



**Science Whole School Curriculum Map**

**Year group: Reception**

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1 Summer 2
<b>Topic of the term</b>	<b><u>Ourselves and Families</u></b>	<b><u>Light and dark</u></b>	<b><u>Food</u></b>	<b><u>Science Week</u></b>	<b><u>Animals and habitats</u></b> <b><u>Life cycles</u></b>
<b>Science unit</b>	<ul style="list-style-type: none"> <li>• Environmental walk</li> <li>• Senses</li> <li>• Bodies/Skeletons</li> </ul>	<ul style="list-style-type: none"> <li>• Shadows</li> <li>• Rainbows</li> <li>• Space</li> </ul>	<ul style="list-style-type: none"> <li>• Healthy Eating</li> <li>• Different food group</li> <li>• Where food comes from</li> </ul>		Investigation area- rocks, natural materials, water tray
<b>Links to National Curriculum</b>	<p><b><u>Early Learning Goals</u></b></p> <p><b><u>Understanding the world</u></b></p> <p>Understand the effect of changing seasons on the natural world around them</p> <p>Describe what they see, hear and feel whilst outside.</p> <p>Explore collections of materials with similar and/or different properties.</p> <p>Talk about what they see, using a wide vocabulary.</p> <p>Understand the key features of the life cycle of a plant and an animal.</p> <p>Begin to understand the need to respect and care for the natural environment and all living things.</p>				



## Science Curriculum Map

### Year Group: 1

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic of the term	<u>It's Good To Be Me</u>		<u>There's no place like home</u>		<u>A Toy's Story</u>	
Science unit	<p><u>Our Changing World</u></p> <p>Throughout the year the children will observe and record changes to trees, leaves, flowers and animals found in the local environment.</p>	<p><u>Our Senses</u></p> <p>Identify, name and compare parts of our bodies.</p> <p>Describe, compare and group different edible materials by using the sense of taste</p> <p>Identify, compare and group the sounds collected during a sound walk.</p> <p>Describe how our sense of touch helps us to learn about the world around us.</p> <p>Describe and compare a variety of different smells, identifying which are the most and least liked by the class (extended writing)</p>	<p><u>Our Changing World</u></p> <p>Throughout the year the children will observe and record changes to trees, leaves, flowers and animals found in the local environment.</p>	<p><u>Everyday Materials</u></p> <p>Introducing materials- sorting objects according to material items are made from (wood, metal, glass, plastic, brick and fabric).</p> <p>Continue looking at ways of sorting objects according to criteria using different properties of materials.</p> <p>Testing different types of paper.</p> <p>Testing different types of materials.</p> <p>Investigate objects made from more than one material.</p>	<p><u>Our Changing World</u> <u>Looking at animals</u></p> <p>Throughout the year the children will observe and record changes to trees, leaves, flowers and animals found in the local environment.</p> <p>Identify and name a variety of common animal and to describe and compare the body structures of different kinds of animals.</p> <p>Describe and compare different kinds of fish.</p> <p>Observe the main features of birds, including feathers, and</p>	<p><u>Plant Detectives</u></p> <p>Identify, name, describe and compare some familiar garden plants in the local environment and to compare a variety of familiar flowering plants and group them according to the similarities in their flowers.</p> <p>Describe and compare the root systems of a variety of familiar plants.</p> <p><b>Enrichment</b> - To identify and name, describe and compare a variety of trees in the local environment.</p>



		<p>Describe how our senses help us to find out about the world.</p>		<p>Testing whether materials bend or stretch.</p> <p>Children to carry out an investigation to find out which material is most absorbent. Chn to predict and how to make a test fair.</p> <p>Idea applied to finding a suitable material for a problem presented.</p> <p>Children to carry out a planned investigation of how waterproof a material is.</p>	<p>to compare these in different kinds of birds.</p> <p>Describe and compare how different kinds of animals move.</p> <p>Recognise that some animals mainly eat meat (carnivores), some only eat plant materials (herbivores) and some eat both (omnivores).</p> <p>Describe how the lives of nocturnal animals differ from those of animals seen during the daytime.</p>	
<p><b>Links to National Curriculum</b></p>	<p><b>Plants</b> 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> <p><b>Animals</b></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> <p><b>Everyday materials</b></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> </ul>					



	<ul style="list-style-type: none"><li>• compare and group together a variety of everyday materials on the basis of their simple physical properties</li></ul> <p><b><u>Seasonal changes</u></b></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>
<b>Skills</b>	<p><b><u>Autumn 1: Our Changing World</u></b></p> <p>To identify changes that occur across the four seasons in plants, animals and the weather. To observe and record changes to trees that occur in the different seasons. To identify and name animals found in the local. To identify and name plants/flowers found in the local. environment and the changes throughout the seasons. To identify and observe changes in each season.</p> <p><b><u>Autumn 2: Our senses</u></b></p> <p>To identify, name and draw different parts of the human body. To identify the 5 senses. To make observations and identify similarities and differences for parts of the body. To ask and answer questions. To carry out simple tests to investigate taste, hearing, touch, smell and sight, To plan and carry out fair tests.</p> <p><b><u>Spring 1: Our Changing World</u></b></p> <p>To identify changes that occur across the four seasons in plants, animals and the weather. To observe and record changes to trees that occur in the different seasons. To identify and name animals found in the local. To identify and name plants/flowers found in the local. environment and the changes throughout the seasons. To identify and observe changes in each season.</p> <p><b><u>Spring 2: Everyday materials</u></b></p> <p>To identify and sort objects made out of wood, metal, plastic, glass, rock, brick, paper and fabric, by how they look and how they feel. To record my sorting pictorially. To recognise that some objects are made from more than one material. To describe objects made from different materials. To identify and describe the physical properties of different materials. To identify materials that bend and stretch. To explore the properties of absorbency and water proofing.</p>



