

Year Group and Subject Content Focus Area				
Reception	Science Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
<p><b>Understanding the World</b> Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</p> <ul style="list-style-type: none"> <li>• <b>Outer Space</b></li> <li>• <b>Earth</b></li> <li>• <b>Climate change</b></li> </ul>	<p>As part of our learning based on 'Out of this World' we will introduce space, whole humans have affected planet earth and also how they can play a part in reducing climate change and looking after the environment.</p> <p>Begin with talking about 'earth' being a planet. Investigate other planets in the solar system and how we relate to them. *How is space different to the natural world they live in? This will relate directly to their current experience, this learning will enhance their understanding. It will be relevant to all the children and their experiences.</p> <p><b>Discussing facts about the solar system</b> There are 8 planets in the solar system. Earth is the planet that we live on. The names of the planets are: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. The sun provides heat and light to the planets. The planets are very different from each other. The moon has craters on it, caused by rocks crashing onto the surface. Astronauts have landed on the moon, they have to wear space suits when they travel into space. There is no gravity or oxygen in the atmosphere.</p>	<p>Understand similarities and difference between the 8 planets in the solar system.</p> <p>Drawing on their experiences and observations how would they describe the planets.</p> <p>Beginning to appreciate that if planets were left undiscovered would this have altered science and knowledge?</p> <p>Also to know how humans have been destroying the earth's atmosphere</p>	<p>Sc1/1 Asking simple questions and recognising that they can be answered in different ways</p> <p>Identifying and classifying</p> <p>Using their observations and ideas to suggest answers to questions</p> <p>Gathering and recording data to help in answering questions.</p>	<p>Understand the world involves guiding children to make sense of the world they live in. To give them a clearer understanding of how we exist and special and precious planet earth is.</p> <p>Appreciating that humans have impacted on planet earth.</p> <p>Begin to understand that we have choices and decisions to make now to make a difference to our future life on earth.</p>

	<p><b>Where?</b> In the solar system there are 8 planets orbit the sun, in order from the closest to the sun.</p> <p><b>How do we know about the solar system?</b> For thousands of years the solar system was not recognised. First discoveries were through telescopes, the start of ‘Space Age’ in 1957 has changed that, scientists and astronomers continue to discover new facts.</p> <p><b>Why do we need to know about Outer Space?</b> We have learned that our planet earth is the only known one to have water and life. Without the heat from the sun, water on the earth we cannot survive. We have a responsibility to look after the planet earth. By learning about the planets we can inspire the need for change and care of it.</p> <p><b>How was it discovered?</b> <a href="https://www.spacekids.co.uk/spacehistory/">https://www.spacekids.co.uk/spacehistory/</a> Discuss timeline.</p> <p><b>What do we know about the solar system?</b> Children will learn facts about the planets, there will be a focus on planet earth, discuss how humans have not taken care of earth and ways we can support climate change and make a difference...</p>	<p>and how this can be changed. What can we do?</p>		
<p>Explore the natural world around them, making observations and drawing pictures of animals and plants.</p> <ul style="list-style-type: none"> <li>• <b>Environment and our part within it</b></li> <li>• <b>Plants</b></li> <li>• <b>Animals</b></li> </ul>	<p><b>Through this topic entitled ‘Oh how we grow’ we will be looking at the environment we live in; observing and exploring animals and plants living around us.</b></p> <p><b>We will begin by looking at our environment.</b> Where do we live? By locating this country (on a globe) and then town (on an atlas) the children get a sense of belonging and how they fit within the world. We were explore different habitats around the world and compare with our own. Links will be made to children living and coming from different countries – we will celebrate the diversity within our world and explore countries that children from within our setting may have their cultural roots.</p> <p>We will then explore in more detail our immediate environment.</p>	<p>Understand where we live, our environment and our place within it. Linking directly to what the children observe and experience all around them.</p> <p>Understanding the world as having many different environments and how habitats are shaped through the environment.</p>	<p>Specific Area: 2020 <b>Explore the natural world around them, making observations and drawing pictures of animals and plants</b></p> <p><i>Links to NC – YR 1 and 2</i> <b>Working scientifically</b></p>	<p>Begin to question and offer explanations to their own observations.</p> <p>Looking within their own environment and comparing/contrasting with the wider world.</p> <p>Making links between animals, humans and the natural world.</p> <p>Understanding our role within the natural world and how our</p>

	<p>How living near the coast, the habitat and climate we have, might influence the plants and animals that live and grow here.</p> <p>After we have explored our environment we will begin to look at <b>plants and growing</b> in more detail.</p> <p>Understanding:</p> <ul style="list-style-type: none"> <li>• The difference between living and non-living.</li> <li>• What plants need in order to flourish? Experiment with taking away one sources – will the plant continue to grow?</li> <li>• Explore plant life cycles.</li> <li>• Grow a plant from seed – observe the changes throughout and record changes.</li> <li>• Introduce types of plants/trees evergreen and deciduous</li> <li>• <b>The importance of trees within our planet. Trees provide oxygen and also provide the habitat for many creatures. – playing our part in protecting our word</b></li> </ul> <p><b>Animals</b></p> <ul style="list-style-type: none"> <li>• Sorting animals, using categories such as: wild or tame, carnivore or herbivore, by habitat</li> <li>• Understanding life cycles, exploring animals that lay eggs and those that give birth to young animals.</li> <li>• Linking back to environments - where the animals might live</li> <li>• Caring for and protecting animals.</li> <li>• Exploring animals that are found within our local environment – observing how they live and grow</li> <li>• Caring for chicks – observe as the grow from the egg, noting changes in appearance and movement</li> <li>• Exploring underground – what lies beneath our soil? Explore the underground habitats of worms, woodlice and more.</li> </ul>	<p>Accepting our responsibility in protecting the natural world and our impact on how the world is changing. Understanding the importance and balance of animals and plants within the world.</p> <p>The importance of observing and watching closely as plants and animals grow and change – what it means to be alive.</p> <p>Be introduced to new subject specific vocabulary.</p>	<p>*asking simple questions and recognising that they can be answered in different ways</p> <p>*observing closely, using simple equipment</p> <p>*performing simple tests</p> <p>*identifying and classifying</p> <p>*using their observations and ideas to suggest answers to questions</p> <p>*gathering and recording data to help in answering question</p> <p><b>Program of study plants –</b></p> <p>*identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>*identify and describe the basic structure of a variety of common flowering plants, including trees</p> <p><b>Animals-</b></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,</p>	<p>actions will shape its future.</p> <p>Looking for links and differences between living things.</p> <p>Being amazed by the life cycle of different creatures and plants and the huge transformation that takes place – given the right conditions to flourish in.</p>
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			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	
Reception - Understand some important processes and changes in the natural world, including the seasons and natural states of matter.	<p><b>Through the topic based on the book ‘Lost and Found’ we will be looking at changing states of matter and the concepts of floating and sinking. In term 3 we will also explore different seasons and the changes that occur as a result of them.</b></p> <p>To learn about changing states of matter and the concepts of floating and sinking, we will begin by reading the book ‘Lost and Found’ by Oliver Jeffers. Firstly, we will discuss the book’s setting, Antarctica, and observe where this is on a map in relation to where we live. We will then model and discuss natural features of Antarctica, and compare them to our immediate environment.</p> <p>Next, we will focus on the ice found in Antarctica and explore <b>how</b> ice changes and <b>what</b> causes ice/water to change.</p> <ul style="list-style-type: none"> <li>• Introduce the concepts of melt and freeze</li> <li>• What causes ice to melt and water to freeze?</li> <li>• Why is ice melting in Antarctica?</li> </ul> <p>After we have focused on changes that occur in the natural environment, we will discuss the boats illustrated in ‘Lost and Found’ and investigate the concepts of floating and sinking.</p> <ul style="list-style-type: none"> <li>• What is meant by floating and sinking?</li> <li>• What causes something to float/sink?</li> <li>• What materials are more likely float/sink?</li> </ul> <p>In term 3, we will introduce the 4 different seasons found in the UK. We will discuss each season’s different features and select texts to share about the changing seasons. We will take children</p>	<p>Introduce children to scientific vocabulary.</p> <p>Awareness of the impacts of their own actions and life choices on the wider world. What can we do to protect areas such as Antarctica?</p> <p>Understand that the world has many contrasting environments – improve Geographical knowledge.</p> <p>Introduce big scientific concepts</p>	<p>Specific Area: 2020          Recognise that some environments are different to the one in which they live.</p> <p>Understand the effect of changing seasons on the natural world around them.</p> <p><i>Links to NC – YR 1 and 2</i> <b>Working scientifically</b>          Seasonal Changes – observe changes across the four seasons</p> <p>Observe and describe whether associated with the seasons and how day length varies</p> <p>Understand geographical similarities and differences</p> <p>Identify daily and seasonal weather patterns in the UK and the location of</p>	<p>Ability to look at own environment and compare/contrast with the wider world.</p> <p>Offer scientific explanations for their own observations in everyday life.</p> <p>Explain changes seen in immediate environment.</p>

	<p>outside so they can observe changes in the environment at different points in the year.</p> <ul style="list-style-type: none"><li>• What are the different seasons?</li><li>• What changes occur between each season?</li><li>• How do animals behave differently as the seasons change?</li></ul>		<p>hot and cold areas in the world</p> <p>Identify and name a variety of everyday materials</p>	
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Year 1	Science Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
<p>Seasonal Changes</p> <p>National Curriculum: Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>observe changes across the 4 seasons</li> <li>observe and describe weather associated with the seasons and how day length varies</li> </ul>	<p><b><u>What seasonal changes happen in Autumn, Winter, Spring and Summer?</u></b></p> <ul style="list-style-type: none"> <li>Pupils to know there are 4 seasons.</li> <li><b>Autumn:</b> Know that autumn starts September and ends in December. Know that the <b>days get shorter</b> and there is less sunlight. Know also that the days <b>start to get colder</b> because of the sunlight being weaker. Pupils to know that the leaves start to turn bright colours and fall off some of the trees. Know that animals begin to store food for the winter.</li> <li><b>Spring:</b> Starts in March and ends in June. Know that the <b>weather turns warmer</b> and the <b>trees begin to grow their leaves</b>. Know that plants start to flower. Many birds start building their nests and lots of animals have their young such as lambs.</li> <li><b>Summer:</b> Starts in June and ends in September. Know that the weather is usually <b>warm</b>, trees have full green leaves and the <b>amount of time it is light is longer</b>.</li> <li><b>Winter:</b> Starts in December and ends in March. Know that winter is the <b>coldest season</b>. Some animals sleep all winter (<b>hibernation</b>). Know that winter has the <b>shortest daylight hours</b>.</li> </ul> <p><b><u>What happens to the trees?</u></b></p> <ul style="list-style-type: none"> <li>Pupils to know that a deciduous tree is one that loses its leaves in autumn and grows new ones in early spring. Know that evergreen trees remain green throughout the season.</li> </ul>	<ul style="list-style-type: none"> <li>Seasonal changes</li> <li>observe changes across the 4 seasons (Autumn)</li> </ul> <p>observe and describe weather associated with the seasons and how day length varies</p>	<p><b>Why here?</b></p> <p>EYFS: Knowledge and Understanding of the World</p> <p>Seasonal Changes</p> <p>KS2: Recognising environments change</p> <p>Links to Geography Earth, Space and movement. Day, night, year, etc.</p>	<p>Ask simple relevant questions</p> <p>Identify and classify</p> <p>Use observation and ideas to answer questions</p> <p>Gather and record data</p>

