly hats and scarves on colder days - especially as it gets closer to winter. In Winter - It gets colder still - this is because the temperature has fallen. Sometimes, it can freeze overnight and in the mornings, there may be ice and frost. Deciduous trees have completely lost their leaves and the braches are bare. The days get shorter and the nights get longer. Winter has the shortest days and the longest</p>		<p>When molten magma cools, igneous rocks are formed. This either cools and forms rocks under the earth's surface, or flows out of erupting volcanoes as lava and may mix with other minerals. Examples include granite and basalt. This type of rock is strong, hardwearing and nonporous. Sedimentary: Sometimes, little pieces of rocks that have been weathered can be found at the bottom of lakes, seas and rivers. This is called sediment. Over millions of years, layers of this sediment builds up forming sedimentary rocks. Examples include limestone and chalk. Sedimentary rocks are porous and can easily be worn down. Metamorphic: When some igneous and sedimentary rocks are heated and squeezed (pressured), they form metamorphic rocks. Examples include slate and marble. Metamorphic rocks are strong. Fossils are the remains of prehistoric life. They are usually formed when a living thing (plant or animal) dies and the body is</p>	<p>that we cannot see them with our eyes. Particles behave differently in solids, liquids and gases. In the solid state, the material holds its shape. Solids have vibrating particles which are closely packed in and form a regular pattern. This explains the fixed shape of a solid and why it can't be poured. Solids always take up the same amount of space. In the liquid state, the material holds the shape of the container it is in. This means that liquids can change shape, depending on the container. Liquids have particles which are close together but random. Liquid particles can move over each other. Liquids can be poured. In the gas state, particles can escape from open containers. Gases have particles which are spread out and move in all directions. When water (in its liquid form) is heated, the particles start to move faster and faster until they have enough energy to move about more freely. The water has evaporated into a water vapour.</p>	<p>rotation over 24 hours (a day). This makes it appear as though the Sun moves through the sky but the Earth's rotation causes day and night. Different parts of the Earth experience daylight at different times.. This is also the reason why we have time zones. Because of the Earth's tilt, the poles experience 24 hours of sunlight in the summer, and very few hours of sunlight in the winter. As the Earth rotates, shadows that are formed change in size and orientation. The Earth takes 365 and a quarter days to orbit the Sun. Because of the extra quarter day it takes to orbit the Sun, every four years on Earth is a leap year! It is the Earth's tilt that causes the seasons. The Moon orbits the Earth anticlockwise and takes approximately 28 days. The Moon spins once on its axis every time it orbits Earth. This means that we only see one side of the Moon. The Moon has different phases depending on where it is in its orbit. There are 8 planets in our Solar System</p>	<p>over many generations, during which species of animals, plants, or insects slowly change some of their physical characteristics. This is because offspring are not identical to their parents. It occurs when there is competition to survive. This is called natural selection. Difference within a species (for example between parents and offspring) can be caused by inheritance and mutations. Inheritance is when characteristics are passed on from generation to the next. Mutations in characteristics are not inherited from the parents and appear as new characteristics. Evidence of evolution comes from fossils - when these are compared to living creatures from today, palaeontologists can compare similarities and differences. Other evidence comes from living things - comparisons of some species may reveal common ancestors. Adaptation is when animals and plants have evolved so that they have adapted to survive</p>
