



SCIENCE LONG TERM PLANNING DOCUMENT

Curriculum Intent Statement

Science teaches an understanding of natural phenomena. It aims to stimulate a child's curiosity in finding out why things happen in the way they do. It teaches methods of enquiry and investigation to stimulate creative thought. Children learn to ask scientific questions and begin to appreciate the way science will affect their future on a personal, national, and global level.

Aims and Objectives

The aims of science are to enable children to:

- ask and answer scientific questions;
- plan and carry out scientific investigations, using equipment, including computers, correctly;
- know and understand the life processes of living things;
- know and understand the physical processes of materials, electricity, light, sound and natural forces;
- know about the nature of the solar system, including the earth;
- evaluate evidence and present their conclusions clearly and accurately.

LONG TERM PLAN

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 1/2 Cycle A	Everyday Materials		Animals Inc. Humans		Plants & Animals	
Year 1/2 Cycle B	Uses of Materials		Seasonal Changes	Animals Inc. Humans	Living Things & Habitats	Plants
Year 3/4 Cycle A	Animals inc. Humans	Forces & Magnets	Rocks	States of Matter	Plants	
Year 3/4 Cycle B	Light	Sound	Electricity & Circuits		Animals inc. Humans	Living Things & Habitats
Year 5/6 Cycle A	Animals inc. Humans	Forces	Earth & Space	Life Cycles	Electricity	
Year 5/6 Cycle B	Living Things & Habitats	Evolution & Inheritance	Properties / Changing Materials		Light	

KNOWLEDGE AND SKILLS LADDER	EYFS	Years 1 and 2	Years 3 and 4	Years 5 and 6
Working scientifically Children will:	<ul style="list-style-type: none"> -show curiosity about objects, events and people. -use senses to explore the world around them. -engage in open-ended activity. -show particular interests. -plan, make decisions about how to approach a task, solve a problem and reach a goal. -check how well their activities are going and change strategy as needed. -review how well the approach worked. -make links and notice patterns in their experience. -make predictions and test their ideas. -develop ideas of grouping, sequences, cause and effect. -think of ideas, finding ways to solve problems and new ways to do things. 	<ul style="list-style-type: none"> -ask simple questions and recognise that they can be answered in different ways. -closely observe, using simple equipment and performing simple tests. -identify and classify using their observations and ideas to suggest answers to questions. -gather and record data to help in answering questions. 	<ul style="list-style-type: none"> -ask relevant questions and use different types of scientific enquiries to answer them. -set up simple practical enquiries, comparative and fair tests. -make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. -gather, record, classify and present data in a variety of ways to help in answering questions. -record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. -report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. -use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. -identify differences, similarities or changes related to simple scientific ideas and processes. -use straightforward scientific evidence to answer questions or to support their findings. 	<ul style="list-style-type: none"> -plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. -take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. -record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. -use test results to make predictions to set up further comparative and fair tests. -report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations. -identify scientific evidence that has been used to support or refute ideas or arguments.

<p>BIOLOGY: Plants and Living Things</p>	<p>Reception</p> <ul style="list-style-type: none"> -know about similarities and differences in relation to places, objects, materials and living things. -talk about the features of their own immediate environment and how environments might vary from one another. -make observations of animals and plants and explain why some things occur, and talk about changes. 	<p>Year 1</p> <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, including trees. -observe and describe how seeds and bulbs grow into mature plants -find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. <p>Year 2</p> <ul style="list-style-type: none"> -explore and compare the differences between things that are living, dead, and things that have never been alive. -identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other -identify and name a variety of plants and animals in their habitats, including microhabitats. -describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food 	<p>Year 3</p> <ul style="list-style-type: none"> -identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. -explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. -investigate the way in which water is transported within plants -explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. <p>Year 4</p> <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 dangers to living things. 	<p>Year 5</p> <ul style="list-style-type: none"> -describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. -describe the life process of reproduction in some plants and animals. <p>Year 6</p> <ul style="list-style-type: none"> -describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. -give reasons for classifying plants and animals based on specific characteristics.
<p>BIOLOGY: Animals including humans</p>	<p>Reception</p> <ul style="list-style-type: none"> -know about similarities and differences in relation to places, objects, materials and living things. -talk about the features of their own immediate environment and how environments might vary from one another. -make observations of animals and plants and explain why 	<p>Year 1</p> <ul style="list-style-type: none"> -identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. -identify and name a variety of common animals that are carnivores, herbivores and omnivores -describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) 	<p>Year 3</p> <ul style="list-style-type: none"> -identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. -identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p>Year 4</p>	<p>Year 5</p> <ul style="list-style-type: none"> -describe the changes as humans develop to old age. <p>Year 6</p> <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.

	<p>some things occur, and talk about changes.</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. Year 2 -notice that animals, including humans, have offspring which grow into adults. -find out about and describe the basic needs of animals, including humans, for survival (water, food and air). -describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	<p>-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.</p>	<p>-describe the ways in which nutrients and water are transported within animals, including humans. -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.</p>
CHEMISTRY: Materials	<p>Reception -know about similarities and differences in relation to places, objects, materials and living things. -talk about the features of their own immediate environment and how environments might vary from one another. -make observations of animals and plants and explain why some things occur, and talk about changes.</p>	<p>Year 1 -distinguish between an object and the material from which it is made. -identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. -describe the simple physical properties of a variety of everyday materials -compare and group together a variety of everyday materials on the basis of their simple physical properties. Year 2 -identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. -find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p>	<p>Year 3 -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. Year 4 -compare and group materials together, according to whether they are solids, liquids or gases. -observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). -identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Year 5 (Year 6 – see Earth) -compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. -know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. -use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. -give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. -demonstrate that dissolving, mixing and changes of state are reversible changes.</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.
PHYSICS: Light and sound	Reception – n/a	Year 1 and 2 – n/a	<p>Year 3</p> <ul style="list-style-type: none"> -recognise that they need light in order to see things and that dark is the absence of light. -notice that light is reflected from surfaces. -recognise that light from the sun can be dangerous and that there are ways to protect their eyes. -recognise that shadows are formed when the light from a light source is blocked by an opaque object. -find patterns in the way that the size of shadows change. <p>Year 4</p> <ul style="list-style-type: none"> -identify how sounds are made, associating some of them with something vibrating. -recognise that vibrations from sounds travel through a medium to the ear. -find patterns between the pitch of a sound and features of the object that produced it. -find patterns between the volume of a sound and the strength of the vibrations that produced it. -recognise that sounds get fainter as the distance from the sound source increases. 	<p>Year 5 – n/a</p> <p>Year 6</p> <ul style="list-style-type: none"> -recognise that light appears to travel in straight lines. -use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. -explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. -use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
PHYSICS: Forces, magnets and electricity	Reception – n/a	Year 1 and year 2 – n/a	<p>Year 3</p> <ul style="list-style-type: none"> -compare how things move on different surfaces. -notice that some forces need contact between two objects, but magnetic forces can act at a distance. -observe how magnets attract or repel each other and attract some materials and not others. -compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. -describe magnets as having two poles. 	<p>Year 5</p> <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. -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>Year 6</p> <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.