<p><b>Everyday Materials</b></p> <p>NC: Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• distinguish between an object and the material from which it is made</li> <li>• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>• describe the simple physical properties of a variety of everyday materials</li> <li>• compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils to know that <b>materials are the matter or substance that objects are made from.</b></li> <li>• Know that materials may include: <b>metal, plastic, wood, glass, wool, water and rock.</b></li> <li>• <b>Naturally made</b> materials come from plants, animals or the ground; <b>stone, wool and wood.</b></li> <li>• <b>Man-made materials</b> are made or caused by human beings; <b>paper, plastic, glass, metal, brick and cardboard.</b></li> <li>• Pupils to know that materials have physical properties. Know the terms; <b>hard, soft; stretchy, stiff; shiny, dull; rough, smooth; waterproof, not waterproof, absorbent; opaque, transparent</b></li> <li>• Know that some materials are better suited for a purpose than others e.g. the material used for an umbrella needs to be waterproof</li> </ul>	<ul style="list-style-type: none"> <li>• distinguish between an object and the material from which it is made</li> <li>• identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</li> <li>• describe the simple physical properties of a variety of everyday materials</li> <li>• compare and group together a variety of everyday materials on the basis of their simple physical properties</li> </ul>	<p><b>Why here?</b></p> <p>EYFS: Knowledge and Understanding of the World</p> <p>KS2: States of matter Properties and changes of materials</p>	<p>Ask simple relevant questions</p> <p>Identify and classify</p> <p>Use observation and ideas to answer questions</p> <p>Gather and record data</p> <p>Perform simple tests</p>
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<p><b>Animals, including humans</b></p> <p>NC: Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>• identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>• describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</li> <li>• identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils to know that different animals vary in many ways having different structures e.g., wings, tails, ears, etc. Know that they also have different skin coverings e.g. scales, feathers, hair. Know that these key features can be used to identify them.</li> <li>• Know the names for a variety of common animals including <b>fish, amphibians, reptiles, birds and mammals</b></li> <li>• Pupils to know the terms <b>carnivores, herbivores, and omnivores.</b></li> <li>• Animals that eat plants exclusively are <b>herbivores (cow, horse, goat etc.)</b>. Animals that eat only meat are <b>carnivores (Lion, tiger, lizard etc.)</b>. When animals eat both plants and meats they are <b>omnivores (dog, cat, crow etc.)</b>.</li> <li>• Pupils to know the basic parts of the human body. Know where to identify; <b>head, neck, arm, elbow, leg, knee, face, ear, eye, hair, mouth and teeth.</b></li> <li>• Know the senses include and know which body part is associated with each sense; <b>sight (eyes), hearing (ears) , touch (know that the sense of touch is associated with the whole body), taste (tongue) and smell (nose)</b></li> <li>• Know how to create a fact file for a chosen animal. Research the animal's behaviour, environment, habitat, family, diet, numbers, conservation and structure. Presented as a non-chronological report with an organised presentation (Cross Curriculum link with English).</li> </ul>	<ul style="list-style-type: none"> <li>• identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>• identify and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>• describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</li> </ul> <p>identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p>	<p><b>Why here?</b></p> <p>Children know about the 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 (ELG).</p> <p><b>Prepares for:</b></p> <p>Describe how animals obtain the food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food (Year 2)</p>	<p>Ask simple relevant questions</p> <p>Identify and classify</p> <p>Use observation and ideas to answer questions</p> <p>Gather and record data</p>
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			<p>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 (Year 6).</p> <p>Give reasons for classifying plants and animals based on specific characteristics (Year 6).</p>	
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<p>Plants</p> <p>NC: Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> <li>• identify and describe the basic structure of a variety of common flowering plants, including trees</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils to undertake chosen plant diary observation (classes to grow individual plants). Pupils to know what a plant needs in order to grow; <b>light, air, water, nutrients</b>. (Make observations of how plants change over time).</li> <li>• Know the basic parts of a plant. Know that plants have common parts (<b>flower, leaves, stem, roots</b>), but they vary between the different types of plants. (Consider the misconception that all plants are flowering plants grown in pots with coloured petals, green leaves and a stem (not all stems are green)).</li> <li>• Pupils to know the basic structure of a variety of flowering plants and trees; <b>petals, roots, stem, leaves, trunk, branch, seed, bulb and fruit</b>. (Addressing the misconceptions trunk is a stem and blossom is a flower).</li> <li>• Pupils to know the names of some of the plants found in the local area; <b>Silver Birch, Horse Chestnut, Flowering Cherry, Conifer, dandelion, daisy, daffodil</b></li> <li>• Pupils to know that a <b>deciduous tree</b> is one that loses its leaves in autumn and grows new ones in early spring. Know that <b>evergreen trees</b> remain green throughout the season.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Seasonal changes (Revisit)</b></li> <li>• observe changes across the 4 seasons (Spring)</li> <li>• observe and describe weather associated with the seasons and how day length varies</li> </ul> <p><b>Plants</b></p> <ul style="list-style-type: none"> <li>• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</li> </ul> <p>identify and describe the basic structure of a variety of common flowering plants, including trees</p>	<p><b>Why here?</b></p> <p>Children know about the 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 (ELG).</p> <p><b>Prepares for:</b></p> <p>Observe and describe how seeds and bulbs grown into mature plants (year 2).</p> <p>Find out and describe how plants need water, light and a suitable temperature to</p>	<p>Pupils work scientifically by: observing closely, using magnifying glasses, and comparing and contrasting familiar plants; describing how they were able to identify and group them, and drawing diagrams showing the parts of different plants including trees. Pupils will keep records of how plants have changed over time and compare and contrast what they have found out about different plants.</p>
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			<p>grow and stay healthy (Year 2).</p> <p>Identify and name a variety of plants and animals in their habitats, including microhabitats (Year 2)</p> <p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers (Year 3).</p> <p>Investigate the way in which water is transported within plants (Year 3).</p>	
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Year 2	Science Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
<p><b>Everyday Materials</b> NC: Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>• identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses</li> <li>• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching</li> </ul>	<ul style="list-style-type: none"> <li>• Pupils to know that metal can be used for; <b>bridges, buildings, ships (iron and steel), coins, cans (aluminum), knives (steel), cooking pots (Aluminum), wires (copper), trains, cars, motors (steel)</b></li> <li>• Know that wood can be used for; <b>furniture, buildings, staircases, paper, doors, fences, some musical instruments; guitar, violin, piano, matches, telegraph poles</b></li> <li>• Know that plastic can be used for; <b>crisp packets, bottles, sweet wrappers, carrier bags, food containers, cotton buds, disposable coffee cups, lunch boxes, straws and computer hardware casings.</b></li> <li>• <b>Pupils to know that different materials can be used for the same thing; e.g. spoons can be made from plastic, wood, or metal</b></li> <li>• Know that cardboard has many uses; <b>for packaging, cereal boxes, paper towel and toilet paper rolls, tissue boxes and milk or juice cartons.</b></li> <li>• <b>Pupils to know that everyday materials can be found in other places; compare usage at home, at school and on visits.</b></li> <li>• <b>Pupils to know the terms; squashing, bending, twisting and stretching.</b></li> <li>• <b>Squashing; squash an object by pushing both hands together.</b></li> <li>• <b>Bending; Bend an object by grabbing both ends of the object and bringing the ends inwards together.</b></li> <li>• <b>Twisting; twist an object by turning your hands in opposite directions.</b></li> <li>• <b>Stretching; Stretch an object by pulling your hands slowly and gently apart.</b></li> <li>• Pupils to know that some materials will stretch, twist, bend and squash.</li> </ul>	<p>Describe how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.</p> <p><b>I can explain how objects made from some materials can be changed</b></p>	<p><b>Why here?</b> <b>Year 1</b> – understanding of a difference between an object and the material from which it is made. Identify a variety of everyday materials and describe their properties. <b>What does this prepare for?</b> <b>Year 3</b> – compare how things move on different surfaces.</p> <p>How magnets attract or repel each other and attract some materials and not others.</p>	<p>Asking simple questions and recognising that they can be answered in different ways.</p> <p>Observing closely, using simple equipment.</p> <p>Performing simple tests.</p> <p>Identifying and classifying</p> <p>Using their observations and ideas to suggest answers to questions.</p> <p>Gathering and recording data to help in answering questions.</p>

<p>Polar Express Living Things and their habitats</p>	<p><b>What is a habitat?</b> Pupils to know that a <b>habitat is a natural environment or home of a variety of plants and animals</b>. Know that the habitat provides the basic needs of animals – shelter, food and water.</p> <p><b>How do arctic foxes adapt to their habitat in summer/winter?</b> Pupils to know that animals live in a habitat to which they are suited, which means that animals have <b>suitable features that help them to move and find food</b>. Know that the Arctic fox ears, legs and muzzle are short to <b>conserve heat</b>. Know that it has <b>deep, thick fur to maintain a consistent temperature</b>. Arctic foxes also have <b>thick fur on their paws which allows them to walk on both snow and ice</b>.</p> <p><b>Vocabulary: Names of habitat. Arctic</b></p> <p><b>Plants and their habitats</b> <b>How do different arctic plants adapt to their habitats?</b> Plants live in a habitat to which they are suited, which means that plants have suitable features that help them to grow well. The habitat provides the basic needs of plants – shelter, food and water.</p>	<p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other <b>I can explain that most living things live in habitats which suit them and depend on each other (LIVING THINGS)</b></p> <p>Identify and name a variety of plants and animals in their habitats including micro-habitats <b>I can name some plants and animals in their habitats including micro-habitats (LIVING THINGS)</b></p>	<p><b>Why here?</b> <b>Year 1</b> – identify and name a variety of common animals <b>What does this prepare for?</b> <b>Year 4</b> – recognise that environments can change that this can sometimes pose dangers to living things.</p>	<p>Asking simple questions and recognising that they can be answered in different ways.</p> <p>Identifying and classifying</p> <p>Using their observations and ideas to suggest answers to questions.</p> <p>Gathering and recording data to help in answering questions.</p>
<p><b>Animals (including humans)</b> Term 4</p> <p>NC:</p> <ul style="list-style-type: none"> <li>Notice that animals, including humans, have offspring which grow into adults.</li> </ul>	<p><b>Basic needs humans and animals.</b> Pupils to know what humans and animals need for survival (<b>food, water, air</b>). Know that the basic needs of <b>feeding, drinking and breathing must be satisfied in order to survive</b>. Pupils to know that to maintain a healthy body, a healthy mind is important too (PSHE link).</p>	<p>Understand that animals, including humans, have offspring which grow into adults. <b>I can explain that animals, including</b></p>	<p><b>Why here?</b></p> <p>Links with core text 'Lighthouse Keeper'. Fishing, healthy eating etc.</p>	<p>Asking simple questions and recognising that they can be answered in different ways.</p>

<ul style="list-style-type: none"> <li>Find out about and describe the basic needs of animals, including humans for survival (water, food and air)</li> </ul>	<p><b>Nutrition: (D&amp;T cross-curricular target)</b> Pupils to know where food comes from (farmed, grown and caught).</p> <p><b>Nutrition - food hygiene</b> Pupils to know that <b>food can be classified in a range of ways.</b> Pupils to know that it is important to have a <b>balanced diet (dairy, carbs, proteins, fats, fruit and veg).</b> Know and name foods in each section of the 'Eatwell Guide'. Pupils to know how to plan and make a healthy meal.</p> <p><b>Exercise and personal hygiene.</b> Know the importance for humans <b>to exercise, eating the right amounts of food and hygiene.</b> Pupils to know that good hygiene is also important in preventing infections and illnesses. (Incorporate into PE.)</p> <p><b>Offspring/growing.</b> Know the difference between <b>living things having young which grow into adults and others that lay eggs/hatch young at a later stage.</b> Pupils to know that the young of <b>some animals do not look like their parents</b> e.g. tadpoles. Pupils to <b>know the appropriate names for each stage and explore physical changes.</b> Pupils to know changes and order them in humans/animals.</p>	<p><b>humans, have babies which grow into adults</b></p> <p>Describe the basic needs of animals, including humans, for survival (water, food and air) <b>I can explain the needs of animals, including humans, for survival</b></p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene <b>I can explain the importance of exercise, eating healthily and keeping clean</b></p> <p>D&amp;T: I can understand the need for a variety of food in a diet</p> <p>I can understand that all food has to be farmed, grown or caught</p>	<p><b>Yr 1</b> - They should have a secure understanding of animals and human body by this point.</p> <p><b>What does this prepare for?</b></p> <p><b>Yr 3</b> - Identify that animals/humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p> <p>Explain why humans and some other animals have skeletons and muscles.</p>	<p>Performing simple tests.</p> <p>Identifying and classifying</p> <p>Using their observations and ideas to suggest answers to questions.</p> <p>Gathering and recording data to help in answering questions.</p>
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		I can use a wider range of cookery techniques to prepare food safely		
Plants	<p><b>Plant seeds/bulbs and observe how they grow</b> (continuing over the course of the term) Pupils to know that plants may grow from seeds and bulbs. Know that seeds and bulbs will develop through the following process; <b>Germinate – seedlings – mature plants.</b> Know that every single <b>seed</b> has the beginnings of a new plant inside it, along with a little store of food to help it grow. Know that a <b>bulb</b> lets the plant rest underground over the winter when it is too cold, then grow back later in the year when conditions are right.</p> <p>Pupils to know what plants need to grow and stay healthy (on going over a couple of weeks). Pupils know that seeds remain dormant (asleep) until they are given soil, water, and light. Although warmth is usually required for a seed to germinate and grow, this varies depending on the type of seed. Not all seeds are dependent on sunlight for germination. However, the amount of light does greatly affect it. Pupils to know that seeds and bulbs need to be planted outside at particular times of year and will germinate and grow at different rates.</p> <p>Pupils to know that there are a variety of habitats and there are a variety of plants which grow there (field, beach etc) Pupils to know that different plants need varying things (full sun, partial or full shade / amounts of water / space).</p>	<p>Observe and describe how seeds and bulbs grow into mature plants. (PLANTS) <b>I can explain how seeds and bulbs grow into plants</b></p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy and describe the impacts of changing these. (PLANTS) <b>I can describe how plants need water, light and a suitable temperature to grow and stay healthy</b></p> <p>Identify and name a variety of PLANTS and animals in their habitats, including micro-habitats. (LIVING THINGS)</p>	<p><b>Why here?</b> <b>Y1</b> – identify and describe basic structure of flowering plants. Identify and name common plants. <b>What does this prepare for?</b> <b>Y3</b> – identify and describe functions of parts of plants. Requirements of plants for life and growth.</p>	<p>Asking simple questions and recognising that they can be answered in different ways.</p> <p>Observing closely, using simple equipment.</p> <p>Performing simple tests.</p> <p>Identifying and classifying</p> <p>Using their observations and ideas to suggest answers to questions.</p> <p>Gathering and recording data to help in answering questions.</p>

