

Plants

	EYFS	Year 1	Year 2	Year 3
National Curriculum Objectives	<ul style="list-style-type: none"> - Explore the natural world around them making observations and drawing pictures of plants - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experience and what has been read in class - Make comments about what they have heard and ask questions to clarify their understanding 	<ul style="list-style-type: none"> - 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. - Identify and name the roots, trunk, branches and leaves of trees. 	<ul style="list-style-type: none"> - Observe and describe how seeds and bulbs grow into mature plants. - Find out and describe how plants need water, light and warmth to grow and stay healthy. 	<ul style="list-style-type: none"> - Identify and describe the functions of different parts of the flowering plant: roots, stem/trunk/leaves and flowers - Explore the part flowers play in a flowering plants life cycle, including: pollination, seed formation and seed dispersal - Explain the requirements of plants for life and growth (air, light, water, nutrients from soil, room to grow) and how they vary between plants - Know the way in which water is transported between plants
Sequence of Lessons	L1 What is a plant L2 Seeds and bulbs L3 What does it need to grow? L4 Plants we can eat? <i>Lots of investigations through play</i>	L1 – What is a plant L2 – Parts of a plant L3 – How plants grow L4- Plant hunt L5 – Sorting plants L6 – Eating plants L7 – Trees L8 – Classifying leaves Assessment	L1 – Plants we eat L2- Investigating Seeds L3- What do plants need L4- Where will they grow L5 – Plant life cycle Assessment	L1 – What do plants need L2 – Parts of a plant L3 – Roots L4 – Transporting Water L5 – Flowers and Pollination L6 – Seed Dispersal Assessment
New Vocabulary	root daisy leaf dandelion stem buttercup flower nettle trunk weeds plant branch flower seed tree soil fruit grow vegetable	root daisy leaf dandelion stem buttercup flower nettle trunk weeds plant branch flower seed tree soil fruit to plant vegetable to water deciduous birch tree evergreen fir tree wild plant pine tree oak tree holly tree sycamore tree grow	plant branch root bulb flower seed leaf seedling stem soil fruit adult plant flower compost vegetable to plant trunk to water tree grow	root blossom leaf pollen stem seed dispersal flower seedling trunk adult plant branch compost seed grow bulb plant reproduce flower air tree light fruit nutrients vegetable soil
Investigations	Where does a plant come from? What does a seed need to grow? Can a seed grow in sand?	Which type of compost grows the tallest sunflower? Which tree has the biggest leaves?	Do cress seeds grow quicker inside or outside?	How does the length of the stem affect how long it takes for the food colouring to dye the petals?
See questioning document to ensure a broad range of questions are asked during each unit.				
Recording	Make verbal comparisons between object such as size, length, weight and capacity.	Record some information in a chart or table Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. Total and compare categorical data.	Interpret and present data using bar charts, pictograms and tables	

Living Things and their Habitats (KS1)