			<p>-predict whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Year 4</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 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>-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>
PHYSICS: Seasonal Changes/ Earth and Space	<p>Reception</p> <p>-know about similarities and differences in relation to places, objects, materials and living things.</p> <p>-talk about the features of their own immediate environment and how environments might vary from one another.</p> <p>-make observations of animals and plants and explain why some things occur, and talk about changes.</p>	<p>Year 1</p> <p>-observe changes across the four seasons.</p> <p>-observe and describe weather associated with the seasons and how day length varies.</p> <p>Year 2 – n/a</p>	Year 3 and 4 – n/a	<p>Year 5</p> <p>-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>-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>Year 6</p> <p>-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>

SCIENCE YEAR 1 and 2 AUTUMN TERM CYCLE A
SNAP, CRACKLE AND POP - Everyday Materials

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Children will – year 1 materials</p> <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, plastic, glass, metal, water, and rock · describe the simple physical properties of a variety of everyday materials · compare and group together a variety of everyday materials on the basis of their simple physical properties. 	<p>Children learn about the difference between objects and materials.</p> <p>Children use a word bank to identify the material that 14 different objects are made from.</p> <p>Children choose 18 objects from around the classroom. They draw a picture, name the object and identify the material. They cut and sort the objects by material.</p> <p>Children choose 10 objects from around the classroom. They sort them according to their properties - bendy/not bendy, hard/soft, transparent/opaque.</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is so important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>Children should</p> <ul style="list-style-type: none"> Ask simple questions and recognising that they can be answered in different ways Observe closely, using simple equipment <input type="checkbox"/> perform simple tests <input type="checkbox"/> identify and classify Gather and record data to help in answering questions. use their observations and ideas to suggest answers to questions 	<p>Children carry out an investigation into whether 5 objects from around the classroom float or sink. They record their results on a simple table.</p> <p>Children use a word bank to think of the best material to use in 8 different situations. They draw a picture of each object, and identify the material and its desirable properties.</p> <p>Children carry out an investigation to find out which is the most absorbent of 4 materials. They use a table to order their results and use them to answer the question.</p>	<p>Material, object, wood, plastic, glass, metal, water, rock, brick, paper, fabrics, elastic, foil, properties, hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, not bendy, waterproof, not waterproof, absorbent, non-absorbent</p> <p><i>2 - Material, object, wood, metal, plastic, glass, brick, rock, paper, cardboard, rubber, squash, bend, twist, stretch, waterproof fabric, macadamisation</i></p>
		Links to other Curriculum Areas
Prior Learning	Key Questions	Future Learning
<ul style="list-style-type: none"> -know about similarities and differences in relation to places, objects, materials and living things. -talk about the features of their own immediate environment and how environments might vary from one another. -make observations of animals and plants and explain why some things occur, and talk about changes. 	<p>'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'</p>	<p>Autumn cycle B Materials</p> <p>Lower school material</p>

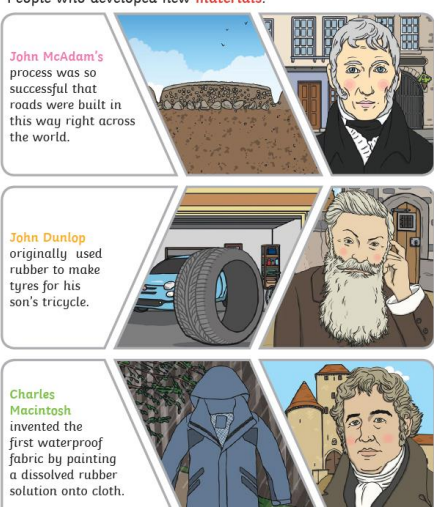
SCIENCE YEAR 1 and 2 SPRING TERM CYCLE A
OUR WORLD, OTHER WORLDS - Animals Inc. Humans

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Children will:</p> <p>Animals (inc humans) Year 1</p> <p>-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>Children use data from a simple table to create a pictogram. They cut and paste the images provided or draw their own symbols.</p> <p>Children place the seasons and months of the year in order. They use this information to create a disc showing the sequence of seasons and months. Children look at 9 different events from throughout the year. They place them in the right season.</p> <p>Children look at 25 different items of clothing. They match them to the correct season.</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is so important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>Children should:</p> <p>Ask simple questions and recognising that they can be answered in different ways</p> <p>Observe closely, using simple equipment</p> <p><input type="checkbox"/> perform simple tests</p> <p><input type="checkbox"/> identify and classify</p> <p>Gather and record data to help in answering questions.</p> <p>use their observations and ideas to suggest answers to questions</p>	<p>Children look at 9 pictures of plants at different times of the year. They match them to the correct season.</p> <p>Children look at 6 pictures of different types of weather. They cut and paste the correct description, or write their own.</p> <p>Children match 4 timelines showing the Sun's position in the sky to their respective seasons.</p>	<p>Seasonal changes – Season, month, summer, autumn, winter, spring, day, daytime, sun, day length, weather, wind, rain, snow, hail, sleet, fog, sun, hot, burn, warm, cold, animals, plants, trees, flowers, leaves, adapting, hibernating, migrating</p> <p>Animals</p> <p>- Fish, amphibians, reptiles, birds, mammals, pets, tongue, nose, eyes, ears, skin, taste, smell, sight, touch, hear, head, legs, eyes, neck, knees, hair, arms, face, mouth, elbows, ears, teeth, carnivore, omnivore,</p>
Prior Learning	Key Questions	Future Learning
<p>-know about similarities and differences in relation to places, objects, materials and living things.</p> <p>-talk about the features of their own immediate environment and how environments might vary from one another.</p> <p>-make observations of animals and plants and explain why</p>	<p>Which season has the most hours of daylight? Which season has the least hours of daylight? Which seasons have similar hours of daylight? How many more hours of daylight are there in summer than in winter?</p>	<p>Animals including humans Year 4</p>