<p><b>Living things and their habitats</b></p>	<p>Pupils to know that all objects are either living, dead or have been alive. Know that <b>living things are plants and animals</b>. Pupils to know that <b>dead things include dead animals and plants and parts of plants and animals that are no longer attached: leaves and twigs, shells, fur, hair and feathers</b>. Know that anything <b>metal, plastic, or stone has never been alive</b>.</p> <p><b>What is a food chain?</b> Know that plants and animals in a habitat depend on each other for food and shelter etc. The way that the animals obtain their food from plants and other animals can be shown in a <b>food chain</b>. Pupils to know that a <b>food chain is a list of what eats what</b>. Know that most food chains begin with a green plant. Food chains end with a <b>top predator</b>.</p> <p><b>Different sources of food</b></p> <ul style="list-style-type: none"> <li>Identify and name a variety of carnivores, herbivores and omnivores.</li> <li>Pupils to know the terms <b>carnivores, herbivores, and omnivores</b>.</li> <li>Animals that eat plants exclusively are <b>herbivores (cow, horse, goat etc.)</b>. Animals that eat only meat are <b>carnivores (Lion, tiger, lizard etc.)</b>. When animals eat both plants and meats they are <b>omnivores (dog, cat, crow etc.)</b>.</li> </ul> <p><b>Why do animals live where they live?</b> Animals live in a <b>habitat</b> to which they are suited, which means that animals have suitable features that help them to move and find food. Pupils to know that a <b>habitat is a natural environment or home of a variety of plants and animals</b>.</p> <p>Know that <b>woodlice live in a damp, dark place beneath rotting materials</b>. Know that <b>worms have pointed heads to help it cut through the soil. It has brown camouflaged skin that blends in with the soil</b>. Know that <b>fish have streamlined bodies that cuts through the water, fins to help it move and balance, gills let it breathe in water</b>.</p> <p><b>How do habitats meet basic needs? –</b></p>	<p>Explore and compare the differences between things that are living, dead, and things that have never been alive <b>I can explain the differences between things that are living, dead and things that have never been alive</b></p> <p>Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other <b>I can explain that most living things live in habitats which suit them and depend on each other</b></p> <p>Identify and name a variety of plants and animals in their habitats, including micro-habitats <b>I can name some plants and animals in their habitats including micro-habitats</b></p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify</p>	<p><b>Why here?</b> <b>Y1 – identify and name a variety of common animals (reptiles, fish, amphibians, birds and mammals. Herbivores, carnivores and omnivores)</b> Changes in weather.</p> <p><b>What does this prepare for?</b> <b>Y4 – living things can be grouped in different ways. Classifying living things. Recognise that environments can change and pose danger to living things.</b></p>	<p>Asking simple questions and recognising that they can be answered in different ways.</p> <p>Identifying and classifying</p> <p>Using their observations and ideas to suggest answers to questions.</p> <p>Gathering and recording data to help in answering questions.</p>
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	<p>Pupils to know that within a habitat there are different habitats. These habitats have different conditions and affect which plants and animals live there. Pupils to know that <b>a micro habitat is a very small habitat</b> e.g. woodlice under logs, leaf litter or stones.</p>	<p>and name different sources of food <b>I can explain how animals get their food from plants and other animals using a simple food chain</b></p>		
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Year 3	Science Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
<p>Animals including humans</p> <p>NC: Pupils should be taught to;</p> <ul style="list-style-type: none"> <li>● 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.</li> <li>● Identify that humans and some other animals have skeletons</li> </ul>	<p><b>Nutrition</b> Pupils to know the different Food types (protein, nutrients...) and their impact on the body (protein for repair...)</p> <p><b>Balanced diet</b> Pupils to know the different food groups (<b>dairy products, carbohydrates (bread, pasta cereals and rice), proteins (fish, meat, eggs), fats, fruit and vegetables</b>) and portions sizes. Pupils to know that a healthy diet (<b>balanced diet</b>) should try to include one portion of food from each of these groups every day.</p> <p><b>Voluntary and involuntary muscles</b> Pupils to know the difference between muscles we control (<b>voluntary</b>) and muscles we don't (<b>involuntary</b>). Pupils to know where to identify the two main muscles in the arms (bicep and triceps) and legs (quad and ham string).</p> <p><b>Skeleton</b> Pupils to know the functions of the skeletal system and what it does (<b>support, protect and help movement</b>). Know the terms vertebrate (animals that have a backbone inside their bone) and invertebrates (don't have a backbone). Pupils to know that exoskeleton is the external skeleton that supports and protects an animal's body. Know that some animals that have no bones at all e.g., slug moves because it is entirely made of muscle.</p> <p><b>Ligaments and tendons.</b> Know how bone is attached to bone (<b>ligaments</b>) and how muscles are attached to bone (<b>tendons</b>).</p>	<p>Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.</p> <p>Explain why humans and some other animals have skeletons and muscles.</p>	<p><b>Why here?</b> Year 1- animals groups and parts of the human body.</p> <p>Y 2- Animals, human life cycles (babies and offspring) and food groups.</p> <p><b>Prepares for?</b></p> <p>Year 4- Learning about a skeletal systems prepares them for the digestive system. Teeth.</p> <p>Year 5- life cycles developing into old age. .</p> <p>Year 6- Circulatory system.</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them (Year 3 focus)</p> <p>Gather, record, classify and present data in a variety of ways to help in answering questions (Year 3 focus)</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables (Year 3 focus)</p> <p>Use straightforward scientific evidence to answer questions or to support his/her findings (Year 3 focus)</p>
<p>Light</p> <p>NC: recognise that they need light in order to see things and</p>	<p><b>What is light and dark?</b></p>	<p>Explain that I need light in order to see things and that</p>	<p><b>Why here?</b></p>	<p>Report on findings from enquiries, including oral</p>

<p>that dark is the absence of light</p> <ul style="list-style-type: none"> <li>♣ notice that light is reflected from surfaces</li> <li>♣ recognise that light from the sun can be dangerous and that there are ways to protect their eyes</li> <li>♣ recognise that shadows are formed when the light from a light source is blocked by an opaque object</li> <li>♣ find patterns in the way that the size of shadows change.</li> </ul>	<p>Pupils to know that light travels in <b>straight lines</b> and that there are two sources of like <b>natural and artificial</b>. Light sources are objects that give out light e.g. The Sun, light bulbs, candles</p> <p>Pupils to know that they need light in order to see things and that dark is the absence of light.</p> <p><b>Sun safety-</b> Know that the invisible light waves from the sun are called '<b>ultra violet</b>'. Identify the dangers of direct sunlight.</p> <p><b>Light reflecting on different surfaces.</b> Pupils to know that when light from an object is reflected by a surface, it changes direction. Know that light bounces off the surface at the same angle as it hits. Know that smooth, shiny surfaces such as mirrors and polished metals reflect light well. Dull and dark surfaces such as dark fabrics do not reflect light well.</p> <p><b>Shadows</b> Know that a <b>shadow is formed when light from a source is blocked by an opaque object</b>. Pupils to know that shadows change due to the direction of the light source. Know that <b>the closer an object is to the source of light the bigger the shadow</b>.</p>	<p>dark is the absence of light.</p> <p>Show that light is reflected from surfaces.</p> <p>Explain that light from the sun can be dangerous and that there are ways to protect eyes.</p> <p>Show how shadows are formed when the light from a light source is blocked by a solid object.</p> <p>Show that there are patterns in the way that the size of shadows change.</p>	<p>EYFS- space, beach (light, warm) , health and safety, weather and seasons.</p> <p>Year 1- seasonal changes (Day and night) and everyday material</p> <p>Year 2- Everyday materials</p> <p><b>Prepares for?</b></p> <p>Year 4- How sounds waves travel?</p> <p>Year 5- Space</p> <p>Year 6- Light</p>	<p>and written explanations, displays or presentations of results and conclusions (Year 3 focus)</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (Year 3 focus)</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes (Year 3 focus)</p>
<p><b>Plants</b></p> <p>NC: identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p> <ul style="list-style-type: none"> <li>♣ 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</li> <li>♣ investigate the way in which water is transported within plants</li> <li>♣ explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</li> </ul>	<p><b>Functions of different parts of flowering plants:</b></p> <p><b>Roots:</b> Know that the <b>roots anchor the plant</b> and take in water and some nutrients from the soil. Know that plants do not take in food through their roots. Know that different plants grow in different soil conditions and some also store food in their roots.</p> <p><b>Stem/trunk:</b> Know that a stem performs the following functions in a plant: (i) It supports branches, <b>leaves, flowers</b>, and fruits. (ii) It transports <b>water</b> and <b>minerals</b> from the <b>roots</b> to the <b>leaves</b> and other parts of plants. (iii) It transports food from <b>leaves</b> to different parts of the plant.</p> <p><b>Leaves:</b> Know that the leaves are necessary for <b>nutrition</b> (Feeding). The green chlorophyll in the leaves uses sunlight to change carbon dioxide gas and water into food (photosynthesis)</p>	<p>Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leave and flowers.</p> <p>Explore the requirement 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><b>Why here?</b></p> <p><b>EYFS-</b> Label parts of the plant. What is needs?</p> <p><b>Year 1-</b> Name common plants. Seasonal cycle and structure of plant. Compare different plants.</p> <p><b>Year 2-</b> What plans would grow</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them (Year 3 focus)</p> <p>Set up simple practical enquiries, comparative and fair tests (Year 3 focus)</p> <p>Make systematic and careful observations</p>