	EYFS	Year 2																																				
National Curriculum Objectives	<ul style="list-style-type: none"> - Explore the natural world around them making observations and drawing pictures of plants and animals - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experience and what has been read in class - Understand some important processes and changes in the natural world around them - Make comments about what they have heard and ask questions to clarify their understanding 	<ul style="list-style-type: none"> - Explore and compare the difference 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 micro habitats. - Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food. 																																				
Lesson	L1 My pets L2 Animals and their mothers L3 Mini beast hunting L4 Mini beast café <i>Potential for animal experiences such as caterpillars etc.</i>	L1 – Living, Dead or Never Alive L2 – Plants and animals in their microhabitats L3 – Habitats around the world L4 – Woodlice investigation L5 – Best suited Habitats L6 – Simple food chains Assessment																																				
Key Vocabulary	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">animals</td> <td style="width: 50%;">woodland</td> </tr> <tr> <td>plants</td> <td>mountain</td> </tr> <tr> <td>habitat</td> <td>savannah</td> </tr> <tr> <td>living</td> <td>under</td> </tr> <tr> <td>dead</td> <td>next to</td> </tr> <tr> <td>ocean</td> <td>within</td> </tr> <tr> <td>desert</td> <td>beside</td> </tr> <tr> <td>jungle</td> <td>on top of</td> </tr> </table>	animals	woodland	plants	mountain	habitat	savannah	living	under	dead	next to	ocean	within	desert	beside	jungle	on top of	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">animals</td> <td style="width: 50%;">ocean</td> </tr> <tr> <td>plants</td> <td>woodland jungle</td> </tr> <tr> <td>habitat</td> <td>mountain</td> </tr> <tr> <td>micro habitat living</td> <td>savannah desert</td> </tr> <tr> <td>dead</td> <td>under</td> </tr> <tr> <td>never been- alive</td> <td>next to within</td> </tr> <tr> <td>suited to- survive</td> <td>beside</td> </tr> <tr> <td>basic needs</td> <td>on top of</td> </tr> <tr> <td>life processes food chain</td> <td></td> </tr> <tr> <td>polar region</td> <td></td> </tr> </table>	animals	ocean	plants	woodland jungle	habitat	mountain	micro habitat living	savannah desert	dead	under	never been- alive	next to within	suited to- survive	beside	basic needs	on top of	life processes food chain		polar region	
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Experiment	Is this an animal or a plant? Where does ___ live? What animals and plants are in our area?	Which type habitat would a woodlice prefer? (L4) Does the amount of light affect how many woodlice move around?																																				
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Living Things and their Habitats (KS2)

	Year 4	Year 5	Year 6																																																																										
National Curriculum Objectives	<ul style="list-style-type: none"> - 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 danger to living things. 	<ul style="list-style-type: none"> - Know the life cycle of different living things, e.g. mammal, amphibian, insect bird. - Know the differences between different life cycles. - Know the process of reproduction in plants. - Know the process of reproduction in animals. 	<ul style="list-style-type: none"> - Classify living things into broad groups according to observable characteristics and based on similarities and differences. - Give reasons for classifying plants and animals based on specific characteristics. 																																																																										
Lesson Sequence	L1- Life Processes L2- Grouping living things L3 – Vertebrates and Invertebrates L4- Local habitat search L5 – Classification keys L6 – Environmental changes Assessment	L1 – Life processes L2 – Reproduction in mammals L3 – Reproduction in other mammals L4 – Reproduction in plants L5 – Life cycles of animals L6 – Life cycle of plants Assessment	L1 – Classifying animals L2 – Classification keys L3 – Classifying plants L4 – Micro-organism investigation L5 – Classifying micro-organisms Assessment																																																																										
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Experiment Ideas	Which living things would we find in our area? (L4) Which is the most common invertebrate on our school playing field?		Is yeast a living micro-organism? (L4) How does the temperature affect how much gas is produced by yeast?																																																																										
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Recording	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	Complete, read and interpret information in tables and line graphs.	Interpret and construct pie charts and line graphs. Calculate and interpret the mean as an average.																																																																										

Animals including Humans (KS1)

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Lesson Sequence	L1 My body L2 I like to move it L3 Food Glorious Food L4 Sleep <i>Links through PSHE</i> <i>Have animal experiences</i>	L1 – Common animals L2 – Comparing common animals L3 – Omnivores, carnivores and herbivores L4- Basic parts of human body and associated senses L5 – Compare humans Assessment	L1 – Basic needs L2 - Offspring L3 – Life cycles L4 – How do humans change investigation L5 – Exercise L6 – Healthy Diet L7 - Hygiene Hand washing L8 – Medicines Assessment																																																																																
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Experiment Ideas	Label a human body Are these foods healthy or unhealthy? Is dancing exercise?	Is our sense of smell better when we can't see? How does my height change over the year? How can we organise all the zoo animals?	Do our feet get bigger as we get older? (L4) What food do you need in a healthy diet and why? What do you need to do to look after a pet and keep it healthy?																																																																																
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Animals including Humans (KS2)