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	<p>nights of all the seasons. In the winter, there are events such as Christmas and Valentine's Day. Things people might do are build snowmen, eat warm foods like soups and light fires. The weather may be windy and rainy. Sometimes it also snows. The clothes you might wear include warm coats, jumpers, woolly hats and scarves. In Spring – It gets warmer and the temperature begins to rise. Some things that happen in spring are: leaves begin to appear on deciduous trees. Some trees begin to blossom. Many plants begin to grow. Lambs are born and chicks begin to hatch. The days become longer and the nights become shorter. In the spring, there are events such as Easter and St. George's Day. The weather may be slightly sunny but still windy and rainy on some days. The clothes you might wear include long-sleeved tops and long trousers. As it gets closer to summer, you may wear t-shirts and shorts on sunnier and</p>		<p>covered up or buried by sediment over tens of thousands of years. Some fossils are formed when the tough bones and teeth in animals, and the woody part of plants are preserved. Other fossils are made from imprints in surrounding sedimentary rock such as footprints or imprints from shells. Soil is made from pieces of rock, minerals, decaying plants and water. When rock is broken down into small grains, soil is formed. There are layers of soil: Above the soil is leaf litter and recently decaying plants. As the soil becomes deeper, the rock grains become larger until bedrock is reached.</p>	<p>When water vapour is cooled, the particles start to slow down. They return to a liquid in a process called condensation. With further cooling they turn into a solid structure and ice is formed. The water has frozen. The temperature at which water turns to ice is called the freezing point. This happens at 0°C. The temperature at which water turns to gas is called the boiling point. This happens at 100°C.</p>	<p>(Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune). Pluto is a dwarf planet. They all orbit the Sun, which is a star. Some planets have moons. The first four planets are relatively small and rocky, while the four outer planets are gas giants (Jupiter and Saturn) or ice giants (Uranus and Neptune). There are also asteroids, meteoroids and comets in the Solar System. The Solar System is in a galaxy called the Milky Way. The galaxy is in the universe.</p>	<p>in their environments. For example, polar bears have a thick layer of blubber under their fur to survive the cold, harsh environment of the Arctic while giraffes have long necks to reach the leaves on trees. Sometimes adaptations can be disadvantageous. One example of this can be the dodo, which became extinct as it lost its ability to fly through evolution. Flying was unnecessary for the dodo as it had lived for so many years without predators, until its native island became inhabited. When adaptations are more harmful than helpful, these are called maladaptations.</p>
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	<p>warmer days. In Summer - It gets warmer still - this is because the temperature has risen. The days get longer and the nights get shorter. Summer has the longest days and the shortest nights of all the seasons. In the summer, there are events such as the long school summer holidays. Things people might do are have picnics, go to the beach and have a paddling pool in the garden. The weather may be hot and sunny with fewer clouds in the sky. The clothes you might wear include t-shirts, shorts and swimming costumes. It is important to stay safe in the summer as the sun can be very strong. You can wear sun hats, sunglasses and sun cream to help keep you safe.</p>					
				<p>Sound The object that makes the sound is called the source. When objects vibrate, a sound is made. The vibration makes the air around the object vibrate and the air vibrations enter your ear. These are called sound waves.</p>		