	<p><b>Flowers:</b> Know that the flowers are necessary for <b>reproduction</b>. They have colour and smell to attract insects. They make pollen which join to the eggs. Part of the flower dies and becomes the new fruit with seeds.</p> <p><b>What are the requirements of plants for life and growth and how they vary from plant to plant?</b> Know that plants need <b>air, light, warmth, water and nutrients</b> to be healthy. Know that a plant that is not watered will have a weak stem and dried up leaves and will eventually die. Know that a seed will not produce a plant at all if it is kept too cold. The seed needs warmth to germinate. Know that a cactus will grow best in lots of light, good drainage, high temperatures and low moisture.</p> <p><b>How is water transported within plants?</b> Know that the <b>roots absorb water from the soil. The stem transports water to the leaves. Water evaporates from the leaves.</b></p> <p><b>What part do flowers play in the life cycle of flowering plants?</b> Pupils to know that <b>flowers</b> contain structures that play a part in <b>reproduction</b>. The job of making new plants is done by the flowers. Know the flowers contain the pollen and eggs which make seeds. Pupils to know that the <b>male parts are the stamens</b>. The stamen is made up of the <b>anther and the filament</b>. Know that the anther contains the pollen. Pupils to know that the carpel conations the <b>female</b> parts. They contain the <b>stigma, style and the ovary</b>. Know that the <b>ovary contains the eggs</b>. Pupils to know that <b>pollination</b> is the process where <b>pollen is transferred from the anther to the stigma</b>. Know that seed formation is the joining of the pollen with the egg (fertilisation) Know that seed dispersal occurs in three ways; by wind (dandelion, sycamore), by animals (apple, burdock) and by explosion (peas, laburnum)</p> <p>Three ways to disperse a fruit with its seeds: <b>By wind; The fruits are light and feathery</b> <b>By animals; The fruits are juicy or sticky</b> <b>By explosion; The fruit skin (pod) dries up and splits open</b></p>	<p>Investigate the way in which water is transported with plants.</p> <p>Explore the part of that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	<p>in each season? Different trees and plant grow around the world. Food chain- producer.</p> <p><b>Prepare for?</b></p> <p><b>Year 4-</b> environmental changes</p> <p><b>Year 5-</b> Life cycles - reproductions of plants.</p> <p><b>Year 6-</b></p>	<p>and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers (Year 3 focus)</p>
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<p><b>Rocks</b></p> <ul style="list-style-type: none"> <li>compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</li> <li>♣ describe in simple terms how fossils are formed when things that have lived are trapped within rock</li> <li>♣ recognise that soils are made from rocks and organic matter.</li> </ul>	<p><b>Lesson 1: Rocks- observations</b> The rocks and stones that we see all over the world exist in three different types: <b>igneous rocks</b>, <b>sedimentary rocks</b> and <b>metamorphic rocks</b>.</p> <p><b>Lesson 2: Rocks- tests</b> Igneous rock is formed when <b>magma</b> pours out onto the surface of the Earth. Once the magma is on the Earth's surface it is called <b>lava</b>. It cools down and becomes solid igneous rock. Granite and basalt are types of igneous rock. Sedimentary rock is formed when small fragments of rock or shell settle on the ground and are squeezed together in layers over long periods of time. Limestone and sandstone are types of sedimentary rock. Metamorphic rock is formed when the Earth's crust is squeezed and heated because of the movement of tectonic plates. This changes the crust into new types of rock. Marble and slate are types of metamorphic rock.</p> <p><b>Lesson 3: Fossils- Women in science- Marry Anning</b> Hidden in some rocks, we can find objects that tell us about things that lived a long time ago. A long time ago, some plants and animals that died were quickly covered by <b>silt</b> or mud so that they did not rot. Slowly, the mud or silt around the dead plant or animal was squeezed until it became hard rock. Eventually, the dead plant or animal was replaced by minerals that got in carried by water penetrating the rock. This left behind a different rock that was the same shape as the plant or animal that had lived a long time ago. These special rocks are called <b>fossils</b></p> <p><b>Lesson 4: Fossils- Practical</b></p> <p><b>Lesson 5: Soil</b> The soil that is all over the Earth is made from tiny particles of rock that have been broken down over a long period of time by weather. This process is called <b>weathering</b>.</p> <p><b>Lesson 6: Recap/ Quiz</b></p>	<p>I can explain that soils are made from rocks and organic matter.</p> <p>I can simply describe how fossils are formed when things that have lived are trapped within rock.</p> <p>I can examine and do practical experiments on various types of rocks in order to group them on the basis of their appearance and simple physical properties.</p>	<p><b>Why here?</b> Year 1- Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)</p> <p>Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)</p> <p>Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)</p> <p>Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)</p> <p>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. (Y2 - Uses of everyday materials)</p> <p><b>Prepares for?</b> Year 6- Recognise that living things have changed over time and that fossils provide information about living</p>	<p>I can make observations and take measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>I can record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Ask relevant questions and use different types of scientific enquiries to answer them (Year 3 focus)</p> <p>Identify differences, similarities or changes related to simple scientific ideas and processes (Year 3 focus)</p> <p>Use straightforward scientific evidence to answer questions or to support his/her findings (Year 3 focus)</p>
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			<p>things that inhabited the Earth millions of years ago. (Y6 - Evolution and inheritance)</p> <p>KS3- The composition of the Earth. (KS3)</p> <p>The structure of the Earth. (KS3)</p> <p>The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. (KS3)</p>	
<p><b>Forces and Magnets</b></p> <ul style="list-style-type: none"> <li>• compare how things move on different surfaces</li> <li>♣ notice that some forces need contact between two objects, but magnetic forces can act at a distance</li> <li>♣ observe how magnets attract or repel each other and attract some materials and not others</li> <li>♣ 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</li> <li>♣ describe magnets as having two poles</li> <li>♣ predict whether two magnets will attract or repel each other, depending on which poles are facing.</li> </ul>	<p><b>Lesson 1: Push and Pull</b> Forces are pushes or pulls. <b>Contact forces</b> are pushes and pulls that are felt when two objects are touching each other. There are different types of contact force: <b>impact forces, strain forces</b> and <b>friction forces</b>.</p> <ol style="list-style-type: none"> <li>1. An impact force occurs when two objects <b>collide</b>.</li> <li>2. A strain force occurs when a material is stretched or squashed.</li> <li>3. A friction force occurs when two objects in contact slide past each other. Because of friction, objects move differently on rough surfaces than on smooth surfaces. There is greater friction when an object moves along a rough surface.</li> </ol> <p><b>Lesson 2: Attract</b> Some forces can act even when objects aren't touching. These are called <b>non-contact forces</b>. <b>Magnetism</b> is a type of non-contact force. Magnets are rocks or metals that create an invisible field around them that exerts a force on other magnets and some metals. A material is <b>magnetic</b> if it is attracted towards a magnet, and it is <b>non-magnetic</b> if it is not attracted towards a magnet. Only metals are magnetic, but not all metals. For example, iron is magnetic, but gold is not.</p> <p><b>Lesson 3 and 4:</b> Magnets have a <b>north pole</b> and a <b>south pole</b>. The north and south pole of magnets <b>attract</b> each other, meaning they pull towards each other. North poles <b>repel</b> other north poles, meaning that they push away from each other. South poles also repel other south poles. The magnetic field around a magnet is strongest at the poles.</p> <p><b>Lesson 5 and 6: Science of Christmas- Material focus</b></p>	<p>Compare how things move on different surfaces.</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>Notice that some forces need contact between two 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>Describe magnets as having two poles.</p> <p>Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<p><b>Why here?</b> Year 2- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials)</p> <p><b>Prepares for?</b> Year 5- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. (Y5 - Forces)</p> <p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. (Y5 - Forces)</p> <p>Recognise that some mechanisms, including levers, pulleys and</p>	<p>Ask relevant questions and use different types of scientific enquiries to answer them (Year 3 focus)</p> <p>Set up simple practical enquiries, comparative and fair tests (Year 3 focus)</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions (Year 3 focus)</p> <p>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (Year 3 focus)</p> <p>Use straightforward scientific evidence to answer questions or to support his/her findings (Year 3 focus)</p>

			<p>gears, allow a smaller force to have a greater effect. (Y5 - Forces)</p> <p>KS3- Magnetic fields by plotting with compass, representation by field lines. (KS3)</p> <p>Earth's magnetism, compass and navigation. (KS3)</p>	
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Year 4	Science Content	Recurring ideas/themes...what is the point of the content?	Rationale (Why here? What is it preparing them for?)	The disciplinary training
<p><b>Term 1 – Classifying living things and their habitats</b></p> <ul style="list-style-type: none"> <li>♣ recognise that living things can be grouped in a variety of ways</li> <li>♣ explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</li> <li>♣ recognise that environments can change and that this can sometimes pose dangers to living things.</li> </ul>	<p><b>How do scientists classify animals?</b></p> <p><b>Know that animals</b> can be divided into groups or 'classified' by looking at the <b>similarities</b> and <b>differences</b> between them.</p> <p>Know that animals are divided into two main groups; <b>invertebrates and vertebrates</b>. Know that plants can be classified into two groups; <b>flowering plants and non-flowering plants</b>.</p> <p><b>What is the difference between vertebrates and invertebrates?</b></p> <p>Animals that have a <b>backbone</b> are called <b>vertebrates</b>. Know that animals that don't have a <b>backbone</b> are called <b>invertebrates</b>. Pupils to know that vertebrates and invertebrates are divided into smaller groups. Vertebrates, for example, are divided into fish, amphibians, reptiles, birds and mammals.</p> <p>Know that there are many different groups of invertebrates too. They include invertebrates which have soft bodies such as jellyfish, worms and molluscs (like slugs and squids). There are also groups of invertebrates with hard bodies, such as insects, crustaceans and spiders.</p> <p><b>Cold-blooded reptiles.</b></p> <p>Pupils to know that cold-blooded reptiles live in hot countries, they lay eggs and have scales to cover their skin. They live in water and on land.</p> <p><b>Warm-blooded birds and animals.</b></p> <p>Know that they're mammals or birds that have feathers or fur. They can be carnivorous or omnivores. They have teeth or beaks.</p> <p><b>How are fish different from amphibians and reptiles?</b></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><b>Why Here?</b></p> <p><b>Year 1</b> Animals(including humans) Season changes.</p> <p><b>Year 2</b> Living things and their habitats.</p> <p><b>Year 3</b> Animals (including humans)</p> <p><b>Prepares for</b></p> <p><b>Year 5</b> Living things and their habitats.</p> <p><b>Year 6</b> Living things and their habitats. Evolution and Inheritance.</p>	<p>Asking relevant questions and using different types of scientific enquires to answer them.</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Identifying differences, similarities, or changes related to simple scientific ideas and processes.</p> <p>Using straightforward scientific evidence to answer questions or to support</p>

	<p>Know that fish have gills and not lungs, whereas amphibians and reptiles can breathe through gills or lungs. They can live on land or water.</p> <p><b>How do environments change and can this pose a danger to living things?</b></p> <p>Pupils to know examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, ecologically planned parks, or garden ponds, and the negative effects of population and development, litter or deforestation.</p>			
<p><b>States of matter</b></p> <ul style="list-style-type: none"> <li>• compare and group materials together, according to whether they are solids, liquids or gases</li> <li>♣ 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)</li> <li>• ♣ identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</li> </ul>	<p><b>Properties of solids, liquids and gases.</b></p> <p>Pupils to know that water exists in three different states of matter. Pupils to know that materials are grouped together, according to whether they are solids, liquids or gases.</p> <p>Know the properties of solids include: Solids stay in one place and can be held. Solids keep their shape. They do not flow like liquids. Solids always take up the same amount of space. They do not spread out like gases. Solids can be cut or shaped. Even though they can be poured, sugar, salt and flour are all solids. Each particle of salt, for example, keeps the <b>same shape</b> and volume.</p> <p>Know liquids <b>can flow</b> or be poured easily. They are not easy to hold. Liquids change their shape depending on the container they are in. Even when liquids change their shape, they always take up the same amount of space. Their volume stays the same.</p> <p>Know The properties of gases include: Gases are often invisible. Gases do not have a fixed shape. They spread out and <b>change their shape</b> and volume to fill up whatever container they are in. Gases can be squashed.</p> <p>Lesson 2: Investigate the effect of temperature on drying washing. To associate the rate of evaporation with temperature by investigating the</p>	<p>Compare and group materials together, according to whether they are solids, liquids or gases.</p> <p>Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius.</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p><b>Why here?</b></p> <p><b>Year 2</b> – use of everyday materials, shapes of solid objects and changes.</p> <p>Prepares for...</p> <p><b>Year 5</b> – properties and changes of materials. Use knowledge of solids, liquids and gases.</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes.</p>	<p>Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, range of equipment, including thermometers and data loggers.</p> <p>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Identify differences, similarities or changes relating to simple scientific ideas and processes.</p>

effect of temperature on drying washing. To make systematic, careful and accurate observations and measurements and report on findings from enquiries by displaying results and conclusions by investigating the effect of temperature on drying washing

**Dissolving and diluting.**

Pupils to know that Some substances **dissolve** when you **mix** them with **water**. When a substance **dissolves**, it might look like it has disappeared, but in fact it has just mixed with the water to make a transparent (see-through) liquid called a **solution**.

Know that substances that dissolve in water are called **soluble substances**. When you mix sugar with water, the sugar dissolves to make a transparent solution. Salt is soluble in water too.

Know that substances that do not dissolve in water are called **insoluble substances**. When you mix sand or flour with water, they do not dissolve.

Pupils to know that some materials change state when they are heated or cooled. Know that the temperature at which this happens in degrees Celsius (°C) by exploring how water can change its state to a solid, liquid or a gas.

**Evaporation and condensation.**

Pupils to know that evaporation occurs when water turns into water vapour. This happens very quickly when the water is hot, like in a kettle, but it can also happen slowly, like a puddle evaporating in the warm air. Know that condensation is when water vapour is cooled down and turns into water. You can see this when droplets of water form on a window. The water vapour in the air cools when it touches the Condensation cold surface.