	Year 3	Year 4	Year 5	Year 6
National Curriculum Objectives	<ul style="list-style-type: none"> - Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat. - Know how nutrients, water and oxygen are transported within animals and humans. - Identify that humans and some other animals have skeletons and muscles for support, protection and movement. - Know about the importance of a nutritious, balanced diet. 	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - Know the life cycle of humans. - Describe the changes as humans develop to old age. 	<ul style="list-style-type: none"> - 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.
Lesson Sequence	L1 – Skeletons and Muscles L2 – Bone and Muscle investigation L3 – Animal skeletons L4 – Nutrition Assessment	L1 – The digestive system L2 – Teeth and their function L3 – Teeth investigation L4 – Food chains Assessment	L1 – Human life cycle L2 – Development in the womb L3 – Development in teenagers – puberty L4 – Development in seniors Assessment	L1 – The human circulatory system L2 – The heart L3 – Pulse Investigation L4 – Nutrient and water absorption L5 – Healthy habits L6 – Unhealthy habits Assessment
Key Vocabulary	skeleton vertebrates muscle invertebrates bone insects skull mini-beasts ribs mammals spinal reptiles column fish backbone birds amphibians joints food sockets growth femur healthy collar bone unhealthy humerus nutrition ulna exercise radius balanced hip diet pelvis nutrients fibula fruit tibia vegetables knee cap protein shoulder carbohydrates blade fat movement sugar support dairy protection vitamins contract minerals relax	dentist tongue toothpaste stomach toothbrush rectum liver dental care pancreas oral swallow hygiene chew hygienist stool teeth enzymes gums function acid incisor saliva molar churn canine absorb pre molar urine wisdom nutrients tooth internal organs decay herbivore healthy producer unhealthy carnivore mouth predator large intestine omnivore anus food salivary glands hunt small intestine prey	baby toddler child teenager adult senior death puberty fertilise egg sperm conception foetus womb birth develop grow change	heart heart beat pulse muscle blood vessel lungs oxygen oxygenated blood deoxygenated blood circulate vein artery diet exercise unhealthy harmful healthy nutrients water transport hygiene smoking alcohol overweight
Experiment Ideas	How does the angle that your elbow/knee is bent affect the circumference of your upper arm/thigh? How does the skull circumference of a girl compare with that of a boy?	What affect do drinks have on our teeth? (L3)	How does age affect a human's reaction time? Who grows the fastest, girls or boys?	Which activity increases your heart rate the most? (L3) How does the length of time we exercise for affect our heart rate?
See questioning document to ensure a broad range of questions are asked during each unit.				
Recording	Interpret and present data using bar charts, pictograms and tables	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	Complete, read and interpret information in tables and line graphs.	Interpret and construct pie charts and line graphs. Calculate and interpret the mean as an average.

Evolution and Inheritance

	KS1 & LKS2	Year 6																
National Curriculum Objectives	<ul style="list-style-type: none"> - Understand there is a variety of life on Earth. - Know that some animal's differences are important to their survival. - Know how animals and plants reproduce. - Know how fossils form over time. 	<ul style="list-style-type: none"> - Know about evolution and can explain what it is. - Know how fossils can be used to find out about the past. - 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 living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. 																
Lesson Sequence		L1 – Plant adaptations L2 – Animal adaptations L3 – Peppered moths and their adaptations L4 – Charles Darwin's research around Finches investigation L5 – Parents and their offspring L6 – How do fossils help us understand evolution Assessment																
Key Vocabulary		<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">evolution</td> <td style="width: 50%;">reproduce</td> </tr> <tr> <td>change over time</td> <td>offspring</td> </tr> <tr> <td>species</td> <td>variation</td> </tr> <tr> <td>population</td> <td>mutation</td> </tr> <tr> <td>features</td> <td>survive</td> </tr> <tr> <td>trait</td> <td>survival of the</td> </tr> <tr> <td>inherited</td> <td>fittest</td> </tr> <tr> <td>characteristics</td> <td>adaptation</td> </tr> </table>	evolution	reproduce	change over time	offspring	species	variation	population	mutation	features	survive	trait	survival of the	inherited	fittest	characteristics	adaptation
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characteristics	adaptation																	
Experiment ideas		How have finches beaks adapted to get food? (L3) What is the most common eye colour in our class? Compare the skeletons of apes, humans, and Neanderthals – how are they similar, and how are they different?																
See questioning document to ensure a broad range of questions are asked during each unit.																		
Recording	Make verbal comparisons between object such as size, length, weight and capacity.	Interpret and construct pie charts and line graphs. Calculate and interpret the mean as an average.																