	<p>To carry out simple tests. To compare the properties of ice and water. To carry out a fair test.</p> <p><b><u>Summer 1: Looking at animals</u></b> To observing the main features of birds and comparing To identify and name groups of animals and compare body structures of different animals To identify and name different types of fish To classify animals by the food they eat To investigate the lives of nocturnal animals</p> <p><b><u>Summer 2: Plant Detectives</u></b> Identifying and naming plants in the local environment Comparing a variety of flowering plants Observe roots of different plants</p>
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**Science Curriculum Map**

**Year Group :2**

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic of the term	<b><u>Bright Lights, Big City</u></b>		<b><u>Dazzling Dinosaurs</u></b>		<b><u>Voyages of Columbus</u></b>	
Science unit	<b><u>Our Changing World Materials</u></b>  Throughout the year the children will:  Understand how habitats provide	<b><u>Take Care</u></b>  Children will sort foods into different categories. Sorting and classifying.	<b><u>Our Changing World The Apprentice Gardener</u></b>  Throughout the year the children will:	<b><u>What is a habitat?</u></b>  Recognise and name things that are living, once lived, and have never lived	<b><u>Our Changing World</u></b>  Throughout the year the children will: Understand how habitats provide plant and animals with basic	<b><u>Growing up</u></b>  What do babies need? Children will learn about and describe the basic needs of animals, including humans, for



<p>animals with basic needs Gather and record data (OCW)</p> <p>Name materials from which objects are made</p> <p>Identify and classify different materials</p> <p>Children will identify and compare the suitability of materials for particular uses -Children will use observations to suggest answers to question (absorbency test)</p> <p>Children will carry out comparative and fair tests and record results (waterproof experiment)</p> <p>- Children will find out how shapes of objects can be changed (squashing, stretching)</p> <p>-Children will find out how shapes of objects</p>	<p>Children will sort food into the 5 main food groups. Sorting and classifying. Children will design a healthy packed lunch</p> <p>Children will understand the importance for humans of hygiene. Using secondary sources of information to answer questions</p> <p>Children will understand the importance for humans of exercise. Investigation</p> <p>Children will create an information booklet for Reception informing them on how to stay healthy</p>	<p>Understand how habitats provide animals with basic needs Gather and record data (OCW)</p> <p>Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Observing closely, using simple equipment.</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>Observe and describe how seeds and bulbs grow into mature plants. Performing simple tests and recording data. Bean germination.</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Using observations and ideas to suggest answers to questions.</p>	<p>- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.</p> <p>Using observations and ideas to suggest answers to questions.</p> <p>What did dinosaurs eat? CCL science investigating carnivores, herbivores and omnivores.</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. Gathering and recording data to help in answering questions.</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</p>	<p>needs and how they depend on each other. Gathering and recording data to help in answering questions. (OCW)</p>	<p>survival (water, food and air) Children will recognise the needs of a human baby for survival</p> <p>How have we changed? Children will notice that animals, including humans, have offspring that grow into adults. They will compare features of a baby and a child.</p> <p>Children will notice that animals, including humans, have offspring which grow into adults. They will classify and describe changes that happen as people grow older.</p> <p>Do older children have bigger heads? Children will learn that animals, including humans, have offspring which grow into adults. They will investigate if older children have bigger heads.</p> <p>Do all our body parts grow as we get older?</p>
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	<p>can be changed (Elasticity test)</p>		<p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p> <p>Gathering and recording data to help in answering questions. (Cress investigation. - Changing variables.)</p>	<p>kinds of animals and plants, and how they depend on each other.</p> <p>Using observations and ideas to suggest answers to questions. They will understand how animals adapt to live in different habitats.</p>		<p>Children will recognise that animals, including humans, have offspring which grow into adults. They will find out and record the answers to questions about babies.</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.</p> <p>Using observations and ideas to suggest answers to questions.</p>
<p><b>Links to National Curriculum</b></p>	<p><b><u>Habitats</u></b></p> <ul style="list-style-type: none"> <li>• explore and compare the differences between things that are living, dead, and things that have never been alive</li> <li>• 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</li> <li>• identify and name a variety of plants and animals in their habitats, including microhabitats</li> <li>• describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food</li> </ul> <p><b><u>Animals, including humans</u></b></p> <ul style="list-style-type: none"> <li>• notice that animals, including humans, have offspring which grow into adults</li> <li>• find out about and describe the basic needs of animals, including humans, for survival (water, food and air)</li> <li>• describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</li> </ul> <p><b><u>Materials</u></b></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>					