**The Water Cycle.**

Know that water on Earth is **constantly moving**. It is recycled over and over again. This recycling process is called **the water cycle**. Know that water evaporates into the air. The sun **heats up** water on land, in rivers, lakes and seas and turns it into water vapour. The water vapour rises into the air. Know that water vapour **condenses** into clouds. Water vapour in the air **cools** down and changes back into tiny drops of liquid water,

	<p>forming clouds. Know that water falls as precipitation. The clouds get <b>heavy</b> and water falls back to the ground in the form of rain or snow. Pupils to know that water returns to the sea. Know that rain water runs over the land and collects in lakes or rivers, which take it <b>back to the sea</b>. The cycle starts all over again.</p> <p><b>Separating simple mixtures of substances</b> - Know that some materials change state when they are heated or cooled. Know that temperature is measured in degrees Celsius.</p>			
<p>Sound</p> <ul style="list-style-type: none"> <li>• identify how sounds are made, associating some of them with something vibrating</li> <li>• recognise that vibrations from sounds travel through a medium to the ear</li> <li>• find patterns between the pitch of a sound and features of the object that produced it</li> <li>• find patterns between the volume of a sound and the strength of the vibrations that produced it</li> <li>• recognise that sounds get fainter as the distance from the sound source increases</li> </ul>	<p><b>How sound travels</b> Know that sounds are transmitted through air or another material. Sound can travel through all kinds of materials like stone, brick, water and glass. Know that sound cannot travel through a vacuum. There is nothing to vibrate</p> <p><b>What causes sound.</b> Know that we hear sound when the vibrating air hits our ear drums and makes them vibrate. The vibration is picked up by our brains.</p> <p><b>The speed of sound and the speed of light.</b> Pupils to know that light travels at 186000 miles per second through air. In 1 second, a light beam in air will travel around the Earth 7 times. Know that the speed of sound is only 340m per second.</p> <p><b>How can sound be made different (PITCH)</b> Know that the harder you hit something, the louder the noise [The more energy in the vibration, the louder the sound]. Know the shorter the vibrating object, the higher pitched the note. The larger the vibrating object, the lower pitched the note. Know that the tighter the string, the higher the pitch of the note.</p> <p><b>How to protect your ears.</b> Know that too much sound reaching your ears can be a problem as it can damage your hearing. Know that people who work in noisy places often wear ear muffs or ear plugs to muffle some of the sound reaching their ears. Know that soft materials, such as carpets and curtains, are very good at muffling sound to stop it travelling any further. Hard materials such as stone and metal are not very good at muffling sound and they help the sound travel further.</p>	<p>Identify how sounds are made, associating some of them with something vibrating.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p> <p>Find patterns between the volume of sound and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p>	<p><b>Why here?</b> <b>Year 1</b> Animals (including humans. Everyday materials.</p> <p><b>Year 2</b> Animals (including humans)</p> <p><b>Prepares for Year 5</b> Animals (including humans)</p> <p>Properties and changes of materials.</p> <p><b>Year 6</b> Animals including humans</p>	<p>Asking relevant questions and using different types of scientific enquiry to answer them.</p> <p>Setting up simple practical enquires, comparative and fair tests.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Using results to draw simple conclusions. And make predictions.</p>

<p>Term 4 – Animals including Humans – food and digestion</p> <ul style="list-style-type: none"> <li>describe the simple functions of the basic parts of the digestive system in humans</li> <li>construct and interpret a variety of food chains, identifying producers, predators and prey</li> </ul>	<p><b>Salivary glands and taste buds.</b> Pupils to know how genes play a role in whether we can taste bitter things or not. Know that the tongue picks up different tastes on different parts (bitter, sour, sweet, umami and salt). Know that the smell of food triggers the salivary glands to produce saliva. Saliva contains enzymes which start to break down the food we eat.</p> <p><b>The intestines.</b> Know that there is a small and large intestine. The small intestine absorbs nutrients from food and passes over any leftover broken down food to the large intestine. The large intestine connects the small intestine to the rectum and absorbs water and forms stools from waste food. Pupils to know that the stomach holds food and starts to break it down.</p> <p><b>Food Chains</b> Know that food chains are a way of showing the different feeding relationships in a certain area. Know that predator is an animal which eats other animals. Know that prey is the animal being eaten. Know that plants are the producers and animals are the consumers; grass – rabbit fox</p> <p><i>Know key words: consumer, producer, prey, predator. Carnivore, omnivore and herbivore. Children to identify consumers and producers and create their own food chains, using arrows to show the transfer of energy.</i></p>	<p>Describe the simple functions of the basic parts of the digestive system.</p> <p>Construct and interpret a variety of food chains, identifying producers, predators, and prey.</p>	<p><b>Why here?</b> <b>Year 1</b> Animals (including humans)</p> <p><b>Year2</b> Living things and their habitats.</p> <p><b>Year 3</b> Animals (including humans)</p> <p><b>Prepares for Year 5</b> Living things and their habitats.</p> <p><b>Year 6</b> Living things and their habitats.</p> <p>Animals (including humans)</p>	<p>Asking relevant questions and using different types of scientific enquiry to answer them.</p> <p>Making systemic and careful observations and, where appropriate, taking accurate measurements, using a range of equipment, including thermometers and data loggers.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p> <p>Using straightforward scientific evidence to answer questions to support their findings.</p>
<p>Term 5 – Electricity</p> <ul style="list-style-type: none"> <li>identify common appliances that run on electricity</li> <li>construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</li> <li>identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is</li> </ul>	<p><b>Simple series electrical circuit</b> Know the basic parts of a series circuit including; cells, wires, bulbs, switches and buzzers. Pupils to know how to construct a simple series circuit identifying whether or not a lamp will light based on whether the lamp is part of a complete loop with a battery. Pupils to know different circuits and predict which will work. Pupils to know that it must all be connected to let the electricity flow.</p> <p><b>What appliances use electricity?</b> Pupils to know common appliances that run on electricity; Television, radio, washing machine, cooker and lighting.</p> <p><b>Series and parallel circuits</b> Know the difference between a series and parallel circuit.</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</p>	<p><b>Prepares for?</b> <b>Year 6 electricity.</b></p> <p>Brightness of a lamp or volume of a buzzer.</p> <p>Compare and give reasons for variations in how components function.</p>	<p>Setting up simple practical enquiries, comparative and fair tests.</p> <p>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.</p> <p>Use results to draw simple conclusions, make predictions for</p>

<p>part of a complete loop with a battery</p> <ul style="list-style-type: none"> <li>recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</li> <li>recognise some common conductors and insulators, and associate metals with being good conductors</li> </ul>	<p>Pupils to know how to build different circuits and try out different combinations of circuits- which have a brighter bulb? Know when a series and parallel circuit would be used.</p> <p><b>Conductors and insulators</b></p> <p><b>Conductors</b> Pupils to know that some materials let electricity pass through them easily. These materials are known as <b>electrical conductors</b>. Know that many <b>metals</b>, such as <b>copper, iron and steel</b>, are good <b>electrical conductors</b>. That is why the parts of electrical objects that need to let electricity pass through are always made of metal. Metal is used in plugs to allow electricity to transfer from the wall socket, through the plug, and into a device such as a radio or TV. In a light bulb, the metal filament conducts electricity and causes the light bulb to light up.</p> <p><b>Insulators</b> Know that some materials do not allow electricity to pass through them. These materials are known as <b>electrical insulators</b>. <b>Plastic, wood, glass and rubber</b> are good <b>electrical insulators</b>. That is why they are used to cover materials that carry electricity. Know that the plastic covering that surrounds wires is an electrical insulator. It stops you from getting an electrical shock.</p> <p><b>Constructing and recording a circuit.</b> Know how to describe and draw the basic parts of a circuit- know bulb, wires, crocodile clips, battery, motor, buzzer.</p> <p><b>Working safely with electricity</b> Pupils to know how to work safely with electricity;</p> <ul style="list-style-type: none"> <li>Never put your fingers in a plug socket. Even if the switch is in the off position, there will still be an electrical current in the socket.</li> <li>If you need to unplug equipment, turn off the switch on the socket and then carefully take the plug out. Don't try to yank it out!</li> <li>Don't overload sockets. Using lots of extension cords could damage the electrical system and cause a fire.</li> <li>If you notice an electrical wire is damaged, you must tell a grown-up straight away.</li> <li>Make sure electrical wires are tucked out of the way because they can be a trip hazard. If a pet chewed on wires, it could get an electric shock. If wires dangle from kitchen surfaces, young children could pull them causing appliances to fall and cause an injury.</li> </ul>	<p>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>Use recognised symbols when representing a simple circuit in a diagram.</p>	<p>new values, suggest improvements and raise further questions.</p>
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	<ul style="list-style-type: none"> <li>• If a piece of bread gets stuck in the toaster, do not use a knife to try and get the bread out - a knife is metal so it will conduct electricity.</li> <li>• Don't touch a light switch or plug socket with wet hands. Water conducts electricity so could cause an electric shock. This is why most bathroom lights have pull cords instead of switches.</li> <li>• You should take great care when walking near pylons, making sure you don't get too close. You should never climb a pylon.</li> <li>• Kites shouldn't be flown near pylons or electricity cables. If a kite got caught in the wires, it could act as a conductor and you would get an electric shock.</li> </ul>			
<p>Term 6 – Animals including Humans – food and digestion</p> <ul style="list-style-type: none"> <li>• identify the different types of teeth in humans and their simple functions</li> </ul>	<p><b>Know the different types of teeth.</b>          Know the different types of teeth; <b>Incisors, Canines, Premolars, Molars, Wisdom Teeth.</b> <b>Incisors</b> are used for biting and cutting food. Know that canines are for ripping and tearing. Know your <b>canines</b> are either side of your incisors and you have four of them. Know that <b>premolars and molars</b> are towards the back of your mouth. Premolars are used for holding and crushing food. Molars chew and grind up food, working with your tongue to prepare food for swallowing. Know that wisdom teeth are an extra set of molars at the very back of your mouth.</p> <p><b>Tooth decay</b>          Pupils to know what causes tooth decay. Know that tooth decay is caused by plaque collecting, in particular, around the gum line, the edges of fillings and the grooved surfaces of the teeth. Plaque is made up of food debris, saliva and bacteria normally present in the mouth. Know the acids generated by bacteria breaking food down can begin to attack tooth enamel within 20 minutes of a meal. Know that if plaque is allowed to collect over time it will harden into tartar. Both tartar and plaque contain acids which, over time, can dissolve away the protective, hard enamel coating of the tooth, and create holes, or cavities</p> <p>Pupils to know how to look after teeth; Brushing <b>your teeth</b> for at least two minutes, twice a day using a pea-size squirt of fluoride toothpaste          Changing <b>your</b> toothbrush every three to four months to stop them wearing out. Making sure you brush every bit of each <b>tooth</b> – front and back, top and bottom</p> <p><b>Food Pyramid</b>          Know that the <b>food pyramid</b> is a pyramid which ranks our food from the healthiest options at the bottom, to the not so healthy treats at the top. Know that to be healthy, we need to have a <b>balanced diet</b>. This means we need to eat the right amounts of different types of food.</p>	<p>Identify different types of teeth in humans and their simple functions.</p>	<p><b>Why here?</b></p> <p><b>Year 2</b> - describe the importance for humans to exercise, eat the right amounts of different types of food.</p> <p><b>Year 3</b> – identify that animals, including humans need the right types and amounts of nutrition.</p> <p><b>Prepares for?</b></p> <p><b>Year 6</b> – recognise the impact of diet, exercise and lifestyle on the way their bodies function. Describe how nutrients and water are transported within animals, including humans.</p>	<p>Asking relevant questions and using different types of scientific enquiry to answer them.</p>