Electricity

	EYFS & KS1	Year 4	Year 6				
National Curriculum Objectives	<ul style="list-style-type: none"> - Understand some important processes and changes in the natural world around them - Make comments about what they have heard and ask questions to clarify their understanding. 	<ul style="list-style-type: none"> - 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 the 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. - Know the difference between a conductor and an insulator; giving examples of each. Safety when using electricity. 	<ul style="list-style-type: none"> - 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. 				
Lesson Sequence	L1 - Technology hunt L2 - Remote controlled cars L3 - iPads – making videos <i>Learning through varied experiences not necessarily sequential lesson</i>	L1 – Common appliances L2 – Constructing a simple circuit L3 – Will the lamp light (complete loops) L4 – Conductors and insulators L5 – How do switches affect a circuit Assessment	L1 – Scientific circuit symbols L2 – How does the voltage affect the brightness of the bulb L3 – Comparing variations in components L4 – Renewable and non-renewable L5 – Construct a circuit and record findings Assessment				
Key Vocabulary	button switch battery power electricity	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"> components cell battery wire bulb bulb holder buzzer motor switch circuit electrical insulator flow device </td> <td style="width: 50%; border: none;"> connection electrical conductor battery powered positive negative safety dangerous crocodile clips dimmer brighter mains electricity appliance </td> </tr> </table>	components cell battery wire bulb bulb holder buzzer motor switch circuit electrical insulator flow device	connection electrical conductor battery powered positive negative safety dangerous crocodile clips dimmer brighter mains electricity appliance	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"> components bulb holder electrical conductor appliance negative cell mains electricity brighter battery motor connection safety dimmer wire </td> <td style="width: 50%; border: none;"> switch flow battery powered dangerous bulb circuit device positive crocodile clips buzzer electrical insulator battery symbol buzzer symbol bulb symbol motor symbol </td> </tr> </table>	components bulb holder electrical conductor appliance negative cell mains electricity brighter battery motor connection safety dimmer wire	switch flow battery powered dangerous bulb circuit device positive crocodile clips buzzer electrical insulator battery symbol buzzer symbol bulb symbol motor symbol
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Experiment Ideas	Can I switch it on?	How does the thickness of a conducting material affect how bright the lamp is? Which metal is the best conductor of electricity?	Use apparatus to construct and control a series circuit, including a light, buzzer, motor and switch. How does the voltage of the batteries in a circuit affect the brightness of the lamp? How does the voltage of the batteries in a circuit affect the volume of the buzzer?				
See questioning document to ensure a broad range of questions are asked during each unit.							
Recording	Make verbal comparisons between object such as size, length, weight and capacity.	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	Interpret and construct pie charts and line graphs. Calculate and interpret the mean as an average.				