<b>Skills</b>	<p><b><u>Autumn 1: Materials</u></b></p> <p>I can compare two objects. I can identify the material an object is made from and think of other objects that are made from that material. I can record my observations in a suitable way. I can identify objects made of particular materials. I can describe the properties of a material. I can suggest reasons to explain why the material was chosen to make that object. I can decide if a material is a good choice or not. I can explain why it is a good choice or not. I can give reasons based on the properties of the materials. I can suggest a way to test a fabric to find out how much water it lets through I can carry out this test and record my results. I can explain what I found out from the test. I can show squashing, stretching, bending and twisting. I can create a movement sequence using squashing, stretching, bending and twisting.</p> <p><b><u>Autumn 2: Take Care</u></b></p> <p>I can sort food in different ways. I can label the groups. I can present my sorting in a Venn diagram I can sort food in different ways. I can name and give examples of the different food types. I can design a healthy lunch box. I can describe how my body feels when I exercise. I can suggest different activities that exercise our bodies. I can plan daily physical activities. I can suggest ways to be hygienic. I can explain how to clean my body. I can give reasons why it is important to keep my body clean. I can decide what information needs to go in my book. I can decide what words and images to put on each page. I can state the key messages about how to stay healthy and safe.</p>
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I can create an effective front and back cover.

**Spring 1: The Apprentice Gardener**

- I can make observations of different types of seeds.
- I can use my observations to describe and identify seeds.
- I can suggest what might help the seeds to grow.
- I can match the seed to the type of plant it will grow into.
- I can think about what might happen to seeds when they grow.
- I can turn my ideas into questions.
- I can suggest what a gardener needs to know about seeds.
- I can decide how we might find answers to our questions.
- I can suggest what might happen when seeds are planted in different ways.
- I can plan how my ideas can be tested.
- I can follow the plan to set up a test.
- I can make careful observations of my seeds.
- I can record my observations using dated and labelled drawings or photographs.
- I can describe the changes using the correct scientific words.
- I can make and record a series of observations as seeds germinate and seedlings grow.
- I can decide what my observations tell me.
- I can write a conclusion describing what I have found out
- I can recognise whether my ideas have changed.

**Spring 2: What is a habitat?**

- I can recognise and name things that are living, once lived and have never lived in some habitats.
- I can explain that the main parts of a habitat are living things, things that once lived and things that have never lived.
- I can describe some similarities and differences between the habitats.
- I can sequence the animals in a food chain based on what they eat.
- I can add arrows correctly to the food chain.
- I can relate the food chains to a suitable habitat.
- I can use my food chain to talk about how the animals depend on each other.
- I can make observations of features of living things.
- I can link features of animals to how they feed, move or make their home.
- I can use features of an animal or plant to decide which habitat it is suited for.



### **Summer 1: Our Changing World**

To identify changes that occur across the four seasons in plants, animals and the weather.

To observe and record changes to trees that occur in the different seasons.

To identify and name animals found in the local.

To identify and name plants/flowers found in the local. environment and the changes throughout the seasons.

To identify and observe changes in each season.

### **Summer 2: Growing up**

I can give differences between living and non-living things.

I can group things a baby does and does not need.

I can identify some things that are not essential but are good for babies to have.

I can recognise characteristics of babies.

I can recognise characteristics of children.

I can identify changes that happen when babies grow into children.

I can name the stages of human life.

I can put the stages of human life in order.

I can describe differences between the stages.

I can measure the size of someone's head.

I can complete a table.

I can plot points on a scatter graph.

I can use the graph to answer the investigation question.

I can ask questions about babies.

I can listen carefully to find out the answers to my questions.

I can make observations of a baby. (If the visit to the class includes a baby.)

I can record what I have found out using writing and pictures.



## Science Curriculum Map

### Year Group : 3

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic of the term	<u>Greece Now and Then</u>		<u>Settlements, Travel and Trade</u>		<u>Raging River, Fantastic Pharoes</u>	
Science unit	<p style="text-align: center;"><b><u>Plants</u></b></p> <p>Throughout the year the children will:</p> <ul style="list-style-type: none"> <li>-To make observations and collect evidence about how trees change as part of a seasonal cycle</li> <li>To make observations and collect evidence about our changing world over time (changes of a flowering plant, leaves and trees)</li> </ul> <p>Describe what we know about the</p>	<p style="text-align: center;"><b><u>Light and shadow</u></b></p> <p>Investigate how different objects reflect different amounts of light</p> <p>Design and produce reflective strips for night ; investigate and understand how mirrors reflect objects and lights.</p> <p>To identify what affects the shape of a shadow.</p>	<p style="text-align: center;"><b><u>Our Changing World Amazing Bodies</u></b></p> <p>Throughout the year the children will:</p> <ul style="list-style-type: none"> <li>To make observations and collect evidence about how trees change as part of a seasonal cycle</li> <li>To make observations and collect evidence about our changing world over time (changes of a flowering plant, leaves and trees)</li> </ul> <p>Children will identify the important things that need</p>	<p style="text-align: center;"><b><u>Power of Forces</u></b></p> <p>To explore how a force is used to make something start to move.</p> <p>Explore how air can make things move.</p> <p>Explore how objects, move on different materials.</p> <p>To explore which materials are magnetic.</p> <p>Measure the strength of a magnet in different ways.</p>	<p style="text-align: center;"><b><u>Our Changing World</u></b></p> <p>Throughout the year the children will:</p> <ul style="list-style-type: none"> <li>Make observations and collect evidence about how trees change as part of a seasonal cycle</li> <li>To make observations and collect evidence about our changing world over time (changes of a flowering plant, leaves and trees).</li> </ul>	<p style="text-align: center;"><b><u>Rock Detectives</u></b></p> <p>To recognise where and how rocks are used and explain how their properties make them for their purpose.</p> <p>To test and compare rocks to identify which is the hardest.</p> <p>To find out which rocks are waterproof.</p> <p>To investigate how rocks, change over time.</p>