				<p>Sound waves travel through a medium (such as air, water, glass, stone, and brick). The sound waves travel to the ear and make the eardrums vibrate. Messages are sent to the brain which recognises the vibrations as sounds. The pitch of a sound is how high or low it is. The volume of a sound is how loud or quiet it is. When a sound is created by a little amount of energy, a weak sound wave is created which doesn't travel far. This makes a quiet sound. A vibration with lots of energy makes a powerful sound wave and therefore a loud sound. Amplitude measures how strong a sound wave is. (The higher the wave the stronger the sound) Decibels measure how loud a sound is. Frequency measures how many sound waves there are per second.</p>		
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Vocabulary

What key vocabulary will our scientists need? Vocabulary is important because it embodies and communicates concepts.

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
	Plants Seeds Bulbs Deciduous Evergreen trees Leaves Flowers (blossom) Petals Fruit Roots Bulb Seed Trunk Branches Stem Animals including humans Fish Reptiles Mammals Birds Amphibians Herbivore Omnivore Carnivore Leg Arm Elbow Head Ear Nose Back Wings Beak Seasonal Change Summer Spring Autumn Winter Sun	Animals including humans Nutrition Survival Water Air Food Adult Baby Offspring Kitten Calf Puppy Exercise Hygiene Living things and their habitats Living Dead Once living Habitat Energy Food chain Producer Predator Prey Woodland Pond Desert Everyday Materials Wood Plastic Glass Paper Water Metal Rock Brick Fabrics Foil Hard Soft	Plants Air Light Water Temperature Growth Nutrients Soil Reproduction Transportation Dispersal Pollination Flowe r Rocks Fossils Soils Sedimentary Metamorphic Igneous Crystals Absorben t Light Light Shadows Mirror Reflective Dark Absorb Reflection Refraction Spectrum Rainbow Colour Forces and Magnets Magnetic Force Contact Attract Repel Friction	Animals including humans Movement Muscles Bones Skull Skeletons Mouth Tongue Teeth Oesophagus Stomach Small Intestine Large Intestine Herbivore Carnivore Canine Incisor Molar Sound Volume Vibration Wave Pitch Tone Speaker Electricity Cells Wires Bulbs Switches Buzzers Battery Circuit Series Conductors Insulators Amps Volts States of matter	Earth and Space Earth Sun Moon Axis Rotation Day Night Phases of the Moon Star Constellation Forces Air resistance Water resistance Friction Gravity Newton Gears Pulleys Properties and changes of materials Hardness Solubility Transparency Conductivity Magnetic Filter Evaporation Dissolving Mixing Living things their habitats and animals including humans Foetus Embryo Womb Gestation Baby	Animals including humans Circulatory Heart Blood Vessels Veins Arteries Oxygenated Deoxygenated Valve Exercise Respiratio n Living things and their habitats Fish Birds Snails Slugs Worms Spiders Insects Environment Habitats Classification Vertebrates Invertebrates Micro - organisms Amphibians Reptiles Mammals Evolution and Inheritance Fossils Adaptation Evolution Characteristics Reproduction Genetics

	Day Moon Night Light Dark	Stretchy Stiff Shiny Dull Rough Smooth Bendy Waterproof Absorbent Opaque Transparent Squashing Bending Twisting Stretching Elastic	Poles Push Pull	Solid Liquid Gas Evaporation Condensation Particles Temperature Freezing Heating	Toddler Teenager Elderly Growth Development Puberty Mammal Reproduction Insect Amphibian Bird Offspring (See also the SRE curriculum)	
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EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
Me and my community -Harvest -Special people -Similarities -Differences Once upon a time -Diwali -Bonfire Night -Christmas -Woodland animal -Hibernation -Observations -Growth -Decay changes over time Starry Night -Chinese New Year -People who help us -Observations -Day -Night -Sun -Moon -Stars	Animals including humans Fish Reptiles Mammals Birds Amphibians Herbivore Omnivore Carnivore Leg Arm Elbow Head Ear Nose Taste Smell Touch Hear See	Animals including humans Nutrition Survival Water Air Food Carbohydrates Fruit Vegetable Fibre Protein Dairy Fats/sugar Adult Baby Offspring Exercise Hygiene	Animals including humans Skeleton Endoskeleton Exoskeleton Muscles Nutrition Support Protection Movement Diets Carnivores Omnivores Herbivores	Animals including humans Movement Muscles Bones Skull Skeletons Mouth Tongue Teeth Oesophagus Stomach Small Intestine Large Intestine Herbivore Carnivore Canine Incisor Molar	<u>Animals including humans</u> Circulatory Heart Blood Vessels Veins Arteries Oxygenated Deoxygenated Valve Exercise Respiration	<u>Animals including humans</u>
		<u>Living things and their habitats</u> Living Dead		<u>Living things and their habitats</u> Characteristics Carnivores	<u>Living things their habitats</u> Characteristics Micro-organisms	<u>Living things and their habitats</u> Fish Birds