Forces and Magnetism

	EYFS & KS1	Year 3	Year 5																																		
National Curriculum Objectives	<ul style="list-style-type: none"> - Explore the natural world around them making observations - Make comments about what they have heard and ask questions to clarify their understanding - May have an awareness of how to make things stop and start, using simple pushes and pulls. - They may know about floating and sinking. 	<ul style="list-style-type: none"> - Compare how things move on different surfaces. - Know how a simple pulley works and use making lifting an object simpler - Notice that some forces need contact between two objects, but magnetic forces can act at a distance. - Observe how magnets attract and 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. 	<ul style="list-style-type: none"> - Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object and the impact of gravity on our lives. - Identify the effects of air resistance, water resistance and friction, which act between moving surfaces. - Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. 																																		
Lesson Sequence	L1 - Pushes and Pulls L2 - Magnets L3 - Floating and sinking <i>Learning through play and investigating</i>	L1 – Compare how things move on different surfaces L2 – Movement investigation L3 – Understanding magnetic force L4 – Magnetic materials L5 – Magnet investigation Assessment	L1 – Gravity L2 – Forces investigation L3 – Friction investigation L4 – Identify the effects of air resistance L5 – Identify the effects of water resistance L6 – Gears, levers and pulleys (Working scientifically) Assessment																																		
Key Vocabulary	magnet push pull magnetic non-magnetic metal attract repel	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">force</td> <td style="width: 50%;">metal</td> </tr> <tr> <td>push</td> <td>stronger</td> </tr> <tr> <td>pull</td> <td>weaker</td> </tr> <tr> <td>magnet</td> <td>horseshoe magnet</td> </tr> <tr> <td>poles</td> <td>bar magnet</td> </tr> <tr> <td>attract</td> <td>ring magnet</td> </tr> <tr> <td>repel</td> <td>movement</td> </tr> <tr> <td>magnetic</td> <td>bigger force</td> </tr> <tr> <td>non-magnetic</td> <td>smaller force</td> </tr> </table>	force	metal	push	stronger	pull	weaker	magnet	horseshoe magnet	poles	bar magnet	attract	ring magnet	repel	movement	magnetic	bigger force	non-magnetic	smaller force	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">friction</td> <td style="width: 50%;">gravity</td> </tr> <tr> <td>air resistance</td> <td>movement</td> </tr> <tr> <td>water resistance</td> <td>drag</td> </tr> <tr> <td>Newton meter</td> <td>grip</td> </tr> <tr> <td>surface area</td> <td>slippery</td> </tr> <tr> <td>push</td> <td>contact</td> </tr> <tr> <td>pull</td> <td>streamlined</td> </tr> <tr> <td>force</td> <td></td> </tr> </table>	friction	gravity	air resistance	movement	water resistance	drag	Newton meter	grip	surface area	slippery	push	contact	pull	streamlined	force	
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Experiment Ideas	Which metals are magnetic? What makes a rocket fly?	Which surface does a protractor move the quickest on? (L2) Are all magnets the same strength (L5)	Is jelly covered in oil more difficult to pick up than without oil? (L2) Whose shoe creates the most friction? (L3) How does changing the position of the pivot affect the amount of force required to lift the weight? (L6) (only pencil, rubber, ruler needed)																																		
See questioning document to ensure a broad range of questions are asked during each unit.																																					
Recording	Make verbal comparisons between object such as size, length, weight and capacity.	Interpret and present data using bar charts, pictograms and tables	Complete, read and interpret information in tables and line graphs.																																		