	<p>different parts of plants and to ask questions about plants for further investigation.</p> <p>Identify the parts of flowers and describe their functions (photosynthesis).</p> <p>Plan and set up a fair test investigation to find out the effect of removing the leaves from a growing plant (Investigate what happens when leaves are removed).</p> <p>Explain observations of water being transported in plants and make predictions based on observations (investigate the way water is transported).</p> <p>Name the main stages of a flowering plant's life cycle and present them in a sequenced diagram.</p>	<p>Identify how the sun affects the shape of a shadow.</p>	<p>to be considered in order to survive.</p> <p>To discuss what we need to eat to stay healthy and how an adventurer stays healthy.</p> <p>To learn about why we have a skeleton and to be able to design a new vertebrate species.</p> <p>To understand how muscles help us to move.</p> <p>To ask questions about whether our bodies affect how well we do things and how good we are at different activities.</p> <p><b>Enrichment</b> – What food will you need to take to the Arctic and discuss animals that lived in the past.</p>			<p>To explain that soils are made partly from rock that has broken down into smaller particles and describe some of the properties of different types of soils and to investigate and test different kinds of soils to see how quickly water drains through.</p> <p>To explore fossils to find out what they are and to explain how fossils came to be formed.</p> <p>To identify where and how fossils are found.</p> <p>To explain how fossil hunters, work as scientists.</p>
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	Describe and model the process of insect pollination.					
<b>Links to National Curriculum</b>	<p><b><u>Plants</u></b> Pupils should be taught to:</p> <ul style="list-style-type: none"><li>• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</li><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><u>Animals, including humans</u></b></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 and muscles for support, protection and movement</li></ul> <p><b><u>Rocks</u></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>					



- recognise that they need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- recognise that shadows are formed when the light from a light source is blocked by an opaque object
- find patterns in the way that the size of shadows change

#### **Forces and magnets**

- compare how things move on different surfaces
- notice that some forces need contact between 2 objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- describe magnets as having 2 poles
- predict whether 2 magnets will attract or repel each other, depending on which poles are facing

#### **Skills**

##### **Autumn 1: Plants**

I can make observations and identify patterns in how leaves, trees and flowers change through the year.

I can record what I have found out in different ways.

I can describe how trees, flowers and leaves change over time

I can identify the parts of a plant.

I can describe some of the functions of those parts.

I can ask scientific questions about plants.

I can make careful observations of parts of a flower.

I can label the parts of a flower.

I can describe the functions of the different parts.

I can compare different flowers.

I can help to plan an investigation to answer the question: What happens if a plant loses its leaves?

I can decide what to observe or measure to collect my results.

I can recognise when a test is fair

I can make scientific observations about water transport in plants.

I can describe what happens to water in a plant.

I can make predictions based on what I have observed.



I can name the main stages in the life cycle of a flowering plant.  
I can put the stages in order.  
I can present them in a sequenced diagram  
I can describe how pollen is transferred between flowers.  
I can explain what the different parts of the flower do.  
I can explain why bees and pollination are important.  
I can make observations and identify patterns in how leaves, trees and flowers change through the year.  
I can record what I have found out in different ways.  
I can describe how trees, flowers and leaves change over time

### **Autumn 2: Light and shadow**

I can describe how objects reflect light  
I can suggest why some objects reflect more light than others.  
I can explain what shiny means.  
I can explain why you cannot see anything if it is completely dark.  
I can make things easier to see at night.  
I can explain how my suggestions will make things easier to see in the dark  
I can describe how a mirror works.  
I can describe how images and words look in different mirrors.  
I can predict what an image or word might look like in a mirror.  
I can describe how a shadow is formed.  
I can explain how the shape of a shadow is related to the shape of the object making it and the position of the light source.  
I can describe how a shadow is formed.  
I can explain how the shape of a shadow is related to the shape of the object making it and the position of the light source

### **Spring 1: Our changing world**

To identify changes that occur across the four seasons in plants, animals and the weather.  
To observe and record changes to trees that occur in the different seasons.  
To identify and name animals found in the local.



To identify and name plants/flowers found in the local environment and the changes throughout the seasons.

To identify and observe changes in each season.