<p>Ready, steady, grow -Mother's day -Easter -Special events -Materials -Models -Life cycles -Butterfly -Caterpillar -Larva</p>		<p>Once alive Habitat Energy Food chain Producer Predator Prey Woodland Forest Minibeast Micro-habitat</p>		<p>Herbivores Omnivores Classification keys Environmental changes Environments Positive effects Negatives effects Deforestation</p>	<p>Classification Invertebrates Insects Vertebrates Fish Amphibians Reptiles Birds Mammals Warm blooded Cold blooded Skin Scales Feathers Wings</p>	<p>Snails Slugs Worms Spiders Insects Environment Habitats Classification Vertebrates Invertebrates Micro -organisms Amphibians Reptiles Adaptations</p>
<p>Animal safari -Special times -Animals -Safari</p> <p>On the beach -Family holidays -Observations -Plants -Animals -Nature -Leaves -Trees</p>	<p>Everyday Materials Wood Plastic Glass Paper Water Metal Rock Brick Fabrics Foil Hard Soft Stretchy Stiff Shiny Dull Rough Smooth Bendy</p>	<p>Use of everyday materials Wood Plastic Glass Paper Water Metal Rock Brick Fabrics Foil Hard Soft Stretchy Stiff Shiny Dull Rough Smooth Bendy Waterproof Absorbent Opaque Transparent Squashing Bending Twisting</p>			<p>Properties and changes of materials Hardness Solubility Transparency Conductivity Magnetic Non magnetic Dissolve Soluble Separated Reversible change Magnets Sieving Insoluble Evaporation Irreversible change Filter</p>	

		Stretching Elastic				
	Plants Seeds Bulbs Deciduous Evergreen trees Leaves Flowers Blossom Petals Fruit Roots Bulb Seed Trunk Branches Stem	Plants Germination Growth Survival Reproduction Seeds Bulbs Water Light Suitable temperature	Plants Air Light Water Temperature Growth Nutrients Soil Reproduction Transportation Dispersal Pollination Flower Roots Stems Trunk Leaves			
				Electricity Cells Wires Bulbs Switches Buzzers Battery Circuit Series Conductors Insulators Amps Volts		Electricity Cells Wires Bulbs Switches Buzzers Battery Circuit Series Conductors Insulators Amps Volts Brightness Volume Symbols
			Light Light Dark Reflection Sun Dangerous Protect Shadows			Light Light Shadows Mirror Reflective Dark Absorb Reflection

						Refraction Spectrum Rainbow Colour Straight line
			<u>Forces and Magnets</u> Magnetic Force Contact Attract Repel Friction Poles Push Pull		<u>Forces</u> Air resistance Water resistance Friction Gravity Newton Gears Pulleys Teeth Pendulums	
	<u>Seasonal Changes</u> Summer Spring Autumn Winter Sun Day Moon Night Light Dark		<u>Rocks</u> Fossils Soils Sedimentary Metamorphic Igneous Crystals Layers	<u>States of matter</u> Solid Liquid Gas Evaporation Condensation Particles Temperature Freezing Heating	<u>Earth and Space</u> Earth Sun Moon Axis Rotation Day Night Phases of the Moon Star Constellation	<u>Evolution and inheritance</u> Fossils Adaptation Evolution Characteristics Reproduction Genetics
				<u>Sound</u> Volume Vibration Wave Pitch Tone Speaker.		

What experiences do we want our scientists to have had? What opportunities will our scientists have had to 'make the world a better place'?