Earth and Space

	EYFS	Year 1 (Seasons)	Year 5
National Curriculum Objectives	<ul style="list-style-type: none"> - Explore the natural world around them making observations - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experience and what has been read in class - Make comments about what they have heard and ask questions to clarify their understanding - Understand some important processes and changes in the natural world around them including the seasons and change of matter 	<ul style="list-style-type: none"> - Observe changes across the four seasons - Observe and describe weather associated with the seasons and how day length varies. 	<ul style="list-style-type: none"> - 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 - Describe the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.
Lesson Sequence	L1 - Day and night L2 – Nocturnal animals	L1 – Autumn L2 – Winter L3 – Spring L4 – Summer Assessment	L1 – The Planets L2 – Spherical Bodies L3 – Movement of the planets L4 – Movement of the moon L5 – Phases of the moon L6 – Day and night Assessment
Key Vocabulary	Autumn cl"old Spring hot Winter warm Summer change seasons sun snow rain hail wind	Autumn cold Spring hot Winter warm Summer grow seasons new life sun year snow change rain tree hail plant wind shadow	Earth Jupiter sun Saturn moon Uranus planet Neptune star shadow space time zones revolve Full Moon orbit Waning Crescent spin First Quarter rotate Waning Gibbous axis Waxing Gibbous solar system Waxing Crescent Mercury Last Quarter Venus New Moon Mars reflect
Experiment Ideas	Season walk: what do you notice about this season?	What time did the sun rise/set? (on going) Which season did it rain the most?	How does the length of daylight hours change in each season? Is there a pattern between the size of a planet and the time it takes to travel around the Sun?
See questioning document to ensure a broad range of questions are asked during each unit.			
Recording	Make verbal comparisons between object such as size, length, weight and capacity.	Record some information in a chart or table Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. Total and compare categorical data.	Complete, read and interpret information in tables and line graphs.

Energy (Light and Sound)

	EYFS & KS1	Year 3	Year 4	Year 6
National Curriculum Objectives	<p>Explore the natural world around them making observations</p> <p>- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experience and what has been read in class</p> <p>- Make comments about what they have heard and ask questions to clarify their understanding</p> <p>- Understand some important processes and changes in the natural world around them including the seasons and change of matter</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 a solid object.</p> <p>- Find patterns in the way that the sizes of shadows change.</p>	<p>- Know how sound is made associating some of them with vibrating.</p> <p>- Know what happens to a sound as it travels from its source to our ears.</p> <p>- Know the correlation between the volume of a sound and the strength of the vibrations that produced it.</p> <p>- Know how sound travels from a source to our ears.</p> <p>- Know the correlation between pitch and the object producing a sound.</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>- Know how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc.</p>
Lesson Sequence	<p>L1 – Day and night</p> <p>L2 – Making Shadows</p>	<p>L1 – Light and dark</p> <p>L2 – Reflected light</p> <p>L3 – Light from the sun</p> <p>L4 – Shadows</p> <p>L5 – Shadows investigation</p> <p>L6 – Mirrors</p> <p>Assessment</p>	<p>L1 – How are sounds made?</p> <p>L2 – Vibrations</p> <p>L3 – The ear</p> <p>L4 – Sound investigation</p> <p>L5 – Pitch</p> <p>L6 – Volume Patterns</p> <p>L7 – Ear Muffs</p> <p>Assessment</p>	<p>L1 – Travelling light</p> <p>L2 – Reflecting</p> <p>L3 – Our eyes</p> <p>L4 – Light shadows</p> <p>L5 - Changing light (refraction)</p> <p>L6 – Light investigation</p> <p>Assessment</p>
Key Vocabulary	<p>light</p> <p>dark</p> <p>see</p> <p>eyes</p> <p>sun</p> <p>shadow</p> <p>mirror</p> <p>reflection</p>	<p>see</p> <p>light</p> <p>light source</p> <p>eyes</p> <p>travel</p> <p>torch</p> <p>sun</p> <p>shadow</p> <p>opaque</p> <p>translucent</p> <p>transparent</p> <p>reflection</p> <p>block</p> <p>reflective</p> <p>mirror</p> <p>direction</p> <p>straight lines</p> <p>bend</p> <p>opaque</p> <p>straight lines</p>	<p>sound</p> <p>source</p> <p>quiet</p> <p>loud</p> <p>soft</p> <p>vibrate</p> <p>vibration</p> <p>travel</p> <p>loudness</p> <p>volume</p> <p>pitch</p> <p>high</p> <p>low</p> <p>muffle</p> <p>tension ear</p> <p>particle</p> <p>air</p> <p>faint</p> <p>noise</p>	<p>see</p> <p>light</p> <p>light source</p> <p>light ray</p> <p>eyes</p> <p>travel</p> <p>torch</p> <p>light beam</p> <p>sun</p> <p>shadow</p> <p>cast</p> <p>reflection</p> <p>block</p> <p>reflective</p> <p>colours</p> <p>mirror</p> <p>direction</p> <p>straight lines</p> <p>bend</p> <p>opaque</p> <p>translucent</p> <p>transparent</p> <p>rainbow</p> <p>reflect</p>
Experiment Ideas	<p>Is my shadow always there?</p>	<p>Is a shadow's length different the closer or further it is from a light source? (L5)</p>	<p>Do people with bigger pinnae (ear flaps) hear sounds louder? (L4)</p> <p>Are two ears better than one?</p>	<p>If I do x with a mirror then y happens (L6)</p> <p>Which material is most reflective?</p>
See questioning document to ensure a broad range of questions are asked during each unit.				
Recording	<p>Make verbal comparisons between object such as size, length, weight and capacity.</p>	<p>Interpret and present data using bar charts, pictograms and tables</p>	<p>Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.</p>	<p>Complete, read and interpret information in tables and line graphs.</p>