**Summer 1: Rock Detectives**

To explore rocks and their properties

To know how rocks are formed

To compare different types of rocks

To investigate permeability

To know how fossils are formed

To identify how fossils are found





Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic of the term	<u>The Roman Empire and its impact on Britain</u>		<u>The Tudors</u>		<u>Invaders and Settlers</u>	
Science unit	<u>Our Changing World In a State</u>	<u>In a State</u>	<u>Our Changing World Where does all the food go?</u>	<u>Human Impact</u>	<u>Our Changing World Good Vibrations</u>	<u>Switched on</u>
<u>Science Curriculum Map</u>  <u>Year Group : 4</u>	-Make observations of leaves during the Winter and classify them using a key.	Classify materials as solids or liquids by observing their properties.  - plan a fair test investigation to test ideas about melting ice and collect, present and interpret data about melting ice.  -define melting and freezing.  - explain observations of air using scientific knowledge about materials  - classify materials as solids, liquids or gases.  - collect data to answer a question about drying	Make observations of leaves during Spring and classify them using a key.  - share what we know about food and nutrition and to ask questions about what happens to food after it has been eaten.  - identify the different teeth that humans have and why we have different types of teeth, their functions and how to look after them.  - construct food chains and webs for a particular habitat and to construct food	Give examples of positive and negative ways in which humans change the environment  plan a litter survey To carry out a litter survey, collecting and presenting data  - research and present information about the impact of litter on animals  - demonstrate understanding of the potential human impact on food chains in a UK habitat  - demonstrate an understanding of human impact on food chains and habitats in another part of the world	Make observations of leaves during the summer and classify them using a key.  -describe what we know about sounds and to explore different ways of making sounds.  -To investigate how sounds travel and to explore how we can make instruments louder and quieter.  - measure how the loudness of a sound changes as the distance from the source increases.  - explore the different notes that plucked	- describe what we know about sounds and to explore different ways of making sounds.  - investigate how sounds travel and to explore how we can make instruments louder and quieter.  - measure how the loudness of a sound changes as the distance from the source increases.  - explore the different notes that plucked bands make and discover how to alter the pitch of a sound.  - explore how we can change the pitch of instruments that are played using air.



		<p>washing and investigate evaporation.</p> <ul style="list-style-type: none"> <li>- describe and explain findings from an evaporation investigation.</li> <li>- identify different materials from their boiling point.</li> <li>- identify where condensation is happening             <ul style="list-style-type: none"> <li>- To use a labelled diagram to answer the question: Where does rain comes from?</li> </ul> </li> <li>- create a concept map to present what I know about changes of state.</li> </ul> <p><b>Enrichment</b> -To compare the melting points of different types of chocolate to determine the best chocolate for a particular purpose</p> <ul style="list-style-type: none"> <li>- To describe the effect of adding salt to ice</li> <li>-Enrichment – How does a Thermometer work?</li> </ul>	<p>chains for some animals living in the African grasslands.</p> <ul style="list-style-type: none"> <li>- describe how food is broken down in the digestive system and to use a model to demonstrate the digestive system.</li> </ul> <p><b>Enrichment</b> - To investigate the function of toothpaste and compare different types and to compare different toothpastes.</p>		<p>bands make and discover how to alter the pitch of a sound.</p> <ul style="list-style-type: none"> <li>- explore how we can change the pitch of instruments that are played using air.</li> </ul>	<ul style="list-style-type: none"> <li>-sort electrical products according to their power source and construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wire, bulbs, switches and buzzers.</li> <li>-explain, using a model, how an electrical circuit works and to identify and correct problems with circuits.</li> <li>- describe what a switch does and how it works and sort materials by testing for a property that makes them suited to replace a wire in a circuit.</li> <li>- strengthen a conclusion about materials that are good conductors of electricity by obtaining more evidence and to investigate the link between a material's properties (conductor or insulator) and its use.</li> <li>- produce a piece of</li> </ul>
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						information writing about electricity.
<b>Links to National Curriculum</b>	<p><b><u>States of matter</u></b></p> <p>Pupils should be taught to:</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><u>Sounds</u></b></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><u>Electricity</u></b></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 part of a complete loop with a battery</li><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>					



<b>Skills</b>	<p><b><u>Autumn 1: Our Changing World</u></b></p> <p>I can make careful observations of leaves in the Autumn</p> <p>I can describe the main characteristics of leaves.</p> <p>I can use the characteristics to devise questions to classify leaves – using a key.</p> <p><b><u>Autumn 2: In a state</u></b></p> <p>I can compare materials using their properties.</p> <p>I can describe the properties of solids and liquids.</p> <p>I can use a material's properties to decide whether it is a solid or a liquid</p> <p>I can make careful observations of melting ice.</p> <p>I can make predictions based on my observations of melting ice.</p> <p>I can plan a fair test to answer a question</p> <p>I can make and record accurate measurements of melting ice to collect my results.</p> <p>I can present my results on a correctly labelled bar chart.</p> <p>I can describe the pattern in the data and use the data to answer a question.</p> <p>I can explain that ice is a solid but when it melts it is a liquid.</p> <p>I can make careful observations of materials and take accurate measurements.</p> <p>I can describe what happens when a solid melts.</p> <p>I can describe what happens when a liquid freezes.</p> <p>I can describe how to melt or freeze materials</p> <p>I can make careful observations of air.</p> <p>I can think about possible causes for what I have observed</p> <p>I can use my observations and scientific knowledge to explain that spaces that appear to be empty are filled with air/gases</p> <p>I can observe and describe differences between solids, liquids and gases.</p> <p>I can state the properties of the three states of matter.</p> <p>I can use those properties to sort materials into solids, liquids and gases can suggest variables to investigate that affect the length of time taken for washing to dry.</p> <p>I can carry out a fair test, recognising what makes it fair.</p> <p>I can collect accurate data.</p> <p>I can explain what is happening when something dries.</p> <p>I can describe patterns in data.</p>
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I can use data to answer a question.

I can use what I know about evaporation to explain my findings.

I can write an email giving advice based on my findings

I can describe what happens when a liquid boils.

I can tell the story of a time and temperature graph.