SCIENCE YEAR 1 and 2 SUMMER TERM CYCLE A
THE SECRET GARDEN/WILD AND WONDERFUL - Plants & Animals

National Curriculum Objectives	Knowledge	Links to Core Values
Living things and their Habitats - Year 1 -identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. -identify and name a variety of common animals that are carnivores, herbivores and omnivores -describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) -identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Plants Year 2 -explore and compare the differences between things that are living, dead, and things that have never been alive. -identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other -identify and name a variety of plants and animals in their habitats, including microhabitats. -describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food	Children will learn that mammals give birth to live young. They sort 9 pictures into 2 groups - mammals and non-mammals. They consider what else the mammals have in common. Children learn about 5 groups of animals - birds, mammals, reptiles, fish and amphibians. They place 18 pictures in the correct animal groups. A description is provided for each animal group. They consider whether animals eat plants or other animals. Children explore patterns, such as animals eating the same type of food. Children learn about carnivores (animals that only eat meat), herbivores (animals that only eat plants) and omnivores (animals that eat both meat and plants). Children use a word bank to help them to label 3 bodies - a baby, a boy and a man. Body parts in the word bank include head, neck, arm, elbow, leg, knee, face, ear, eye, hair, mouth and teeth. Children use a word bank to label a diagram, showing what part of the body is associated with each sense - sight, hearing, taste, touch and smell. They learn that the sense of touch is associated with the whole body, rather than a particular organ. Children should use secondary sources to name animals seen in the local environment that they may not currently be able to name (eg. Birds, magpie, blackbird) Research what animals they have first hand experience of eat.	Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe. Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work. Working together in Science is so important as we work with our buddies to solve problems.
Skills		Key Vocabulary
Ask simple questions and recognising that they can be answered in different ways Observe closely, using simple equipment <input type="checkbox"/> perform simple tests <input type="checkbox"/> identify and classify Gather and record data to help in answering questions. use their observations and ideas to suggest answers to questions		Common, wild plants, garden plants, deciduous, evergreen, plant, leaf, root, leaves, bud, flowers, blossom, petals, root, stem, tree, trunk,
		Links to other Curriculum Areas
Prior Learning	Key Questions	Future Learning
Reception -know about similarities and differences in relation to places, objects, materials and living things. -talk about the features of their own immediate environment and how environments might vary from one another. -make observations of animals and plants and explain why some things occur, and talk about changes.	What type of animal is this? What makes an amphibian special? What is a life cycle? What is a sense? How do we use these as humans? Do animals have the same senses as we do?	

SCIENCE YEAR 1 and 2 AUTUMN TERM CYCLE B
TURRETS AND TIARAS - Uses of Materials

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Materials</p> <p>Children will</p> <p>Year 2</p> <p>-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>Children will learn about</p> <p>Investigations and setting fair tests</p> <p>What variable they will change in an investigation</p> <p>Materials are what objects are made from</p> <p>Suitability means having the properties which are right for a specific purpose.</p> <p>Properties is what a material is like and how it behaves (soft,stretchy,waterproof)</p> <p>People who developed new materials:</p>  <p>John McAdam's process was so successful that roads were built in this way right across the world.</p> <p>John Dunlop originally used rubber to make tyres for his son's tricycle.</p> <p>Charles Macintosh invented the first waterproof fabric by painting a dissolved rubber solution onto cloth.</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is so important as we work with our buddies to solve problems.</p>
Skills	Key Questions	Key Vocabulary
<p>To explore the properties of a variety of balls</p> <p>To generate questions and discuss the similarities and differences between the balls</p> <p>To discuss and design an investigation to test which ball is the bounciest</p> <p>To make predictions, test, and record results</p> <p>To learn about what makes a material have bouncy properties</p> <p>To examine fabrics and discuss the requirements of some clothes</p> <p>To understand that some materials need to be able to 'give' a little and not break</p> <p>To identify and discuss the materials/properties of objects and sort them according to criteria</p>		<p>Material, object, wood, plastic, glass, metal, water, rock, brick, paper, fabrics, elastic, foil, properties, hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, not bendy, waterproof, not waterproof, absorbent, non-absorbent</p>
Prior Learning		Links to other Curriculum Areas
<p>Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.</p>	<p>Children generate questions for investigation such as:</p> <p>Do people with longer arms have longer legs?</p> <p>Can more people identify prawn cocktail crisps than cheese and onion?</p> <p>Do all animals with.....have.....?</p>	<p>Future Learning</p> <p>Animals including humans (Year 4) Year 6</p>

SCIENCE YEAR 1 and 2 SPRING TERM CYCLE B

ANIMAL MAGIC (SUNNY'S SPRING ADVENTURES) Seasonal changes and Animals, including humans

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Seasonal changes (year 1) (Seasonal Changes)</p> <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. <p>Animals including humans (Year 2)</p> <p>Children will Observe changes across the four seasons</p> <p>Observe and describe weather associated with the seasons and how day length varies</p> <p>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>Children will: sequence and describe the life cycle of different animals.</p> <p>sequence the different stages in a human life.</p> <p>match the young of different animals to their adult form.</p> <p>explain what humans need to survive</p> <p>explain what animals need to survive.</p> <p>explain why it is important to be clean when eating food.</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is so important as we work with our buddies to solve problems.</p>
Skills	investigate how exercise produces changes in the body.	Key Vocabulary
<p>Pupils should observe and talk about changes in the weather and the seasons.</p> <p>Note: Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.</p> <p>Pupils might work scientifically by: making tables and charts about the weather; and making displays of what happens in the world around them, including day length, as the seasons change.</p> <p>Pupils should be introduced to the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans. They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs.</p> <p>The following examples might be used: egg, pupa, spawn, lamb. Growing into adults can include reference to baby, toddler, child, teenager, adult.</p> <p>Pupils might work scientifically by: observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions.</p>		<p>Offspring, grow, adults, survival, water, food, air, exercise, hygiene, nutrition, reproduce, egg, chick, chicken, egg, caterpillar, pupa, butterfly, spawn, tadpole, frog, lamb, sheet, baby, toddler, child, teenager, adult</p>
Prior Learning		Links to other Curriculum Areas
<p>Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.</p>	<p>Can they describe the basic needs of animals for survival and the main changes as young animals, including humans, grow into adults?</p>	<p>Walk in the woods</p>
Prior Learning	Key Questions	Future Learning
<p>Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur and talk about changes.</p>	<p>Can they describe the basic needs of animals for survival and the main changes as young animals, including humans, grow into adults?</p>	<p>Animals inc humans Year 4 and 6</p>

**SCIENCE YEAR 1 and 2 SUMMER TERM CYCLE B
LAND AHOY**

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Plants (Year 1) Children will Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees. -identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. -identify and describe the basic structure of a variety of common flowering plants, including trees. -observe and describe how seeds and bulbs grow into mature plants -find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>Living things (Year 2) -explore and compare the differences between things that are living, dead, and things that have never been alive. -identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other -identify and name a variety of plants and animals in their habitats, including microhabitats. -describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food</p>	<p>Children will learn that bulbs and seeds can grow into mature plants. They match 5 trees and plants to their bulbs or seeds in a cut and stick activity. They identify whether they are looking at a bulb or a seed.</p> <p>Children use a word bank and pictures to identify 9 common garden plants. They think about ways of grouping the plants, and consider whether they have seen them before.</p> <p>Children use a word bank and pictures to identify common wild plants. They explore ways of grouping them and think about whether or not they have seen them before.</p> <p>Children use a word bank and pictures to identify common trees, with reference to their shape, leaves, fruit and seeds. They think about whether the trees lose their leaves or not in the autumn and whether or not the trees are familiar.</p> <p>Children use a tally chart to investigate the local area and find out how many of 5 different plants there are. They show their results on a simple pictogram. They perform some data handling and analysis, considering which plant was the most common.</p> <p>Children colour and label the four main parts of a flowering plant - flower, stem, leaf and roots. They discuss the function of each of the four parts.</p> <p>habitat (a natural environment or home of a variety of plants and animals) and micro-habitat (a very small habitat, for example for woodlice under stones, logs or leaf litter)</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe. Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work. Working together in Science is so important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>observe the growth of flowers and vegetables that they have planted. work scientifically by: observing closely, perhaps using magnifying glasses, and comparing and contrasting familiar plants record how plants have changed over time, for example the leaves falling off trees and buds opening; and compare and contrast what they have found out about different plants. introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. raise and answer questions that help them to become familiar with the life processes that are common to all living things. identify and study a variety of plants and animals within their habitat and observe how living things depend on each other, for example, plants serving as a source of food and shelter for animals. compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest. work scientifically by: sorting and classifying things according to whether they are living, dead or were never alive, and recording their findings using</p>		<p>They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem). Common, wild plants, garden plants, deciduous, evergreen, plant, leaf, , bud, tree,</p> <p>Fish, amphibians, reptiles, birds, mammals, pets, tongue, nose, eyes, ears, skin, taste, smell, sight, touch, hear, head, legs, eyes, neck, knees, hair, arms, face, mouth, elbows, ears, teeth, carnivore, omnivore, herbivore, meat, plants, names of animals</p>