Materials (KS1)

	EYFS	Year 1	Year 2																																																																														
National curriculum Objectives	<ul style="list-style-type: none"> - Explore the natural world around them making observations - Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experience and what has been read in class - Make comments about what they have heard and ask questions to clarify their understanding - Understand some important processes and changes in the natural world around them including the seasons and change of matter 	<ul style="list-style-type: none"> - Distinguish between an object and the material from which it is made. - Identify and name a variety of everyday materials, including wood, metal, plastic, glass, 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 properties. 	<ul style="list-style-type: none"> - 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 shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 																																																																														
Lesson Sequence	L1 - Exploring materials – material hunt L2 - Make a feely board L3 - Can it change shape? (experimenting with playdough)	L1 – What is it made from? L2 – Different types of materials L3 – Why are objects made from different materials? L4 – Simple properties of materials L5 – Materials investigation Assessment	L1 – Identifying materials L2 – Objects and the material from which they are made. L3 – Which material is best investigation L4 – Protecting objects investigation L5 – Changing materials Assessment																																																																														
Key Vocabulary	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">plastic</td> <td style="width: 50%;">rough</td> </tr> <tr> <td>wood</td> <td>squidgy</td> </tr> <tr> <td>rubber</td> <td>bumpy</td> </tr> <tr> <td>fabric</td> <td>stretchy</td> </tr> <tr> <td>metal</td> <td></td> </tr> <tr> <td>brick</td> <td></td> </tr> <tr> <td>rock</td> <td></td> </tr> <tr> <td>glass</td> <td></td> </tr> <tr> <td>paper</td> <td></td> </tr> <tr> <td>material</td> <td></td> </tr> <tr> <td>hard</td> <td></td> </tr> <tr> <td>soft</td> <td></td> </tr> <tr> <td>smooth</td> <td></td> </tr> </table>	plastic	rough	wood	squidgy	rubber	bumpy	fabric	stretchy	metal		brick		rock		glass		paper		material		hard		soft		smooth		<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">plastic</td> <td style="width: 50%;">rough</td> </tr> <tr> <td>wood</td> <td>squidgy</td> </tr> <tr> <td>rubber</td> <td>waterproof</td> </tr> <tr> <td>fabric</td> <td>strong</td> </tr> <tr> <td>metal</td> <td>weak</td> </tr> <tr> <td>brick</td> <td>bumpy</td> </tr> <tr> <td>rock</td> <td>stretchy</td> </tr> <tr> <td>glass</td> <td>see-through</td> </tr> <tr> <td>paper</td> <td>breakable</td> </tr> <tr> <td>material</td> <td>cotton</td> </tr> <tr> <td>hard</td> <td>wool</td> </tr> <tr> <td>soft</td> <td>fleece</td> </tr> <tr> <td>smooth</td> <td></td> </tr> </table>	plastic	rough	wood	squidgy	rubber	waterproof	fabric	strong	metal	weak	brick	bumpy	rock	stretchy	glass	see-through	paper	breakable	material	cotton	hard	wool	soft	fleece	smooth		<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">plastic</td> <td style="width: 50%;">rough</td> </tr> <tr> <td>wood</td> <td>squidgy</td> </tr> <tr> <td>rubber</td> <td>waterproof</td> </tr> <tr> <td>fabric</td> <td>strong</td> </tr> <tr> <td>metal</td> <td>weak</td> </tr> <tr> <td>brick</td> <td>bumpy</td> </tr> <tr> <td>rock</td> <td>stretchy</td> </tr> <tr> <td>glass</td> <td>see-through</td> </tr> <tr> <td>paper</td> <td>breakable</td> </tr> <tr> <td>material</td> <td>cotton</td> </tr> <tr> <td>hard</td> <td>wool</td> </tr> <tr> <td>soft</td> <td>fleece</td> </tr> <tr> <td>smooth</td> <td></td> </tr> </table>	plastic	rough	wood	squidgy	rubber	waterproof	fabric	strong	metal	weak	brick	bumpy	rock	stretchy	glass	see-through	paper	breakable	material	cotton	hard	wool	soft	fleece	smooth	
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Experiment Ideas	Are all materials the same? How are they different? Which material is best to make a bridge?	Which material is best suited to make an umbrella? (L5) Which shapes make the strongest paper bridge?	Which material would be best for the roof of the little pig's house? (L3) Which material would best protect Humpty Dumpty from his fall? (L4)																																																																														
See questioning document to ensure a broad range of questions are asked during each unit.																																																																																	
Recording	Make verbal comparisons between object such as size, length, weight and capacity.	Record some information in a chart or table Interpret and construct simple pictograms, tally charts, block diagrams and simple tables. Total and compare categorical data.																																																																															