I can identify the boiling point on a time and temperature graph.

I can describe what happens when water boils or evaporates.

I can describe the process of condensation.

I can make careful observations.

I can use my knowledge of changes of state to explain my observations

I can describe my careful observations using my knowledge of changes of state.

I can explain where rain comes from.

I can make connections between a model and real life.

I can label where changes of state are happening

I can recognise and name changes of state.

I can apply what I know about changes of state to the water cycle.

I can organise information on a concept map about changes of state.

I can compare how long different types of chocolate take to melt.

I can use my understanding of melting to choose the best chocolate for making crispy cakes.

I can consider what else might affect whether the cakes melt.

I can follow instructions for a practical activity.

I can make careful observations and measurements to compare freezing points.

I can explain how what I have found out is useful.

**Spring 1: Where does all the food go?**

I can name the main food groups and give examples of foods that belong to each group.

I can explain why each food group is important.

I can explain the term 'balanced diet'.

I can name the basic parts of the digestive system.

I can sequence the parts of the digestive system.



I can name the types of teeth.

I can recognise the types of teeth in my mouth.

I can explain the difference between the teeth of a child and an adult.

I can name the types of human teeth.

I can explain the function of the different types of teeth.

I can describe different ways to look after our teeth.

I can explain why it is important to look after our teeth.

I can give some consequences of not looking after our teeth.

I can state whether a living thing is a consumer or producer.

I can create food chains/webs from information given.

I can use the food chains/webs to decide whether or not animals are predators or prey or both.

I can use correctly the terms consumer, producer, predator and prey.

I can sort some animals according to what they eat by looking at their skulls, and in particular their teeth.

I can order the animals in a food chain.

I can identify the organs in which food is broken down.

I can describe the difference between a chemical and mechanical process for breaking down food.

I can use appropriate secondary sources to find information about the digestive system.

I can present my findings about digestion.

I can represent the parts of the digestive system in a model.

I can use this model to explain the role of each of the parts of the digestive system.

I can explain how the model differs from the actual digestive system

  

I can follow instructions to carry out the investigation

I can plan a fair test

I can record my observations and results.

I can explain what I found out from my investigation

I can carry out the investigation.

I can record my observations and results.

I can explain what I found out from my investigation.



### **Spring 2: Human Impact**

- I can describe some negative ways that humans change their environment.
- I can describe some positive ways that humans change their environment.
- I can group items of litter into categories.
- I can label a tally chart for data collection.
- I can plan a survey to find out how much litter is around my school.
- I can collect data about litter.
- I can sort data into categories.
- I can present data on a graph.
- I can use the data to answer a question and make suggestions
- I can describe how different types of litter may be dangerous to animals.
- I can name local animals that might be affected by different types of litter.
- I can describe ways to reduce the dangers of litter to animals.
- I can present information in a persuasive way to support my argument.
- I can present my findings on habitat destruction in other parts of the world.
- I can use scientific evidence to support my findings.
- I can explain some implications of global habitat destruction

### **Summer 1: Good Vibrations**

- I can identify and describe different types of sound.
- I can say how some sounds are made.
- I can talk about how sounds might be changed.
- I can make sounds in a range of different ways.
- I can say how some sounds are made.
- I can explain how sounds are associated with vibrations.
- I can describe how sounds travel.
- I can test how sounds travel through different materials.
- I can use my evidence to justify my ideas about how sounds travel.
- I can predict which instruments will be louder.



I can explain what affects the volume of a sound.  
I can measure the volume of the sound produced.  
I can explain my results and match them to my prediction.  
I can take careful measurements.  
I can record my measurements.  
I can present my data in a graph  
I can explore ways to change the pitch of a plucked band.  
I can describe how the length and thickness of the string or band affects the pitch  
I can use air to make high and low notes.  
I can identify what is vibrating to cause the sound.  
I can explain how high and low notes are produced

**Summer 2: Switched on**

I can recognise items that are powered by electricity.  
I can identify the power source for an electrical device.  
I can organise and present findings from sorting activity.  
I can recognise actions that are caused by electricity.  
I can find different ways to light a bulb.  
I can record circuits using labelled drawings.  
I can apply what I have learned to connecting other components  
I can describe what is happening in the circuit.  
I can use annotated drawings to explain how a circuit works  
I can recognise circuits which are not complete.  
I can identify what is causing a circuit not to work.  
I can describe, using labelled drawings, what to do to make a circuit work.  
I can make circuits which include switches.  
I can record my circuits using labelled drawings.  
I can explore and explain how simple switches work.  
I can make a simple switch.