charts. construct a simple food chain that includes humans (e.g. grass, cow, human). describe the conditions in different habitats and micro-habitats (under log, on stony path, under bushes) and find out how the conditions affect the number and type(s) of plants and animals that live there.		
		Links to other Curriculum Areas
Prior Learning	Key Questions	Future Learning
	How do seeds change as they germinate? How long do they take to germinate? How do plants change as they grow? Which are the quickest plants for us to grow and eat? Is a flame alive? Is a deciduous tree dead in winter?	

YEAR 3&4 AUTUMN TERM CYCLE A
GREEKS

National Curriculum Objectives	Knowledge	Links to Core Values
Using straightforward scientific evidence to answer questions or to support their findings. Animals, including humans Pupils should be taught to: identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat identify that humans and some other animals have skeletons and muscles for support, protection and movement	Scientists and Inventors Children will learn about: - The chronology of inventions. Use photographs to understand how a local area has changed over time. To understand the impact of the invention of steam travel on everyday life. Research and study notable historical people, including scientists, inventors and the Ancient Greeks, in particular their impact and relevance -to the modern day. Consider how their local area changed over time, including industrial development.	Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe. Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work. Working together in Science is so important as we work with our buddies to solve problems.
Skills	Animals including humans To know the functions of a skeleton Most children will know the functions of the skeleton and will understand what would happen if humans and animals didn't have a skeleton Most children will begin to sort animals into vertebrate and invertebrate. Most children will know that muscles enable us to move, are attached to bones and will know where some key muscles are located by carrying out an exercise or stretch	Key Vocabulary
set up simple practical enquiries, comparative and fair tests make systematic and careful observations and, where appropriate, take accurate measurements using standard units, use a range of equipment, including thermometers and data loggers describe and explain the skeletal system of a human describe and explain the muscular system of a human describe what they have found using scientific language describe what they have found out using secondary sources explain how the muscular and skeletal systems work together to create movement		Industry, development, impact, influence, locality. Nutrition, nutrients, carbohydrates, protein, fats, fibre, water, vitamins, minerals, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic, skeleton, vertebrate, invertebrate, contract, relax, muscles, ball joint, socket joint, hinge joint, gliding joint
		Links to other Curriculum Areas
Prior Learning	Key Questions	Future Learning
Changes within living memory Events beyond living memory that are significant Lives of significant individuals Significant events/ people in the locality	What is a skeleton? What is its purpose? Why is it so important? What are the main bones in a human skeleton? Where are they located? Birds and bats both fly, but what is different about them?	

**YEAR 3&4 SPRING TERM CYCLE A
FROM STONE TO STEEL**



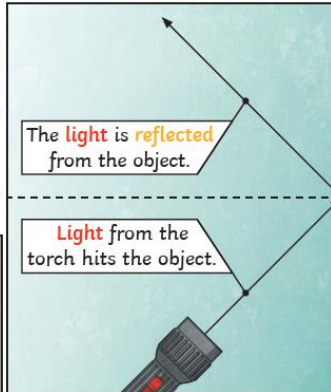
National Curriculum Objectives	Knowledge	Links to Core Values
<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>recognise that soils are made from rocks and organic matter</p> <p>Forces and magnets</p> <p>compare how things move on different surfaces</p> <p>notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>observe how magnets attract or repel each other and attract some materials and not others</p> <p>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</p> <p>describe magnets as having 2 poles</p> <p>predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p>	<p>Rocks (Y3) What do rocks tell us?</p> <p>Compare and group together different types 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 are trapped within rock</p> <p>Recognise that soils are made from rocks and organic matter</p> <p>Forces and magnets (Y3) Are all metals magnetic?</p> <p>Compare how things move on different surfaces</p> <p>Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>Observe how magnets attract or repel each other and attract some materials but not others</p> <p>Compare and group together a variety of everyday materials on the basis of whether they attracted to a magnet, and identify some magnetic materials</p> <p>Describe magnets as having 2 poles</p> <p>Predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is so important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>Compare and group together different rocks on the basis of their appearance and simple physical properties</p> <p>Describe and explain how different rocks can be useful to us</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>Describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed</p> <p>Recognise that soils are made from rocks and organic matter</p> <p>Classify objects in different ways</p> <p>Describe what they have found using scientific language</p> <p>Different ideas and suggest how to find something out</p> <p>Compare how things move on different surfaces</p> <p>Observe that magnetic forces can be transmitted without direct contact</p> <p>Observe how some magnets attract or repel each other</p> <p>Identify and classify which everyday materials are attracted to magnets and which are not</p>		<p>Rock, appearance, physical, <i>properties</i>, <i>hard</i>, <i>soft</i>, <i>shiny</i>, <i>dull</i>, <i>rough</i>, <i>smooth</i>, <i>absorbent</i>, <i>non-absorbent</i>, fossils, sedimentary, soils, organic matter, buildings, gravestones, grains, crystals</p> <p>Forces and magnets Force, push, pull, open, surface, magnet, magnetic, attract, repel, magnetic poles, North, South</p>
		Links to other Curriculum Areas
		<p>History Stone Age</p> <p>Writing Opportunities – Non-chronological report</p> <p><i>Mary Anning</i></p> <p>Writing Opportunities - Writing in role</p> <p><i>Diary entry as Magnes - Discovery of magnetism in science</i></p>