Materials (KS2)

	Year 3 (Rocks)	Year 4 (States of matter)	Year 5 (Properties and changes)
National Curriculum Objectives	<ul style="list-style-type: none"> - 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. 	<ul style="list-style-type: none"> - Compare and group materials together, according to whether they are solids, liquids or gases. - Observe that some materials change state when heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. - Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	<ul style="list-style-type: none"> - 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. - 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. - Comparative and fair tests, for the particular uses of everyday materials, including wood, metals and plastic. - Demonstrate that dissolving, mixing and changes of state are reversible changes. - Explain that some changes result in the formation of new materials, and this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda.
Lesson Sequence	L1 – Appearance of rocks L2 – Rock properties investigation L3 – How rocks are formed L4 – Layers of rocks and soils L5 – Soil Investigation L6 – Fossils Assessment	L1 – Solid, liquids and gases L2 – Liquid investigation L3 – Using a thermometer L4 – Heating and cooling L5 – Water cycle L6 – Evaporation fair test L7 – Evaporation investigation Assessment	L1 – Solid, liquid and gases L2 – Describe and compare properties L3 – Insulating investigation L4 – Magnetic materials L5 – Dissolving L6 – Separating materials L7 – Irreversible changes
Key Vocabulary	rocks soils stone pebble slate marble chalk granite sandstone clay	hard soft permeable acid fossil sedimentary metamorphic igneous magma bedrock	solid liquid gas change durable flexible soluble insoluble magnetic
Experiment Ideas	Compare and group together different kinds of rocks on the basis of their simple physical properties (L2) Investigate the permeability of different soils (L5)	Do all ketchups behave the same? Which is best to use on a hotdog? (L2) Where does the material dry the quickest? (L7)	Are some cups better than others at keeping a drink warmer for longer? Are two cups (one inside another) better at keeping a drink warmer for longer? Does having a lid on a cup affect how long it stays warm? (L3)
See questioning document to ensure a broad range of questions are asked during each unit.			
Recording	Interpret and present data using bar charts, pictograms and tables	Interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	Complete, read and interpret information in tables and line graphs.