EYFS	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6
<p>Stories that are going to be shared as part of the 'Understanding the World' learning.</p> <p>Me and my community -Colour Monster -The Worryasurus -It's okay to be different -Pink is for boys -No matter what -Poems out loud</p> <p>Once upon a time -The three little pigs -Jolly postman -Santa's post</p> <p>Starry Night -Owl babies -How to catch a star -Poems out loud</p> <p>Ready, steady, grow -Little red hen -The runaway pea -Jasper's beanstalk</p> <p>Animal safari -A first book of animals -Little red and the very hungry lion -Poems out loud</p> <p>On the beach</p>	<p>Animals including humans</p> <ul style="list-style-type: none"> • Match animals to their offspring then compare and contrast offspring to their parents. • Find and classify animals e.g group animals according to what they eat • Learn songs to recall the main parts of the body • Participate in a sensory experience - test senses through taste tests, feely bags, colour blindness tests. • Complete a simple exercise (such as a star jump) and describe which parts of your body move. 	<p>Animals including humans</p> <ul style="list-style-type: none"> • Investigate the effects of exercise on the body Participate in a series of exercises and investigate how each exercise: makes your body feel, affects your breathing, uses each of your muscles • Identify how different foods contribute to a varied diet and design meals based on your research. • Describe what happens if one part is missing from a balanced diet and how some groups of people (e.g. vegetarians) may compensate for that. • Observe the butterfly life cycle. 	<p>Animals including humans</p> <ul style="list-style-type: none"> • Visit Yorkshire Wildlife Park and observe a range of animals. Discuss their diets and their skeleton types. • Match given animals to their diet using knowledge of carnivores, herbivores and omnivores. • Sort given foods into food groups, identify what nutrients you would get from eating certain meals. • Sort living things based on their skeletons. • Perform different physical stretches/exercises. Describe how your muscles work to enable you to do these stretches/exercises. 	<p>Animals including humans</p> <ul style="list-style-type: none"> • Compare the teeth of animals and predict if they are carnivores or herbivores. • Do a plaque disclosing tablet to see where plaque is building on your teeth. • Investigate the amount of sugar in drinks and learn how sugar leads to an increase in plaque and how this destroys tooth enamel. • Find out what happens to a tooth left in various types of drinks • Create booklets to share with younger children about the need for brushing your teeth and the dangers of fizzy drinks and sugars to your dental health. • Demonstrate the process of digestion by creating their own digestive system. 	<p>Animals including humans</p> <ul style="list-style-type: none"> • Create a Venn diagram to show what the similarities and differences are between children, adolescents and Adults. • Draw the different stages of the human life cycle, detailing the changes that happen in each stage. 	<p>Animals including humans</p> <ul style="list-style-type: none"> • Identify the parts of the circulatory system and explain their functions. • Explore the different chambers of a heart using an animal's heart from the butcher. • Make a circulatory system with a pump. • Create a presentation to show how our blood is pumped around the body. • Analyse line graphs that show the change in heart rate over time before, during and after exercise. • Investigate which exercise produces the fastest pulse? How would you make this a fair test?
		<p>Living things and their habitats</p> <ul style="list-style-type: none"> • Identify if an object is alive, once alive or dead • Go on a mini beast hunt! Investigate micro-habitats (such as under stones and under logs) 		<p>Living things and their habitats</p> <ul style="list-style-type: none"> • Group living things, discuss how they can be grouped based on diet, habitat, appearance and features. 	<p>Living things their habitats</p> <ul style="list-style-type: none"> • Compare the life cycles of mammals, amphibians, insects and birds. What is similar about their life cycles? What 	<p>Living things and their habitats</p> <ul style="list-style-type: none"> • Locate a range of habitats on the school site • Carefully observe minibeast in a microhabitat and use a classification key to