<p>Notice that some forces need contact between two objects, but magnetic forces can act at a distance</p> <p>Describe magnets have having two poles (N & S) and predict whether two magnets will attract or repel each other depending on which poles are facing?</p> <p>Make and record a prediction before testing?</p> <p>Take accurate measurements using different equipment and units of measure?</p> <p>Set up a simple fair test to make comparisons?</p> <p>Explain what they have found out and use their measurements to say whether it helps to answer their question?</p> <p>Record their observations in different ways? - labelled diagrams, charts etc.?</p>		
Prior Learning	Key Questions	Future Learning
<p>Dinosaur topic Littlehaven</p>	<p>What do they already know about rocks?</p> <p>Can the children name the three types of rock?</p> <p>Can they tell you how each type is formed?</p> <p>Can they classify igneous and sedimentary rocks?</p> <p>Can they begin to relate the properties of rocks with their uses?</p> <p>Can they investigate the strengths of different magnets and find fair ways to compare them?</p> <p>Can they create a glossary and understand the different terms and vocab?</p>	<p>Properties and changes of material year 5</p>

**YEAR 3&4 SUMMER TERM CYCLE A
OUR DIVERSE WORLD**

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Pupils should be taught to:</p> <p>Plants (Y3) How do plants survive?</p> <p>identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</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>Year 4</p> <p>-recognise that living things can be grouped in a variety of ways.</p> <p>-explore and use classification keys to help group, identify and 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>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</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>identify the way in which water is transported within plants</p> <p>Explore the part that flowers play in the life cycle</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is so important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>Identify and describe the functions of different parts of flowering plants (roots, stem/trunk, leaves and)</p> <p>Explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow)?</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>Record their observations in different ways (Labelled diagrams, charts etc.) Use secondary sources</p> <p>Plan and set up a fair test and explain why it was fair</p> <p>Explain what they have found out and use their measurements to say whether it helps to answer their question</p> <p>Set up a simple test to make comparisons</p>		<p>Common, wild plants, garden plants, deciduous, evergreen, plant, leaf, root, leaves, bud, flowers, blossom, petals, root, stem, tree, trunk,</p>
		Links to other Curriculum Areas
		<p>A walk in the woods. Living things and their habitats</p> <p>Writing Opportunities – Non-chronological reports, Explanations</p> <p><i>Plant fact files, Explaining the pollination process, Finding out how nature regenerates</i></p>
Prior Learning	Key Questions	Future Learning
<p>Plants (yr1 and 2)</p>	<p>Why do plants need leaves?</p> <p>Why do plants need stems?</p> <p>Why do plants need roots?</p> <p>What is the lifecycle of a plant?</p> <p>Can they classify a range of common plants according to many criteria (environment found, size, climate required, etc.)</p>	<p>Evolution and inheritance in Year 5/6</p>

YEAR 3&4 AUTUMN TERM CYCLE B
A WALK IN THE WOODS

National Curriculum Objectives	Knowledge	Links to Core Values														
<ul style="list-style-type: none">-recognise that they need light in order to see things and that dark is the absence of light.-notice that light is reflected from surfaces.-recognise that light from the sun can be dangerous and that there are ways to protect their eyes.-recognise that shadows are formed when the light from a light source is blocked by an opaque object.-find patterns in the way that the size of shadows change.-identify how sounds are made, associating some of them with something vibrating.-recognise that vibrations from sounds travel through a medium to the ear.-find patterns between the pitch of a sound and features of the object that produced it.-find patterns between the volume of a sound and the strength of the vibrations that produced it.-recognise that sounds get fainter as the distance from the sound source increases	<p>We need light to be able to see things. Light travels in a straight line. When light hits an object, it is reflected (bounces off). If the reflected light hits our eyes, we can see the object. Some surfaces and materials reflect light well. Other materials do not reflect light well. Reflective surfaces and materials can be very useful...</p> <div><div><p>hi-vis jacket</p></div><div><p>cat's eyes</p></div></div> <div></div> <p>Surfaces that best reflect are smooth and shiny. Mirrors reflect light very well, so they create a clear image. An image in a mirror appears to be reversed. For example, if you looked in the mirror and raised your left hand the mirror image appears to raise your right hand.</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is so important as we work with our buddies to solve problems.</p>														
Skills		Key Vocabulary														
<p>Recognise that they need light in order to see things</p> <p>Recognise 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 size of shadows change</p> <p>Explain the difference between transparent, translucent and opaque</p> <p>Set up a simple fair test to make comparisons</p> <p>Describe what they have found using scientific language</p> <p>Record their observations in different ways- labelled diagrams, charts etc.</p>		<table><tr><td>light</td><td>A form of energy that travels in a wave from a source.</td></tr><tr><td>light source</td><td>An object that makes its own light.</td></tr><tr><td>dark</td><td>Dark is the absence of light.</td></tr><tr><td>reflection</td><td>The process where light hits the surface of an object and bounces back into our eyes.</td></tr><tr><td>reflect</td><td>To bounce off.</td></tr><tr><td>reflective</td><td>A word to describe something which reflects light well.</td></tr><tr><td>ray</td><td>Waves of light are called light rays. They can also be called beams.</td></tr></table>	light	A form of energy that travels in a wave from a source.	light source	An object that makes its own light .	dark	Dark is the absence of light .	reflection	The process where light hits the surface of an object and bounces back into our eyes.	reflect	To bounce off.	reflective	A word to describe something which reflects light well.	ray	Waves of light are called light rays . They can also be called beams.
light	A form of energy that travels in a wave from a source.															
light source	An object that makes its own light .															
dark	Dark is the absence of light .															
reflection	The process where light hits the surface of an object and bounces back into our eyes.															
reflect	To bounce off.															
reflective	A word to describe something which reflects light well.															
ray	Waves of light are called light rays . They can also be called beams.															
Prior Learning	Key Questions	Future Learning														
<p>Growing plants in year 1 and 2 and animals including humans in year 1 and 2. For example , How are humans and animals different and the same?</p> <p>Animals including humans cycle A</p>	<ul style="list-style-type: none">• Can they explain why lights need to be bright or dimmer according to need?• Can they say what happens to the electricity when more batteries are added?• Can they explain why their shadow changes when the light source is moved closer or further from the object?	<p>Living things and their habitats in Year 5/6.</p>														

YEAR 3&4 SPRING TERM CYCLE B
ROAMING ROMANS

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Year 4</p> <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 a circuit and associate this with whether or not a lamp lights in a simple series circuit. -recognise some common conductors and insulators, and associate metals with being good conductors 	<p>How does a switch make a room bright? 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</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe. Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work. Working together in Science is so important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>Identify common appliances that run on electricity Construct a simple series electric circuit Identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers Recognise symbols to represent simple series circuit diagrams Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery Recognise that a switch opens and closes a circuit Associate a switch opening with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators Associate metals with being good conductors Plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated Suggest improvements and predictions Ask their own question Explain their findings in different ways (display, presentation, writing)</p>		<p>Circuits, components, light, buzzer, cell, battery, classification, micro-organisms, vertebrates, invertebrates</p>
		Links to other Curriculum Areas
		<p>Links to crumble in D.T and coding (scratch) in computing.</p>
Prior Learning	Key Questions	Future Learning
<p>Living things in year 1 and 2</p>	<p>What is that component called? What does the component do? Will that circuit work? Why won't that circuit work? What is a conclusion? Why do scientists put things into groups?</p>	<p>Year 6 Electricity unit.</p>

YEAR 3&4 SUMMER TERM CYCLE B
WHAT LIES BENEATH

National Curriculum Objectives

Year 4

- 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.