	<p><b>Fats, spreads and oils;</b> Fats, spreads and oils include foods like olive oil, vegetable oil, butter and margarine. Mayonnaise and some salad dressings are also included in the section because they have lots of oil in them.</p> <p>Know that we should only have a small amount of fats, spreads and oils because too much is bad for our hearts</p> <p><b>Protein;</b> Know that meat, poultry, fish, eggs, beans and nuts are all sources of protein. Protein is a nutrient which is important to help us grow and help our bodies to repair themselves. These foods also have something called iron in them and this helps keep our blood healthy. You should aim for two servings of protein a day and try to have a different kind each time. Examples of a portion include 100g of fish, 75g of meat and two eggs.</p> <p><b>Dairy;</b> Milk, yoghurt and cheese are examples of dairy. Dairy foods have lots of calcium in them. Calcium is a nutrient which gives us healthy teeth and bones.</p> <p>Know that you should aim for three portions of dairy a day. A portion includes a glass of milk, a pot of yoghurt or 25g of cheese.</p> <p><b>Carbohydrates;</b> Carbohydrates include food such as bread, potatoes, pasta, rice and wholegrain cereals like porridge. Carbohydrates are nutrients which give our bodies energy. These foods also give us fibre which helps us to go to the toilet regularly.</p> <p>Know that you should aim for between three and five portions of carbohydrates a day. Brown rice, wholemeal pasta and wholegrain bread are the healthiest choices. Two slices of bread, 75g of pasta and four small potatoes all count as a portion each.</p> <p><b>Fruit and Vegetables;</b> Fruit and vegetables are the biggest section of the food pyramid and are the foods we should have the most of. Examples of these include apples, oranges, broccoli, carrots and onions. They include vitamins and minerals which help to keep us healthy. Fruit and vegetables also contain fibre which helps us to go to the toilet regularly. Know that the guidance has always been to have five portions of fruit and vegetables a day, but now doctors are encouraging people to aim for seven. To be healthy, you should try to eat lots of different coloured fruit and vegetables. Examples of a portion include an apple, two plums or three tablespoons of peas</p> <p>Know the terms;</p> <p><b>Diet</b> = What we eat.</p> <p><b>Nutrients</b> = The vitamins, minerals and other things that keep us healthy.</p>			
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Year 5	Science Content	Recurring ideas/themes...what is the point of the content?	Rational (Why here? What is it preparing them for?)	The disciplinary training
<p>Term 1 – Properties of Materials</p> <ul style="list-style-type: none"> <li>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</li> <li>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>explain that some changes result in the formation of</li> </ul>	<p><b>Comparing and grouping everyday materials</b></p> <p>Know that all materials have properties. This means the things about them you can measure that can be different to other materials. Different materials are good for different jobs based on their properties. Pupils to know;</p> <p><b>Hardness</b> – the ability of a material to resist being dented</p> <p><b>Solubility</b> – how easily a material a material will dissolve</p> <p><b>Magnetism</b> – if a material is magnetic or not</p> <p><b>Conduction of Heat</b> – how easily heat passes through</p> <p><b>Conduction of Electricity</b> – how easily electricity passes through</p> <p><b>Transparency</b> - if a material allows light to pass through or not</p> <p><b>Compare the properties and uses of different materials ~ solutions</b></p> <p>Know that Some substances <b>dissolve</b> when you <b>mix</b> them with <b>water</b>. Know that when a substance <b>dissolves</b>, it might look like it has disappeared, but in fact it has just mixed with the water to make a transparent (see-through) liquid called a <b>solution</b>.</p> <p>Know that substances that dissolve in water are called <b>soluble substances</b>. When you mix sugar with water, the sugar dissolves to make a transparent solution. Salt is soluble in water too. Substances that do not dissolve in water are called <b>insoluble substances</b>. When you mix sand or flour with water, they do not dissolve.</p> <p><b>How mixtures might be separated?</b></p> <p>Know that salt is soluble in water, when salt is added to water most of it dissolves to make a solution. When sand is added to water it either hangs in the water or forms a layer at the bottom of the container. Sand</p>	<p>Compare and group together everyday materials on the basis of their properties including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>	<p>Why here?</p> <p>Year 1 - Everyday materials. Name variety of everyday materials and compare and group.</p> <p>Year 2 – Uses of everyday materials. Identify and compare the suitability of a variety of materials.</p> <p>Find out how some solid objects can change shape by squashing, bending, twisting and stretching.</p> <p>Year 4 – States of Matter. Compare and group materials into solids, liquids and gases.</p> <p>Observe change of state in some materials when heated or cooled.</p>	<p>Plan different types of scientific enquires to answer questions, including recognising and controlling variables where necessary.</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs bar and line graphs.</p> <p>Use test results to make predictions to set up further comparative and fair test.</p> <p>Report and present findings from enquiries, including conclusions, causal relationships and explanations of and</p>

<p>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>therefore does not dissolve in water and is insoluble. It is easy to separate sand and water by filtering the mixture. Salt can be separated from a solution through evaporation. The water can also be recovered as well as the salt if the water vapour is trapped and cooled to condense the water vapour back into a liquid. This process is called distillation.</p> <p><b>Filtering:</b> Know that you can separate a mixture of sand and water by passing it through a piece of <b>filter paper</b>. The water is able to pass through the tiny gaps in the paper but the sand particles are too big and are left on the surface of the filter paper.</p> <p><b>Sieving:</b> Know that a mixture made of solid particles of different sizes, for example sand and gravel, can be separated by <b>sieving</b>.</p> <p><b>Evaporating;</b> Know that by dissolving salt in water you make a <b>solution</b>. You can separate the salt from the water again by boiling the solution. The water will evaporate until it is all gone. The salt will be left behind</p> <p><b>What are reversible changes?</b> Pupils to know that reversible change is a change that can be undone or reversed. If you can get back the substances you started the reaction with, that's a reversible reaction. A reversible change might change how a material looks or feels, but it doesn't create new materials. Examples of reversible reactions include dissolving, evaporation, melting and freezing.</p> <p><b>What are irreversible changes?</b> Know that a change is called irreversible if it cannot be changed back again. In an irreversible change, new materials are always formed. Sometimes these new materials are useful to us.</p> <p><b>Heating</b> Know that heating can cause an irreversible change. For example you heat a raw egg to cook it. The cooked egg cannot be changed back to a raw egg again.</p> <p><b>Mixing</b> Know that mixing substances can cause an irreversible change. For example, when vinegar and bicarbonate of soda are mixed, the mixture</p>		<p>Evaporation and condensation in the water cycle.</p> <p>Preparing for - year 7 'States of matter and Separating Mixtures.</p> <p>Properties of the different states of matter.</p> <p>Similarities and differences between solids, liquids and gases.</p>	<p>degree of trust in results, in oral and written forms such as displays and other presentations.</p>
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	<p>changes and lots of bubbles of carbon dioxide are made. These bubbles and the liquid mixture left behind, cannot be turned back into vinegar and bicarbonate of soda again.</p> <p><b>Burning</b> Know that burning is an example of an irreversible change. When you burn wood you get ash and smoke. You cannot change the ash and smoke back to wood again.</p>			
<p>Term 2 – Forces</p> <ul style="list-style-type: none"> <li>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> <li>recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</li> </ul>	<p><b>Sir Isaac Newton</b> Pupils to know about the life and work of Sir Isaac Newton and find out how his work has impacted scientific discoveries since.</p> <p><b>Explore gravity and air resistance</b> Pupils to know that that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p>Pupils to know the forces that act upon parachutes of different shapes and sizes.</p> <p><b>Water resistance, air resistance and friction</b> <b>Air and water resistance:</b> Know that <b>air resistance</b> is a type of friction between air and another material.</p> <p>For example, when an aeroplane flies through the air, air particles hit the aeroplane making it more difficult for it to move through the air.</p> <p>It's the same for an object moving through water. If you go swimming, there is friction between your skin and the water particles. This is known as water resistance</p> <p><b>Friction:</b> Pupils to know that friction is a force <b>between two surfaces</b> that are sliding, or trying to slide, across each other. For example, when you try to push a book along the floor, friction makes this difficult. Know that friction always works in the direction <b>opposite</b> to the direction in which the object is moving, or trying to move. Friction always <b>slows</b> a moving object down. The amount of friction depends on the materials from which the two surfaces are made. The rougher the</p>	<p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and falling objects</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>Why here – Year 3 Forces and Magnets.</p> <p>How things move on different surfaces</p> <p>Preparing for – Year 7 Forces</p> <p>Forces as push or pull.</p> <p>Using force arrows.</p> <p>Forces: associated with deforming objects</p> <p>Forces measured in Newtons – Force-extension linear relation; Hooke's Law.</p>	<p>Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary (Year 5 focus)</p> <p>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate (Year 5 focus)</p> <p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 5 focus)</p> <p>Use test results to make predictions to set up further comparative</p>

	<p>surface, the more friction is produced. Friction also produces <b>heat</b>. If you rub your hands together quickly, you will feel them get warmer.</p> <p>Friction can be a useful force because it prevents our shoes slipping on the pavement when we walk and stops car tyres skidding on the road. When you walk, friction is caused between the tread on shoes and the ground. This friction acts to grip the ground and prevent sliding.</p> <p><b>Levers and pulleys</b>          Know that using a simple mechanism like a lever, pulley, or gear allows a smaller force to have a greater effect.  <b>Levers</b>; Pupils to know that levers are the simplest type of mechanism. They are really good at lifting objects and can be used to make objects easier to lift.  <b>Pulleys</b>; Know that pulley's are like gears but the two wheels do not lock together. Instead the wheels are joined by a belt. Pulleys can be used to change the speed, direction or force of a movement.  <b>Gears</b>; Gears are toothed wheels that lock together and turn one another. The wheels are usually different sizes so that one gear speeds up to slow down the next gear. Gears are also used to change the direction of movement.</p> <p><b>Floating and sinking</b>          Know that when something is in water, there are <b>two forces</b> acting on it. Its <b>weight</b> and the force of the water pushing up, <b>the upthrust</b>. Know that if the weight is equal to or less than the upthrust, it floats. Things that float are <b>buoyant</b>. Know that if the weight is greater than the upthrust, it sinks.</p>			<p>and fair tests (Year 5 focus)</p> <p>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 (Year 5 focus)</p>
<p>Term 3 – Space</p> <p>NC:</p> <ul style="list-style-type: none"> <li>describe the movement of the Earth and other planets relative to the sun in the solar system</li> </ul>	<p><b>Describe the Sun, Earth and Moon as approximately spherical bodies</b>          Pupils to know that the Earth, Moon and Sun are all <b>spherical</b>. Know that it is only in the last 50 years or so that we have photographic evidence of this. Astronauts who have been travelled into space have been able to see that the Earth, Moon and Sun are not flat.</p> <p><b>Describe the movement of Earth, and other planets, relative to the Sun in the solar system.</b></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>Why here?</p> <p>Year 1 – Seasonal Changes</p> <p>Preparing for year 8 – Space</p>	<p>Identify scientific evidence that has been used to support or refute ideas or arguments (Year 5 focus)</p>

<ul style="list-style-type: none"> <li>describe the movement of the moon relative to the Earth</li> <li>describe the sun, Earth and moon as approximately spherical bodies</li> <li>use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> </ul>	<p>Pupils to know that the Earth rotates on its <b>axis</b>. It does a full rotation once in every <b>24 hours</b>. Know that at the same time that the Earth is rotating, it is also orbiting around the Sun. It takes <b>365 and a quarter days to orbit the Sun</b>.</p> <p>Know that All the planets orbit the Sun in more or less the same plane. This is called the plane of the ecliptic.</p> <p><b>Describe the movement of the Moon relative to the Earth</b></p> <p>Pupils to know that the Moon orbits the Earth in an oval shaped path whilst spinning on its axis. At various times of the month, the Moon appears to be different shapes; this is because as the Moon rotates round the Earth, the Sun lights up different parts of it.</p> <p><b>Explain day and night and the apparent movement of the sun across the sky.</b></p> <p>Pupils to know that as the Earth moves around the Sun it rotates on its axis, so we have <b>day and night</b>. The side of the Earth facing the Sun is bathed in light and heat (<b>daytime</b>). The side of the Earth facing away from the Sun, out towards space, is darker and colder (<b>nighttime</b>).</p> <p><b>What are comets, asteroids and meteors?</b></p> <p>Know that <b>comets</b> are lumps of ice, dust and rock that orbit the Sun. Know that <b>asteroids</b> are small, rocky objects that orbit the Sun. Although asteroids orbit the Sun like planets, they are much smaller than planets.</p> <p>Know that a <b>meteor</b> is a space rock—or meteoroid—that enters Earth's atmosphere. As the space rock falls toward Earth, the resistance—or drag—of the air on the rock makes it extremely hot. What we see is a "shooting star." That bright streak is not actually the rock, but rather the glowing hot air as the hot rock zips through the atmosphere.</p> <p>When Earth encounters many meteoroids at once, we call it a meteor shower.</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>Gravity force, weight different on different planets.</p> <p>Our sun as a star, other stars in our galaxy, other galaxies.</p> <p>The seasons and earth's tilt.</p> <p>The light year as a unit of astronomical distance</p>	<p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 5 focus)</p>
<p>Term 5 – Living things</p> <ul style="list-style-type: none"> <li>describe the differences in the life cycles of a mammal,</li> </ul>	<p><b>Lesson 1</b></p> <p>Pupils to know about Sir David Attenborough and his life/ work discovering the impact his work has had on animals and their habitats. Know that Sir David Attenborough has made significant contributions to</p>	<p>Describe the difference in the life cycles of a mammal, an amphibian, an insect and a bird.</p>	<p>Year 1 Identify animals.</p>	<p>Report and present findings from enquiries, including</p>