	<p>I can identify what property to test to find out if a material would be suitable to replace a wire in a circuit.</p> <p>I can decide how to test the property.</p> <p>I can record my results and present them in different ways.</p> <p>I can give examples of materials which are electrical conductors and insulators</p> <p>I can decide what my results show about electrical conductors and insulators.</p> <p>I can test more materials to check my ideas about electrical conductors and insulators.</p> <p>I can look for patterns in the data.</p> <p>I can write a conclusion that refers to the evidence from the tests.</p> <p>I can name materials which are good electrical conductors and insulators.</p> <p>I can identify where and why they have been used.</p> <p>I can explain how this keeps us safe.</p> <p>I can choose appropriate materials to make different parts of switches can review what I knew about electricity at the start of this module.</p> <p>I can identify what I have learned in this module and how I have learned it.</p> <p>I can tell others what I know about electricity using correct scientific vocabulary.</p> <p>I can write about what I have learned using correct scientific vocabulary.</p>
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**Year Group: 5 Science Curriculum Map**

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic of the term	<u>Mayans and the rainforest</u>		<u>The Earth and Beyond</u>		<u>The Vikings</u>	



Science unit	<u>Our Changing World</u> <u>Circle of Life</u>	<u>Reproduction in plants</u> <u>and animals</u>	<u>Our Changing World</u> <u>The Earth and Beyond</u>	<u>Feel the Force</u>	<u>Our Changing World</u> <u>Everyday materials</u>	<u>Marvellous Mixtures</u>
	<ul style="list-style-type: none"> <li>- compare the life cycles of different animals.</li> <li>- define what a mammal is and describe its life cycle.</li> <li>- define an amphibian and describe its life cycle.</li> <li>- define what insects are and describe the different types of life cycle, including the process of metamorphosis.</li> <li>- define what a bird is and describe its life cycle.</li> <li>- create a life cycle for an imaginary animal that will help to ensure its long-term success.</li> <li>- explore and describe ways in which humans</li> </ul>	<ul style="list-style-type: none"> <li>- describe the process of sexual reproduction in many flowering plants, naming parts of the flower and explaining their importance within the process.</li> <li>- recognise that flowers are not all the same and identify how they are different and to describe how plants can reproduce asexually, by creating new plants from different parts of the parent plant rather than by producing seeds.</li> <li>- describe the life process of reproduction in amphibians and most insects and recognise this process as sexual reproduction.</li> <li>- describe the life process of reproduction in mammals and birds and recognise this process as sexual reproduction and to recognise patterns in data about the life cycles of</li> </ul>	<ul style="list-style-type: none"> <li>- describe the shapes, positions and movement of the planets in the solar system and some of the differences between these and stars.</li> <li>- use a model to describe and compare the movements of different planets in space and to use a model or diagram to explain the effect of the Earth's rotation in space.</li> <li>-make a shadow clock and test its accuracy.</li> <li>- use a model to explain why sunrise and sunset occur at different moments in time in different parts of the world and to explain how the Earth's tilt leads to seasonal changes.</li> <li>- To be able to explain how the Earth's tilt affects the times of sunrise and sunset in different places</li> </ul>	<ul style="list-style-type: none"> <li>- measure, using appropriate units, friction between moving surfaces as part of an investigation into how the surface area and materials affect friction.</li> <li>- use evidence to explain how objects fall through the air, use arrows to represent forces that make objects move in different directions and to use test results about air resistance as a starting point for further investigative work.</li> <li>- measure the effects of water resistance and to identify and explain the effect of up thrust on objects in water.</li> <li>- explain why a larger mass stretches a rubber band or spring more than a smaller mass and demonstrate how levers work and how they reduce the force required to move objects.</li> </ul>	<ul style="list-style-type: none"> <li>- classify a variety of materials according to their properties.</li> <li>- compare and contrast different solids according to their properties, including their hardness.</li> <li>- compare and contrast the properties of different liquids, including viscosity.</li> <li>- identify the properties of different metals and describe how these properties make them suitable for particular uses.</li> <li>- To use evidence from investigations to explain how a cool bag works as an insulator.</li> </ul>	<ul style="list-style-type: none"> <li>- explain that materials can mix and to demonstrate that mixtures of solid materials can be separated by the technique of sieving.</li> <li>- identify through investigation some solids that dissolve and others that do not, and describe how to tell that a solid has dissolved.</li> <li>- identify, through investigation, some variables that affect the rate at which salt or sugar dissolves.</li> <li>- explain the processes of evaporation and condensation and how these might help to produce drinkable water from a plentiful supply of seawater.</li> <li>- demonstrate and explain how pure salt can be separated from a rock salt mixture, using techniques</li> </ul>



	<p>are using science to help endangered animals to complete their life cycles and increase their population numbers.</p>	<p>humans and other mammals.</p> <p>- describe puberty in girls and to describe puberty in boys.</p>	<p>at different times of the year.</p> <p>- identify the phases of the Moon and explain why these occur.</p>	<p>- explain why pulleys make lifting objects easier.</p> <p>- explain how gears allow a smaller force to have a greater effect.</p>		<p>based on the properties of the materials involved.</p>
<p><b>Links to National Curriculum</b></p>	<p><b><u>Living things</u></b>  Pupils should be taught to:  describe the changes as humans develop to old age  Properties and changes of materials  Pupils should be taught to:</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 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</li> </ul> <p><b><u>Earth and space</u></b>  Pupils should be taught to:</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>					



- describe the movement of the moon relative to the Earth
- describe the sun, Earth and moon as approximately spherical bodies
- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky

#### **Forces**

Pupils should be taught to:

- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect

#### **Skills**

##### **Autumn 1: Circle of Life**

I can define the main stages of an animal life cycle.

I can identify similarities and differences between the life cycles of an elephant, a toad, a bumblebee and a blue tit.

I can describe how the length of life cycle of these animals varies

I can define what a mammal is.

I can describe the common characteristics of different types of mammal.

I can sequence the life cycle stages of a hedgehog, a bat, a polar bear or a mountain gorilla.

I can ask questions to find out more about mammals and identify how to answer these questions.