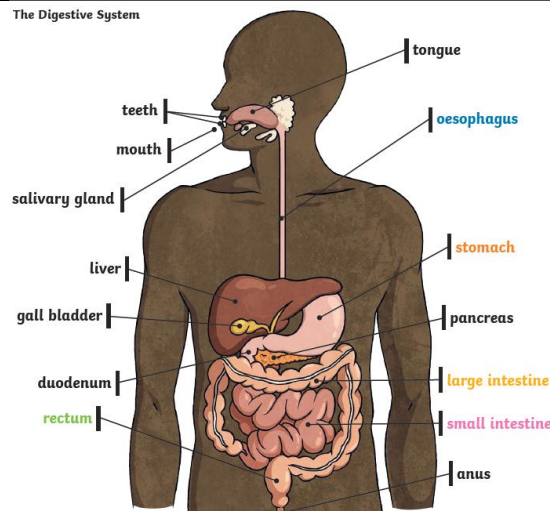
Skills

Identify, name and describe the functions of the basic parts of the digestive system in humans
Identify the simple function of different types of teeth in humans
Compare the teeth of herbivores and carnivores
Identify, construct and interpret a variety of food chains, identifying producers, predators and prey
Identify differences, similarities or changes related to simple scientific ideas or processes

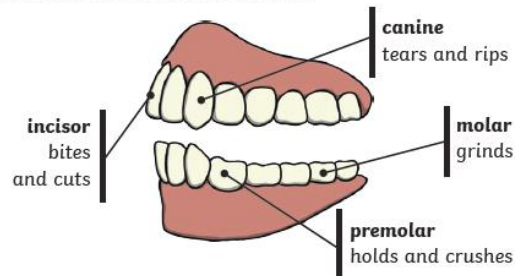
Prior Learning

Year 3 objectives cycle A
Year 1 ½

Knowledge



Human Teeth and Their Functions



Some people have wisdom teeth but they have no function now.

Links to Core Values

Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.
Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner
Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.
Working together in Science is so important as we work with our buddies to solve problems.

Key Vocabulary

digest	Break down food so it can be used by the body.
oesophagus	A muscular tube which moves food from the mouth to the stomach.
stomach	An organ in the digestive system where food is broken down with stomach acid and by being churned around.
small intestine	Part of the intestine where nutrients are absorbed into the body.
large intestine	Part of the intestine where water is absorbed from remaining waste food. Faeces are formed in the large intestine.
rectum	Part of the digestive system where faeces are stored before leaving the body through the anus.
herbivore	An animal that eats plants.
carnivore	An animal that feeds on other animals.
omnivore	An animal that eats plants and animals.
producer	An organism, such as a plant, that produces its own food.
predator	An animal that hunts and eats other animals.
prey	An animal that gets hunted and eaten by another animal.

Links to other Curriculum Areas

Key Questions

Can they classify living things and non-living things by a number of characteristics that they have thought of?
 • Can they explain how people, weather and the environment can affect living things?
 • Can they explain how certain living things depend on one another to survive?

Future Learning

**YEAR 5&6 AUTUMN TERM CYCLE A
WORLD CONFLICT**

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Animals including Humans Life Cycles Circulatory System describe the changes as humans develop to old age. 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. describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the life process of reproduction in some plants and animals.</p>	<p>Children learn about the different components of blood. They learn that red blood cells carry oxygen, white blood cells fight infection, platelets help to prevent bleeding, and that plasma is the medium in which these components are suspended. Children describe the functions of red blood cells, white blood cells, platelets and plasma, and create a pie chart showing the percentage of each component by volume in a typical sample of blood.</p> <p>Children learn that the human circulatory system is composed of 2 parts - the systemic circulation and the pulmonary circulation. They learn about the role of the heart, blood vessels, and the components of blood such as red and white blood cells, platelets and plasma. In the writing frame provided, children create an information text on the human circulatory system using what they have learned.</p> <p>Children learn about the life cycles of 3 different amphibians - frogs, salamanders and axolotls. They create 3 life cycle diagrams, adding their own explanations and diagrams or cutting and pasting those provided. They compare the life cycles of these amphibians.</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe. Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work. Working together in Science is so important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>Animals including humans Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty. Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.</p> <p>Circulatory System identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function describe the ways in which nutrients and water are transported within animals, including humans. Pupils might work scientifically by: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.</p> <p>Life Cycles Pupils should study and raise questions about their local environment throughout the year. They should observe life-cycle changes in a variety of living things, for example, plants in the vegetable garden or flower border, and animals in the local environment. They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall. Pupils might work scientifically by: observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times), asking pertinent</p>		<p>Puberty, life cycle, gestation, growth, reproduce, foetus, <i>baby</i>, fertilisation, <i>toddler</i>, <i>child</i>, <i>teenager</i>, <i>adult</i>, old age, life expectancy, adolescence, adulthood, early adulthood, middle adulthood, late adulthood, childhood</p> <p>Internal organs, heart, lungs, liver, kidney, brain, skeletal, <i>skeleton</i>, muscle, muscular, digest, digestion, digestive, circulatory system, heart, blood vessels, blood, impact, diet, exercise, drugs, lifestyle, nutrients, water, damage, drugs, alcohol, substances</p>
		Links to other Curriculum Areas

questions and suggesting reasons for similarities and differences. They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. They might observe changes in an animal over a period of time (for example, by hatching and rearing chicks), comparing how different animals reproduce and grow.		
Prior Learning	Key Questions	Future Learning
Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function.		

YEAR 5&6 SPRING TERM CYCLE A
SPACE

National Curriculum Objectives	Knowledge	Links to Core Values
Year 5 -describe the movement of the Earth, and other planets, relative to the Sun in the solar system. -describe the movement of the Moon relative to the Earth. -describe the Sun, Earth and Moon as approximately spherical bodies. -use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Can show using diagrams the movement of the Earth and moon. Can explain the rotation of the Earth and how this causes night and day. Can explain evidence gathered about the position of shadows in terms of movement of the Earth. Can explain how a sundial works. Can explain why we have time zones.	Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe. Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work. Working together in Science is so important as we work with our buddies to solve problems.
Skills		Key Vocabulary
Identify and explain the movement of the Earth and other plants relative to the sun in the solar system Explain how seasons and the associated weather is created Describe and explain the movement of the Moon relative to the Earth Describe the sun, earth and moon as approximately spherical bodies Use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky Present a report of their findings through writing, display and presentation using appropriate scientific vocabulary Use evidence from secondary sources to explore their own and other people's ideas		Earth, sun, moon, space, planets, stars, solar system, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto, rotate, day, night, Aristotle, Ptolemy, Galileo, Copernicus, Brahe, Alhazen, orbit, axis, spherical,
		Links to other Curriculum Areas Writing Opportunities -Non-chronological reports <i>Space and astronauts, Fact files on the planets</i>
Prior Learning	Key Questions	Future Learning
Year 1 and 2 work on seasons	<ul style="list-style-type: none">• Can they compare the time of day at different places on the earth?• Can they create shadow clocks?• Can they begin to understand how older civilizations used the sun to create astronomical clocks, e.g. Stonehenge?• Can they explore the work of some scientists? (Ptolemy, Alhazen, Copernicus)	