<p>an amphibian, an insect and a bird</p> <ul style="list-style-type: none"> <li>describe the life process of reproduction in some plants and animals</li> </ul>	<p>our understanding of nature and the need to care for it. He was a leading figure in the fight against plastic pollution and other environmental issues that are damaging our planet.</p> <p><b>Lesson 2</b> Pupils to know about the life and work of Jane Goodall. Know that <b>Jane Goodall</b>, DBE, (1934–), is a British ethologist and conservationist, famous for her world expertise on gorillas and chimpanzees, having studied them in the wild for over 60 years. Her groundbreaking research provided a unique insight into the life of these creatures – now known to be our nearest living relatives.</p> <p><b>Lesson 3</b> Looking at the differences in life cycles between mammals, an amphibian, and a bird. Know that: <b>Insect:</b> Some insects undergo complete metamorphosis. The stages are egg, larva, pupa, and adult e.g. bee, butterfly, ladybug, mosquito Other insects undergo incomplete metamorphosis. The stages are egg, nymph, and adult e.g. bedbug, dragonfly, grasshopper, lice <b>Amphibian:</b> Amphibians also undergo a metamorphosis. They lay their eggs in water. Larvae hatch and live underwater. They grow and develop into terrestrial adults that live and breathe on land e.g. frog, salamander <b>Mammal:</b> Mammals are born alive. They grow and develop until they become adults e.g. bat, cat, cow, dog, seal, humpback whale, moose, pig, polar bear, porcupine, red fox, snowshoe hare, walrus, wolverine <b>Fish:</b> Fish deposit eggs (spawn). Fish hatch and then grow and develop into adults. Arctic char, capelin, dogfish, haddock, halibut, lake trout, northern pike, rainbow trout, smelt, salmon, whitefish <b>Bird:</b> Birds lay eggs. The eggs hatch and the chicks grow and develop into adults e.g. seagull, snowy owl, starling, tern reptile Most reptiles lay eggs. The eggs hatch and the young reptiles grow and develop into adults. garter snake, painted turtle, sea turtle</p> <p><b>Lesson 4</b> <b>Describe the process of reproduction in some plants and animals.</b> Pupils to know that to reproduce, animals need a male and female. Together they can create offspring, or babies. Some animals, such as chickens, fish and snakes, lay eggs which contain their offspring. Other</p>	<p>Describe the life process of reproduction in some plants and animals</p>	<p>Identify carnivores, herbivores and omnivores.</p> <p>Compare the structure of animals.</p> <p>Identify and label parts of the Human body.</p> <p>Year 2 Explore and compare living and dead things.</p> <p>Describe how seed grow into plants.</p> <p>Find out why plants a need water, light and suitable temperature.</p> <p>Year 4 Group living things in different ways.</p> <p>Explore and use classification keys</p> <p>Year 6 Identify the main parts of the human circulatory system.</p> <p>Year 7 Reproduction in humans</p>	<p>conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations (Year 5 focus)</p> <p>Identify scientific evidence that has been used to support or refute ideas or arguments (Year 5 focus)</p>
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	<p>animals, including humans, tigers and sheep, grow their babies inside them until they are developed enough to be born.</p> <p>Pupils to know how seeds are made. Know that Pollen is carried by insects or blown by the wind from one flower to another. This process is called pollination. Pollen reaches the new flower and travels to the ovary where it fertilises egg cells (ovules) to make seeds. This is fertilisation. The seeds are scattered by animals or the wind. This process is called dispersal. Some of the seeds will grow into new plants.</p> <p><b>Lesson 5</b> <b>Describe the life cycle of a butterfly.</b> Pupils to know that butterflies change shape through <b>FOUR</b> different stages during their lifetime:</p> <ol style="list-style-type: none"> <li>1. <b>THE EGG,</b></li> <li>2. <b>LARVA (CATERPILLAR),</b></li> <li>3. <b>THE PUPA (CHRYSLIS),</b></li> <li>4. <b>THE ADULT BUTTERFLY.</b></li> </ol> <p>This process of changing shapes is called <b>Metamorphosis</b>.</p> <p><b>Lesson 6</b> Learn about asexual reproduction.</p> <p>Pupils to know that <b>Asexual reproduction</b> only involves one parent so there is no joining of sex cells during fertilisation. Organisms produced by <b>asexual reproduction</b> are genetically identical to each other and their parent. They are clones. Some plants can also reproduce without an egg cell being fertilised to produce a seed. Instead, these plants produce an identical copy of themselves. This type of reproduction is known as asexual reproduction.</p>		<p>Mechanism of breathing in humans</p>	
<p>Term 6 – Reproduction, Gestation and Growth</p> <ul style="list-style-type: none"> <li>• describe the changes as humans develop to old age</li> </ul>	<p><b>Lesson 1</b> <b>life cycles</b> Pupils to know that all animals, including humans, are born, they get older and bigger and some will go on to have children. In the end, all animals die. We call this a life cycle. Animals are small when they start life. Over time they grow bigger and their bodies change. When they are grown up, they might reproduce and have young animals of their own.</p>	<p>Describe the changes as humans develop to old age.</p>	<p>Why here? Year 1: Identifying part of the human body.  Year 2: Offspring including humans.  Prepares for</p>	<p>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (Year 5 focus)</p>

	<p>These children will get older and may eventually also have children too, and so the life cycle keeps going!</p> <p><b>Lesson 2</b>  <b>How do animals reproduce?</b>  Reproduction  Pupils to know that to reproduce, animals need a male and female. Together they can create offspring, or babies. Know that Some animals, such as chickens, fish and snakes, lay eggs which contain their offspring. Other animals, including humans, tigers and sheep, grow their babies inside them until they are developed enough to be born.</p> <p><b>Lesson 3</b>  <b>Understand changes which happen in adolescence</b>  Pupils to know that puberty is the stage of development between childhood and adulthood.  Know that physical growth occurs so that the body changes to that of an adult, which enables reproduction.</p> <p><b>Lesson 4</b>  <b>Describe the changes as humans develop to old age.</b>  Human life cycle  There are six stages in the human life cycle: 1. Foetus ~ At this time, a baby is growing inside its mum's womb. 2. Baby ~ A baby is born after spending nine months inside the womb .3. Childhood ~ At this stage, you learn to walk and talk. 4. Adolescence ~ Children become teenagers. 5. Adulthood ~ Your body is fully developed .6. Old age ~ The last stage in the life cycle of a human.</p> <p><b>Lesson 5</b>  <b>Exploring gestation periods</b>  Pupils to know that gestation is the period of time that a mammal carries her offspring, or babies, inside her body before giving birth. The length of gestation is different for each type of mammal. Larger animals usually have longer gestations than smaller animals. Human gestation, or pregnancy, lasts about nine months. An elephant's gestation lasts about 22 months. In squirrels, gestation lasts only about six weeks.</p>		<p>Year 7:  reproduction in humans in more detail.</p>	
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Year 6	Science Content <i>Best that has been said and thought</i>	Recurring ideas/themes...what is the point of the content?	Rational (Why here? What is it preparing them for?)	The disciplinary training
<p>Term 1 – Electricity</p> <ul style="list-style-type: none"> <li>• NC: recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</li> <li>• recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>• identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>	<p><b>Lesson 1 - Recap knowledge of circuits</b> Recap knowledge of electricity and circuits. Know the basic parts of a series circuit including; cells, wires, bulbs, switches and buzzers. Pupils to know how to construct a simple series circuit.</p> <p><b>Lesson 2 - investigate bulb brightness</b> Pupils to know the ways in which the brightness of a bulb or speed of a motor is changed. Know that placing cells in series increases the voltage in the <b>circuit</b> by 1.5 V for each cell. Increasing the voltage increases the <b>brightness</b> of the <b>bulb</b>. When a <b>bulb</b> in a series <b>circuit</b> is unscrewed all <b>bulbs</b> in the <b>circuit</b> go out. Increasing the number of <b>bulbs</b> in a series <b>circuit</b> decreases the <b>brightness</b> of the <b>bulbs</b>.</p> <p>Know that it is possible to change lots of different things about a circuit. For example – you could:</p> <ol style="list-style-type: none"> <li><b>1. Add more batteries</b> – this would supply more energy to the circuit by increasing the voltage. It would make any bulbs brighter, any buzzers louder and any motors move faster</li> <li><b>2. Add more bulbs, buzzers or motors</b> – If you kept the number of batteries the same they would be dimmer, quieter or slower.</li> <li><b>3. Use batteries with a higher voltage</b> – The higher the voltage the more energy they supply so it would make any bulbs, buzzers or motors brighter, louder or faster</li> </ol> <p><b>Lesson 3 - Circuit symbols</b> Pupils to know conventional symbols for circuits. Children will learn about a variety of symbols used in circuit diagrams. Pupils to know how to create circuits according to given diagrams.</p> <p><b>Lesson 4 – Wire length investigation</b> Pupils to know how to plan, carry out and evaluate an experiment to see how changing the wire in a circuit affects the brightness of a bulb.</p>	<p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.</p> <p>Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>	<p><b>Why here?</b></p> <p>Year 1: Everyday materials.</p> <p>Year 2: Uses of everyday materials.</p> <p>Year 4: Physics Electricity</p> <p><b>Prepares for:</b></p> <p>Year 7 Physics: energy changes and transfers, electricity and magnetism</p>	<p><b>Lesson 2</b> -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.</p> <p><b>Lesson 4</b> -record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. -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</p>

	<p>Children will suggest ways in which wires of different lengths, thicknesses and materials may be tested to determine how they affect the brightness of a bulb. They may then either conduct an experiment, or interpret a given set of data.</p> <p><b>Lesson 5 – Review knowledge of electricity</b> review and assess understanding of circuits.</p>			
<p>Term 2 – Humans and other animals</p> <ul style="list-style-type: none"> <li>• identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</li> <li>• recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</li> <li>• describe the ways in which nutrients and water are transported within animals, including humans</li> </ul>	<p><b>Lesson 1 – Review body systems focusing mostly on the digestion system.</b> Pupils to know how nutrients and water are transported in the human body. Know that when you digest food, your small intestine absorbs the <b>nutrients</b> from your food and passes them into the blood stream. The circulatory system then carries the blood, and therefore the <b>nutrients</b>, to all the parts of the <b>body</b> it is needed.</p> <p>.</p> <p><b>Lesson 2 - How the heart works</b> investigate what happens to the heart when we exercise and why including function of the lungs. Know that the <b>heart</b> sits within the chest cavity between the lungs and is about the size of a fist. Essentially it is a muscle which <b>functions</b> as a really powerful pump. The <b>heart</b> takes in blood low in oxygen from the body. It pumps it through the right side of the <b>heart</b> and on to the lungs. <b>Lungs:</b> Pupils to know that air travels through your mouth and nose, down your windpipe, to reach your <b>lungs</b>. It gets warm and damp on its journey. Inside the <b>lungs</b> oxygen enters the bloodstream and a waste gas, called carbon dioxide, which could poison the body if its levels rise, is removed from the blood and breathed out.</p> <p>.</p> <p><b>Investigation to link lessons 2 and 3 – The Heart and Exercise</b> Pupils to know that <b>exercise</b> causes an <b>increase</b> in <b>pulse rate (heart rate)</b>. When <b>exercising</b> our muscles contract more often and require more energy. Energy is made during the process of respiration. As more glucose and oxygen is needed, cardiac output (blood pumped per minute) and blood flow to the muscles increases Children will learn about what happens to the heart when we exercise, then conduct practical investigations where heart rate is measured.</p> <p><b>Lesson 3 – How muscles work</b> Know that skeletons can be remarkably flexible but muscles are needed</p>	<p>Describe the ways in which nutrients and water are transported within animals, including humans.</p> <p>Identify and name the main parts of the human circulatory system, and describe the function of the heart, blood vessels and blood.</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.</p>	<p><b>Why here?</b> Year 1- animals groups and parts of the human body.  Y 2- Animals, human life cycles (babies and off-spring) and food groups.  Year 4- Learning about a skeletal systems prepares them for the digestive system. Teeth.  Year 5- life cycles developing into old age.  <b>Prepares for:</b> Year 7 Biology: health and human body  Year 8 Biology: photosynthesis and respiration</p>	<p><b>Lesson 2</b> -recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p> <p><b>Lesson 5</b> - identifying scientific evidence that has been used to support or refute ideas or argument.</p>