<p>-We're going on a lion hunt -Poem out loud</p>		<p>in the school environment or forest school.</p> <ul style="list-style-type: none"> • Use your knowledge of biomes to describe the types of animals and plants that live there. Match animals and plants to their habitats (e.g. forest, ocean, poles, desert). Answer questions such as 'Why would a polar bear not survive in the desert?' • Create food chains for different habitats and compare them. How do the producers, predators and prey compare? 		<ul style="list-style-type: none"> • Create a classification key for a given animal. • Identify an environment that has change – discuss why it has happened and the positive/negative impact this has had on the living things in it. • Identify potential dangers to living things in local environments. 	<p>is different? Which have the most and fewest parts?</p> <ul style="list-style-type: none"> • Compare the life cycles and growth pattern of humans to other animals. • Observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow. • Research the gestation periods of other animals and comparing them with humans 	<p>identify them. Record these in a variety of ways (e.g. Venn and Carroll diagrams, tables)</p> <ul style="list-style-type: none"> • Use a classification key to sort plants and vertebrate and invertebrate animals into groups, describing their key features. • Design own keys and branch diagrams to identify animals and plants on the school site and lead another year group on a bug hunt using these charts to classify. • Use simple computer software programmes to create a branching classification key. • Explore examples of human impact (both positive and negative) on environments. • Organise an event to make the rest of the school aware of one of these situations in the world. • Sort scenarios where microorganisms might be helpful (e.g. yeast in baking) or harmful; (e.g. infectious diseases).
	<p>Everyday Materials</p> <ul style="list-style-type: none"> • Identify objects within the classroom or in the school grounds. • Discuss the materials that objects are made out of. 	<p>Use of everyday materials</p> <ul style="list-style-type: none"> • Sort natural materials from man-made materials • Investigate how some objects can be changed by squashing, bending, 			<p>Properties and changes of materials</p> <ul style="list-style-type: none"> • Experiment to find properties of materials, e.g. does it attract to a magnet, can heat pass through it. 	

	<ul style="list-style-type: none"> • Describe the properties of a group of objects. • Sort objects based on the material they are made out of. • Sort objects based on their properties. • Consider the best materials 	<p>twisting and stretching.</p> <ul style="list-style-type: none"> • Distinguish between absorbent and waterproof materials. Investigate what happens when water is placed on these materials (Santa sleigh investigation) • Group materials based on their properties. • Consider why some properties of materials make them suitable or unsuitable for different uses. 			<ul style="list-style-type: none"> • Experiment with irreversible changes, e.g. Observe and compare the changes that take place when cakes are baked or bicarbonate of soda mixes with vinegar. • Find the best material to stop an ice cube from melting. Remember to keep it a fair test. • Design an experiment that investigates dissolving, consider which variables you could change. • Create a variety of mixtures using materials such as salt, sand, water, paper clips and rice and use a variety of methods to separate them. 	
	<p>Plants</p> <ul style="list-style-type: none"> • Plant a bulb or a seed and watch it grow. • Use time-lapse photography to record how deciduous trees change • Go on a tree hunt around the school or on a trip - what types of trees can you see? • Collect fallen leaves and identify which tree they came 	<p>Plants</p> <ul style="list-style-type: none"> • Observe plants in the local environment throughout the year. Write about your observations. • Discuss how plants survive in their environments. • Plant a bulb or a seed and watch it grow. Record your observations in a diary. • Plant a seed and control the conditions it 	<p>Plants</p> <ul style="list-style-type: none"> • Experiment with different ways to make a seed germinate without soil. Then observe plants as they grow. • Place white carnations in dyed water to observe how plants transport water. • Dissect a flower and identify each of the different parts that help with fertilisation. 			

	<p>from using pictures to help you.</p> <ul style="list-style-type: none"> Sort the leaves between deciduous and evergreen trees. 	<p>is in (remove sunlight from one seed, remove water from another plant and remove both from another seed). What happens? Do the plants still grow?</p> <ul style="list-style-type: none"> Label the different parts of the plant in this diary. 	<ul style="list-style-type: none"> Dissect fruits and use microscopes and magnifying glasses to observe their structure. Use this to explain how seeds are dispersed. 			
				<p>Electricity</p> <ul style="list-style-type: none"> Cells Wires Bulbs Switches Buzzers Battery Circuit Series Conductors Insulators Amps Volts 		<p>Electricity</p> <ul style="list-style-type: none"> Cells Wires Bulbs Switches Buzzers Battery Circuit Series Conductors Insulators Amps Volts Brightness Volume Symbols
			<p>Light</p> <ul style="list-style-type: none"> Experience the lack of light by creating dark dens. Test a range of items to see if they are reflective or not. Design an experiment to measure shadow length by changing a variable. Explore which objects form shadows when light is shone on 			<p>Light</p> <ul style="list-style-type: none"> Explore which objects form shadows when light is shone on them and how you can change the size and shape of shadows by using the same object. Make a light ray pass around corners using mirrors. Make a periscope and explain how it works using diagrams