YEAR 5&6 SUMMER TERM CYCLE A
VIKING INVASIONS Electricity and Forces

National Curriculum Objectives	Knowledge	Links to Core Values
<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>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<p>Children learn about the appearance and function of different electrical components, including switches, bulbs, buzzers, motors, cells and wires. They match pictures of each component to their electrical symbols. They cut and paste descriptions of how each component functions, or write their own.</p> <p>Children learn that objects fall to the Earth due to the force of gravity. They explore why people don't fall off the 'bottom' of the Earth, and why the Moon does not fall out of the sky. Children investigate the force of gravity by weighing 5 objects in grams, and then measuring the pull between them and the Earth using a force meter, measuring the force in newtons (N). They look for a relationship between their two measurements.</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>Building on their work in year 4, pupils should construct simple series circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors.</p> <p>Pupils should be taught to take the necessary precautions for working safely with electricity.</p> <p>Pupils might work scientifically by: systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.</p> <p>Forces</p> <p>Pupils should explore falling objects and raise questions about the effects of air resistance. They should explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall. They should experience forces that make things begin to move, get faster or slow down. Pupils should explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel. Pupils should explore the effects of levers, pulleys and simple machines on movement.</p> <p>Pupils might work scientifically by: exploring falling paper cones or cup-cake cases, and designing and making a variety of parachutes and carrying out fair</p>	<p>Pupils find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.</p> <p>They should learn how to represent a simple circuit in a diagram using recognised symbols.</p> <p>Note: Pupils are expected to learn only about series circuits, not parallel circuits.</p>	<p>gravity, air resistance, water, resistance, friction, surface, force, effect, move, accelerate, decelerate, stop, change direction, brake, mechanism, pulley, gear, spring, theory of gravitation, Galileo Galilei, Isaac Newton</p> <p>voltage, brightness, volume, <i>switches, danger, series circuit, safety, sign</i>, circuit diagram, switch, <i>bulb, buzzer, motor, recognised, symbols</i></p>
		Links to other Curriculum Areas

tests to determine which designs are the most effective. They might explore resistance in water by making and testing boats of different shapes. They might design and make products that use levers, pulleys, gears and/or springs and explore their effects.		
Prior Learning	Key Questions	Future Learning
Year 3 / 4 work on magnets	<p>Can they describe and explain how motion is affected by forces? (including gravitational attractions, magnetic attraction and friction)</p> <p>Can they design very effective parachutes?</p> <p>Can they work out how water can cause resistance to floating objects?</p> <p>Can they explore how scientists, such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation?</p>	

YEAR 5&6 AUTUMN TERM CYCLE B

WELCOME TO THE JUNGLE Living things and their habitats and Evolution and inheritance

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p> <p>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 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>Children learn that Carl Linnaeus developed a classification system which placed organisms into hierarchical groups. They learn about binomial nomenclature. Children sort 20 different objects into Linnaeus' kingdoms. They discuss the elements from Linnaeus's system that we still use, those that we have abandoned, and why.</p> <p>Children learn about the life and work of the early palaeontologist, Mary Anning. They use what they have learned to create an interview text, imagining themselves as Mary, answering questions such as 'What do your fossils tell us?' and 'Do you think you received enough recognition for your finds?'</p> <p>Children learn what fossils are and how they are formed. They learn how palaeontologists build up a picture of the past using incomplete evidence, most organisms die without leaving a fossil trace. They learn about stratigraphy, and that organisms found in lower layers of rock tend to have died earlier. Children use a diagram showing a simplified cross-section of rock to date 3 different organisms, working out when they appeared, when they died out, and how long they lived for. Children compare the organisms to each other and discuss which lived most recently. Using fossil evidence, children make their best guess at how the animal may have looked when alive, showing this in a diagram.</p> <p>Children read a fictitious autobiography of Charles Darwin. They learn about his early life, his role in the voyage of the HMS Beagle, his relationship with Alfred Russel Wallace, and how he developed and published his theory of natural selection. Children use the information in the autobiography to create their own third-person information text about the life of Charles Darwin.</p> <p>Children learn about the process of evolution by natural selection. They learn that offspring inherit traits of their parents, and that they might occasionally carry a random mutation which gives them a survival advantage and that they pass on to their own offspring. They learn that this process can change a population over time. Children use what they have learned to create an explanation text. They cut and</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>They should be introduced to the idea that broad groupings, such as micro-organisms, plants and animals can be subdivided. Through direct observations where possible, they should classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). They should discuss reasons why living things are placed in one group and not another.</p> <p>Pupils might find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.</p> <p>Pupils might work scientifically by: using classification systems and keys to identify some animals and plants in the immediate environment. They could research unfamiliar animals and plants from a broad range of other habitats and decide where they belong in the classification system.</p> <p>They should be introduced to the idea that characteristics are passed from parents to their offspring, for instance by considering different breeds of dogs, and what happens when, for example, labradors are crossed with poodles. They should also appreciate that variation in offspring over time can make animals more or less able to survive in particular environments, for example, by exploring how giraffes necks got longer, or the development of insulating fur on the arctic fox.</p>		<p>Evolution and inheritance (6) Evolution, inheritance, inherited traits, adapted traits, natural selection, inheritance, Charles Darwin, DNA, genes, variation, parent, offspring, <i>fossil, environment, habitat, fossilisation, plants, animals, living things</i></p> <p>Living things and habitats (5/6) 5 - Life cycles, mammal, amphibian, insect, bird, life processes, plants, animals, vegetable garden, flower border, animal naturalists, animal behaviourists, reproduction, sexual, asexual, <i>rainforest, oceans, deserts, prehistoric, similarities, differences</i> 6 - Classify, compare, Linnaean, Carl Linnaeus, classification, domain, kingdom, phylum, class, order, family, genus, species, characteristics, <i>vertebrates, invertebrates, microorganisms, organism, flowering, non-</i></p>
		Links to other Curriculum Areas
		<p>Writing Opportunities - Biography and Explanations <i>Charles Darwin, Evolution</i></p>

<p>Note: At this stage, pupils are not expected to understand how genes and chromosomes work. Pupils might work scientifically by: observing and raising questions about local animals and how they are adapted to their environment; comparing how some living things are adapted to survive in extreme conditions, for example, cactuses, penguins and camels. They might analyse the advantages and disadvantages of specific adaptations, such as being on two feet rather than four, having a long or a short beak, having gills or lungs, tendrils on climbing plants, brightly coloured and scented flowers.</p>	<p>paste the diagrams and explanations provided, or create their own</p> <p>Pupils might find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.</p>	
Prior Learning	Key Questions	Future Learning
<p>Pupils should build on their learning about grouping living things in year 4 by looking at the classification system in more detail.</p> <p>Building on what they learned about fossils in the topic on rocks in year 3, pupils should find out more about how living things on earth have changed over time.</p>	<p>Can they 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>Can they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents?</p> <p>Can they give reasons why offspring are not identical to each other or to their parents?</p> <p>Can they explain the process of evolution and describe the evidence for this?</p> <p>Can they identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution?</p> <p>Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?</p>	