	<p>to move them. Muscles are used every time we move. There are more than 600 muscles in the human body. Know that muscles are attached to the bone by tendons and work in pairs to allow for smooth movement. To move a joint, one muscle contracts while the other muscle relaxes and becomes longer.</p> <p>Pupils to know how muscles move the skeleton and how muscle activity requires increased blood flow.</p> <p><b>Lesson 4 – Food groups and nutrients</b></p> <p>Pupils to know that the human body needs a balanced diet to work properly. Good health involves drinking enough water and eating the right amount of foods from the different food groups: <b>Carbohydrates</b> give us energy. They are found in foods such as bread, potatoes and pasta.</p> <p><b>Proteins</b> help our bodies to repair themselves. They are found in foods such as fish, meat, beans, nuts, seeds, eggs and cheese.</p> <p><b>Fats</b> help store energy for our bodies. They are found in foods such as butter, cheese, nuts and fried food.</p> <p><b>Fibre</b> is important for helping us digest our foods. It's found in fruit and vegetables.</p> <p>Children will learn about food groups: what they provide our bodies with, and what quantities of each we need in a balanced diet.</p> <p><b>Lesson 5 – Keeping healthy</b></p> <p>To investigate the effects of tobacco, alcohol and other drugs. <b>(Links to our PSHE)</b></p> <p>Pupils to know what drugs are, how some are helpful and some are harmful. They will also consider ways in which drugs have side effects. Following this, children may explain differences between drugs, or their effects, in their own words</p> <p><b>Lesson 6 – Keeping healthy</b></p> <p>Pupils to know that in order For your body to work properly, it <b>needs</b> a balanced diet, exercise and enough sleep. It's important to eat a varied and balanced diet to <b>stay healthy</b>. You <b>need</b> to drink plenty of water and eat at least five portions of fruit and vegetables every day.</p>			
<p>Term 3 – Evolution and Inheritance</p> <ul style="list-style-type: none"> <li>• NC: recognise that living things have changed over time and that fossils provide</li> </ul>	<p><b>Lesson 1- inheritance</b></p> <p>Pupils to know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p><b>Lesson 2- Adaptation</b></p>	<p>Recognise that living things have changed over time and that fossils provide information about living things that</p>	<p><b>Prepares for:</b></p> <p>Year 7</p>	

<p>information about living things that inhabited the Earth millions of years ago</p> <ul style="list-style-type: none"> <li>recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</li> <li>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</li> </ul>	<p>Pupils to know how animals and plants are adapted to suit their environment in different ways in the context of environmental variation.</p> <p><b>Lesson 3- Theory of Evolution</b> Pupils to know the current scientific evidence that has been used to support or refute ideas or arguments; Identify how adaptation may lead to evolution. Know that evolution is change over time. It is the reason we have so many species on earth. Evolution occurs when there is competition to survive (natural selection) and differences within a species caused by inheritance and mutations. Inheritance is when something is passed on to the next generation. Offspring are not identical to their parents and hence species change over time. Some characteristics are inherited. Other differences are new in the offspring – these are called mutations. It is not necessary for children to understand the genetic basis for mutations.</p> <p><b>Lesson 4- Evidence of evolution</b> Identifying scientific evidence that has been used to support or refute ideas or arguments; -Know that both extinct animals and living things provide evidence for evolution. - Pupils to know that fossils are the remains of living things which are found in sedimentary rocks. These rocks form in layers so animals and plants can get trapped between the layers. - Know that when palaeontologists compare fossils to animals from today, they can see similarities and identify relationships between them. - Living things also provide evidence for natural selection and evolution</p> <p><b>Lesson 6- Adaptation, Evolution and Human Intervention</b> Know how adaptation may lead to evolution by examining the advantages and disadvantages of specific adaptations and the role of human intervention in the process of evolution. Know that offspring are not normally identical to their parents. Know that characteristics can be inherited or caused by mutations. Pupils to know that sometimes the changes in the next generation can be an advantage (because they are better suited to their habitat); sometimes they can be a disadvantage (it is harder for them to survive in their habitat)</p>	<p>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>Biology: Cells and organisation, reproduction</p> <p>Year 8 Biology: inheritance , ecosystems and interdependence</p>	
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<p>Term 4 – Light</p> <ul style="list-style-type: none"> <li>• NC: recognise that light appears to travel in straight lines</li> <li>• 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</li> <li>• 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</li> <li>• use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul>	<p><b>Lesson 1 – How shadows are formed.</b> Pupils to know <b>Shadows</b> are <b>formed</b> when light from a source is blocked by an opaque object. The closer an object is to the source of light the bigger the <b>shadow</b>.</p> <p><b>Lesson 2- investigate how we can change shadows.</b> Pupils to know how to conduct an investigation into how we can change and manipulate shadows ‘shape, length, intensity and in particular, size. They conduct an experiment, identifying the key variables, and observe the results. They then draw conclusions from their results.</p> <p><b>Lesson 3 - understand how our eyes allow us to see.</b> Know that the eye is a ball with a hole at the front, the pupil, which lets in light. Inside the eye is a lens which focuses the light onto a surface at the back of the eyeball. This surface is called the retina and is made up of special cells which detect light and send messages to our brain, allowing us to see.</p> <p><b>Lesson 4 - understand how we see objects.</b> Know that all objects reflect and absorb different amounts of light. They will discover that it is these reflections that allow us to see objects. The images we see are made up of light reflected from the <b>objects</b> we look at. This light enters the eye through the cornea, which acts like a window at the front of the eye. The amount of light entering the eye is controlled by the pupil, which is surrounded by the iris – the coloured part of the eye.</p> <p><b>Lesson 5 - To investigate reflection.</b> Pupils to know about the law of reflection and use their knowledge and understanding of identifying and measuring angles to predict reflected light rays. They will identify the angle of incidence and reflection and use these to complete a light maze. Know that sound waves and light waves reflect from surfaces. The angle of incidence equals the angle of reflection. This is called the <b>law of reflection</b>. So, if a wave hits a mirror at an angle of 36°, it will be reflected at the same angle (36°).</p> <p><b>Lesson 6 - learn about refraction.</b> Pupils to know how refraction can bend and change the direction of light rays. Know that light travels and bounces off surfaces into our eyes. When light travels from air through water, glass or anything that lets light through, it gets bent. This bending is called refraction.</p> <p><b>Lesson 7 - investigate the colours in white light.</b> Pupils to know how white light can be split into the seven colours of the rainbow. They will find out about Isaac Newton’s experiments with prisms and discuss how we see colours. White light is made up of the following</p>	<p>Recognise that light appears to travel in straight lines.</p> <p>Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.</p> <p>Explain that we see things because light travels from light sources to our eyes or from light sources to objects then to our eyes.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shapes as objects that cast them.</p>	<p><b>Why here?</b></p> <p>EYFS- space, beach, health and safety, weather and seasons.</p> <p>Year 1- seasonal changes (Day and night) and everyday material</p> <p>Year 2- Everyday materials</p> <p>Year 4- How sounds waves travel?</p> <p>Year 5- Space</p> <p><b>Prepares for:</b></p> <p>Year 7 Physics: Electricity and magnetism</p> <p>Year 8 Physics: Waves</p>	<p><b>Lesson 2:</b> -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.</p> <p><b>Lesson 5:</b> -using test results to make predictions to set up further comparative and fair tests -reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p> <p><b>Lesson 7:</b> -Planning different types of scientific enquiries to answer questions, including recognising and</p>
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	<p>colours: <b>red, orange, yellow, green, blue, indigo, and violet</b>. Each coloured light has its own <b>wavelength</b>. Red light has the <b>longest</b> wavelength and violet light has the <b>shortest</b> wavelength. Pupils to know that when white light shines towards a glass prism, it splits up into the different coloured wavelengths. Each wavelength <b>slows down</b> and changes direction. Red light changes direction <b>least</b>, and violet light changes direction <b>most</b>. The light leaving the prism is spread out into its different colours - a process called <b>dispersion</b>. When light hits a surface, some of it is absorbed and some of it is reflected. The light that is <b>reflected</b> is the colour of the object in that light. For example, a blue object <b>absorbs</b> all the colours of the spectrum except blue, which is reflected.</p>			<p>controlling variables where necessary. -taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.</p>
<p>Term 5 – Animals and their habitats</p> <ul style="list-style-type: none"> <li>• NC: 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</li> <li>• give reasons for classifying plants and animals based on specific characteristics</li> </ul>	<p><b>Lesson 1: To recap ways of grouping organisms according to their characteristics.</b> Pupils to know <b>Living things can be grouped</b> into five main groups called kingdoms: plants, <b>animals</b>, fungi, Protocista and Monera. ... The animal kingdom <b>can</b> be divided into two main groups – vertebrates (<b>animals</b> with a backbone) and invertebrates (<b>animals</b> without a backbone). Children will learn about some of the broad groups used to classify animals, then identify, sort or describe organisms within those groups according to some of their characteristics.</p> <p><b>Lesson 2: To explore ways of distinguishing between organisms that have similar characteristics.</b> Pupils to know that <b>Animals</b> can be divided into groups or '<b>classified</b>' by looking at the <b>similarities</b> and <b>differences</b> between them. Know that animals are divided into two main groups. Animals that have a <b>backbone</b> are called <b>vertebrates</b>. Animals that don't have a <b>backbone</b> are called <b>invertebrates</b>.</p> <p>Know that <b>vertebrates and invertebrates</b> are divided into smaller groups. Vertebrates, for example, are divided into fish, amphibians, reptiles, birds and mammals. Know that there are many different groups of invertebrates too. They include invertebrates which have soft bodies such as jellyfish, worms and molluscs (like slugs and squids). There are also groups of invertebrates with hard bodies, such as insects, crustaceans and spiders. Children will consider ways in which animals which belong to the same broad group can be distinguished and further classified.</p> <p><b>Lesson 3: To be able to classify plants according to their characteristics.</b></p>	<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><b>Why here?</b></p> <p>Year 2: Living things and their habitats.</p> <p>Year 4: Living things and their habitats.</p> <p>Year 5: Living things and their habitats.</p> <p><b>Prepares for:</b></p> <p>Year 8 Biology: ecosystems and interdependence</p>	<p><b>Lesson 5-</b> Working scientifically targets -taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate. -recording data and results of increasing complexity using scientific diagrams and labels. -using test results to make predictions. -reporting and presenting findings from enquiries. - identifying scientific evidence.</p>

	<p>Know that <b>Plants</b> fall into four categories: With seeds or without seeds; flowering <b>plants</b>, conifers, ferns and mosses. ... They use the flowers to reproduce and make baby versions of themselves. Trees are flowering <b>plants</b> too. They make fruit in the same way that smaller flowers do.</p> <p>Children will learn some ways in which plants are classified by botanists, then take photos, collect samples, or research, then classify plants.</p> <p><b>Lesson 4: To find out about Carl Linnaeus and his classification system.</b></p> <p>Pupils to know that In 1735, a scientist named Carl Linnaeus published '<b>Systema Naturae</b>', which explained a way to classify living things. Linnaeus put all living things into three groups called kingdoms; plants, animals and minerals. Each kingdom was then split into smaller levels. Scientists still use this system today. More species have been discovered since Linnaeus' lifetime so extra categories have been added. The system now looks like this: <b>Domain, Kingdom, Phylum, Class, Order, Family, Genus and Species</b></p> <p>Children will learn about the development of Linnaeus' classification system, then use it to help them identify, classify, and answer questions about a number of different organisms.</p> <p><b>Lesson 5: To explore what microorganisms are and how they can be grouped.</b></p> <p>Pupils to know that <b>Microorganisms</b> or <b>microbes</b> are <b>microscopic organisms</b> that exist as unicellular, multicellular, or cell clusters. Microorganisms are widespread in nature and are beneficial to life, but some can cause serious harm. They can be divided into six major types: <b>bacteria</b>, archaea, fungi, protozoa, algae, and viruses.</p> <p>Children will learn about some ways in which microorganisms are classified, and what they need to survive. Following this, they may either write in depth about micro-organisms, or conduct an experiment to determine what food a microorganism prefers.</p> <p><b>Lesson 6: To be able to identify and classify organisms in the local area.</b></p> <p>Children will either look at a local environment, or study one in another country. They will identify and classify organisms in that environment.</p> <p><b>This could link with the key text studied this term (term 5) <i>Holes</i></b></p>			
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