			<p>them and how you can change the size and shape of shadows by using the same object.</p>			<p>and scientific vocabulary. Use the idea that light appears to travel in straight lines to explain how it works.</p>
			<p>Forces and Magnets</p> <ul style="list-style-type: none"> • Investigate the amount of friction created by different surfaces. Use measures (such as length and time) to show how far or fast and object travels. • Explore the uses of magnets in everyday objects and group the objects into magnetic and non-magnetic • Investigate if the size of a magnet affects how strong it is (using chains of paper clips of varying lengths) 		<p>Forces</p> <ul style="list-style-type: none"> • Experiment to test the strength of different forces and work out how they can be reduced. • Make parachutes to investigate how air resistance works. Ensure that only one variable is changed while other variables stay the same. • Investigate the amount of friction created by different surfaces. Use measures (such as length and time) to show how far or fast and object travels. • Draw diagrams to show how objects move down ramps, through the air and through water, using arrows to show the direction of the forces. • Explore resistance in water by making and testing boats of different shapes. • Design and make products that use levers, pulleys, gears and/or springs and explore their effects. (Knex etc.) 	

	<p><u>Seasonal Changes</u></p> <ul style="list-style-type: none"> • Investigate animal behaviours during the different seasons. E.g. animals that hibernate or migrate in winter months and return in the summer. • Go on a nature walk - what signs of autumn, winter, spring or summer can you spot? Can you identify different trees on your walk? • Match events to the seasons they happen in • Discuss what happens when the children go home from school in the different seasons- what do they notice about daylight? 		<p><u>Rocks</u></p> <ul style="list-style-type: none"> • Explore the types of rocks you can find in the local environment. • Make your own food rocks: Sedimentary – layers squashed together. Metamorphic – different biscuit doughs squashed then heated and Igneous rocks- different chocolates melted. • Explain why rocks are used for different purposes based on their properties. • Research the different ways fossils are made. • Sort different types of rocks based on how rough or smooth they are, how easily they can break down, how strong they are and what they look like. 	<p><u>States of matter</u></p> <ul style="list-style-type: none"> • Group materials according to their states. • Act out the particle structure of solids, liquids and gases. • Explore the effect of temperature on substances such as chocolate, butter, cream. Compare their melting points and place them in a table. • Research the temperature at which materials change state. • 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. 	<p><u>Earth and Space</u></p> <p>Use the internet (pen pals) to establish that the time of day is different in different places in the world.</p> <ul style="list-style-type: none"> • Creating working models of the solar system. • Act out the rotations and orbits of the planets round the sun. • Construct shadow clocks and sundials. • Keep a Moon diary over the course of a month - what do you notice? 	<p><u>Evolution and inheritance</u></p> <ul style="list-style-type: none"> • Investigate the work of renowned palaeontologists such as Mary Anning and how Charles Darwin and Alfred Wallace developed their ideas on evolution. • Identify examples of how animals have adapted to their environments. • Research and then create a fact file of an animal or plant identifying how it has adapted to its environment and how it has evolved to survive. • Create a new planet and describe the environmental features. What animals and plants can live there? How have they adapted to survive?
				<p><u>Sound</u></p> <ul style="list-style-type: none"> • Experiment with rice on drums and rulers pinged on tables to demonstrate how sounds are created through vibrations • Experiment with glass jars filled with water to investigate pitch. • Use one object (such as a saucepan) and try and create a scale of sounds by manipulating it. 		

				<ul style="list-style-type: none">• Make/use musical instruments using different length strings. How do their pitches differ?• Visit Magna Science centre and take part in the sound workshops and activities.		
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