YEAR 5&6 SPRING TERM CYCLE B
TOMB RAIDERS

National Curriculum Objectives	Knowledge	Links to Core Values
<p>Properties and Changing materials compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic demonstrate that dissolving, mixing and changes of state are reversible changes Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>	<p>Children learn that solutions cannot be separated by filtering because the particles have spread out and are not in clumps that can be blocked by a sieve. Children investigate the best place to put a cup of salt solution so that the water evaporates most quickly. They choose 4 locations and measure the amount of water in each container over the course of 7 days. They transfer their results to a line graph and use this to answer the question. Children investigate the properties of 10 different materials. They predict and then investigate whether the materials are electrical conductors, transparent, strong thermal conductors or magnetic. They record their results in a table, and then complete a Venn diagram containing 2 intersecting sets, choosing 2 properties by which to group the materials. Children learn that when a solute dissolves in a solvent to create a solution, its particles spread out so that they can no longer be seen or retrieved by filtering. They investigate whether sand, sugar, salt, flour or iron filings will dissolve in water. They record their results in a table and then display them in a single-set Venn diagram. They consider how they could separate the mixtures and solutions. Children investigate whether 5 different materials can be scratched by 4 different objects of increasing hardness. They use their results to place the materials in order of hardness.</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe. Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work. Working together in Science is important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>They should explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes. Pupils should explore changes that are difficult to reverse, for example, burning, rusting and other reactions, for example, vinegar with bicarbonate of soda. Note: Pupils are not required to make quantitative measurements about conductivity and insulation at this stage. It is sufficient for them to observe that some conductors will produce a brighter bulb in a circuit than others and that some materials will feel hotter than others when a heat source is placed against them. Safety guidelines should be followed when burning materials.</p>	<p>Children identify the materials that 4 different objects are made from and explain why they have been chosen with reference to their physical properties. Next, they describe the physical properties and uses of 6 different materials - metals, plastics, wood, fabrics, glass and leather. They cut and paste or write their own descriptions. They should find out about how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton.</p>	<p>Properties and changes of materials (5) Properties, hardness, solubility, transparency, electrical conductor, thermal conductor, magnetic, dissolve, solution, separate, separating, solids, liquids, gases, evaporating, reversible changes, dissolving, mixing,</p> <p align="center">Links to other Curriculum Areas</p>

<p>Pupils might work scientifically by: carrying out tests to answer questions, for example, Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains? They might compare materials in order to make a switch in a circuit. They could observe and compare the changes that take place, for example, when burning different materials or baking bread or cakes. They might research and discuss how chemical changes have an impact on our lives, for example, cooking, and discuss the creative use of new materials such as polymers, super-sticky and super-thin materials</p>		
Prior Learning	Key Questions	Future Learning
<p>Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4</p>	<p>Can they compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets? Can they explain how some materials dissolve in liquid to form a solution? Can they explain what happens when dissolving occurs? Can they use their knowledge of solids, liquids and gases to decide and describe how mixtures might be separated, including through filtering, sieving, evaporating? Can they give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals wood and plastic? Can they describe changes using scientific words? (evaporation, condensation) (Covered in Geography unit) Can they demonstrate that dissolving, mixing and changes of state are reversible changes? Can they 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? Can they use the terms 'reversible' and 'irreversible'?</p>	

YEAR 5&6 SUMMER TERM CYCLE B
EXTREME EARTH

National Curriculum Objectives	Knowledge	Links to Core Values
<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>Children use a ruler to draw the shape of a shadow cast by an object on a simple plan diagram. They predict and then measure the width of each shadow, and try to find what kind of set-up produces the widest shadows.</p> <p>Children learn that a periscope is a device made from 2 angled mirrors that enables the user to see around obstacles. Using the template provided, along with 2 small mirrors, children construct their own simple periscope. They attempt to explain how it works.</p> <p>Children learn that light rays travel in straight lines, and that mirrors can make light reflect (predict) at precise angles, depending on their own position and angle. Children look at 4 simple diagrams. They predict, and then calculate (using a ruler and protractor) the best position for a mirror, so that the viewer (a car driver) can see an object (a motorcycle headlamp). They look for patterns between different distances and angles in their diagrams.</p>	<p>Respect in Science is where we follow the school rules and our teachers. It can be exciting when we carry out investigations but we must stay safe.</p> <p>Perseverance in Science we need to solve problems and set investigation. Sometimes this might not work out, so we need to keep trying in a fair and logical manner</p> <p>Reflection in Science we need to look at what we have been working on. We try to set goal and improve our work.</p> <p>Working together in Science is important as we work with our buddies to solve problems.</p>
Skills		Key Vocabulary
<p>Exploring the way that light behaves, including light sources, reflection and shadows. They should talk about what happens and make predictions. Pupils might work scientifically by: deciding where to place rear-view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. They might investigate the relationship between light sources, objects and shadows by using shadow puppets. They could extend their experience of light by looking a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur)</p>	<p>Children learn about the main parts of the human eye, including the cornea, iris, pupil, lens, retina and optic nerve. They use this information to create and label their own diagram of a human eye, cutting and pasting the descriptions provided or writing their own.</p> <p>Children learn that light travels in straight lines and can be made to follow a path by placing mirrors in its path. Children use a simple grid and position mirrors at 45° angles to make light travel through a maze. They solve 12 increasingly difficult problems, and use a blank sheet to create their own.</p> <p>Children learn that we see light sources because they create light which travels in a straight line into our eyes. They learn that we can see non-light sources because light from light sources reflects (bounces) off them into our eyes.</p> <p>Children use a selection of images to build their own diagram showing how we see light sources and non-light sources.</p> <p>Children learn that white light is a combination of different colours, and that these colours exist on the visible light spectrum. They learn how white light can be split up into its component colours. Children use a prism and a light source to create a rainbow effect and discuss how it is cause. They learn that a range of colours can be combined into white light. Children create a spinner, which they spin using either string or a pencil, to demonstrate this.</p> <p>Children learn that shadows are formed when light is blocked by an opaque object, creating a pattern of light on</p>	<p>Light (6) light, travel, straight, <i>reflect</i>, reflection, light source, object, <i>shadows</i>, mirrors, periscope, rainbow, filters</p> <p align="center">Links to other Curriculum Areas</p>

	a surface. Children investigate what happens to its shadow when an object is moved towards a light source. They predict and then measure the width of an objects shadow at different distances from the light source. Children record their information in a table and use it to create a line graph. They attempt to explain the relationship between distance and shadow width.	
Prior Learning	Key Questions	Future Learning
Light Year3/4		