I can define what an amphibian is.

I can describe the common characteristics of different types of amphibian.

I can sequence the life cycle stages of a toad, newt, salamander or tree frog.

I can decide what information sources to use to find out about amphibians.

I can explain what is different about the life cycle of an amphibian compared with that of a mammal.

I can define insects.

I can describe the common characteristics of different types of insect.

I can sequence the life cycle stages of an insect.

I can present my findings in a poster.

I can describe the differences and similarities between metamorphosis in insect life cycles and an amphibian life cycle.

I can define a bird.

I can describe the common characteristics of different types of birds.



I can sequence the life cycle stages of a bird.

I can select and record key information gathered from secondary sources to help me answer questions about the breeding cycle of birds

I can create a detailed life cycle for an imaginary animal.

I can identify ways in which my animal will be successful.

I can communicate my ideas creatively.

### **Autumn 2: Reproduction in plants and animals**

I can describe the life process of sexual reproduction in flowering plants, including pollination and fertilisation.

I can explain the role of different parts of the flower in sexual reproduction.

I can present the process of sexual reproduction in flowering plants in a storyboard or other sequence.

I can identify, name and describe in detail the function of the reproductive parts of a flower and the processes involved in plant reproduction.

I can describe how the flowers of some plants are different, including only male or female parts.

I can explain how the process of reproduction differs in plants that have single sex flowers.

I can describe ways that plants are able to reproduce other than by producing seeds.

I can suggest why it is useful for plants to reproduce asexually.

I can produce a step-by-step 'How to' guide for a propagation method of my choice.

I can describe how some amphibians and insects reproduce.

I can identify metamorphosis as a stage in the life process of reproduction that is specific to these two types of animals.

I can explain that amphibian and most insect reproduction is sexual reproduction, requiring two animals, one male and one female.

I can describe how some mammals and birds reproduce.

I can identify similarities and differences between the life process of reproduction in these two types of animals.

I can explain that mammal and bird reproduction is a type of sexual reproduction, requiring two animals – one male and one female.

I can name and sequence the stages on a human life cycle diagram.

I can compare the human life cycle with that of other mammals.

I can present data as a scatter graph.

I can use my graph to answer a question about life cycles.

I can identify differences between girls and women.

I can describe the changes that happen to girls during puberty.

I can give reasons for some of the changes.



I can identify differences between boys and men.  
I can describe the changes that happen to boys during puberty.  
I can give reasons for some of the changes.

**Spring 1: Earth and Beyond**

I can ask questions that help me to find out about the solar system.  
I can use secondary sources of information to answer my questions.  
I can recognise that the Earth and other planets and the Moon are spheres.  
I can describe how the Earth and other planets move around the Sun.  
I can identify the Sun as a star.  
I can use models and secondary sources of information to explain how the planets orbit the Sun.  
I can explain how the length of a year was decided in ancient times.  
I can explain what a leap year means and why we have them.  
I can identify patterns in my observation of shadows.  
I can explain why the Sun appears to move across the sky from east to west.  
I can explain how night changes to day and back to night  
I can take accurate measurements and record them accurately.  
I can make predictions based on my measurements.  
I can test a shadow clock to check how accurate it is.  
I can use lines of longitude on a map to find the time in different places around the world.  
I can put a list of cities around the world in order of when they have sunrise and begin a new day.  
I can explain how people around the world use time zones to organise their clocks and calendars.  
I can describe how the Earth orbits around the Sun while it is turning on its axis.  
I can explain how the tilt of the Earth's axis causes seasons.  
I can use my pictures or models to explain why a season is not exactly the same in different parts of the same hemisphere.  
I can use secondary sources to find out the times of sunrise and sunset in different places.  
I can record my results in a line graph that shows a gradual change over time.  
I can explain how the tilt of the Earth's axis causes changes in the hours of daylight in different seasons.  
I can name the phases of the Moon.



I can explain why the Moon appears to change shape.  
I can say how long the Moon takes to orbit the Earth and how the calendar is linked to this.

**Spring 2: Feel the force**

I can use a Newton meter with accuracy.  
I can record my results in a table.  
I can identify the effect of friction in my investigations.  
I can explain my results using scientific vocabulary, including the word 'friction'  
I can plan a comparative test to investigate my ideas about how objects fall.  
I can identify how scientific evidence has been used in arguments.  
I can explain why objects fall using scientific vocabulary  
I can explain how to change the speed and direction of bubbles as they fall.  
I can use arrows to represent forces.  
I can use the term 'gravity' in an explanation of why things fall.  
I can make a prediction.  
I can use this prediction to plan a fair test.  
I can take accurate readings using a stopwatch.  
I can use my results to identify which object has the least water resistance.  
I can identify the forces that start the object moving and stop the movement.  
I can explain why objects record a different mass in water and in air.  
I can record results systematically and take repeat readings.  
I can use the term 'up thrust' to explain how an object floats.  
I can carry out a test to investigate how mass affects the amount that springs or rubber bands stretch.  
I can identify a pattern in my results.  
I can explain how springs help us to weigh objects.  
I can use levers to move objects.  
I can explain that when something is moved using a lever, less force is needed.  
I can label a diagram using scientific vocabulary to explain how a lever works.  
I can explain how a pulley works.



I can plan and carry out an investigation to find out how a pulley affects the force needed to lift a load.

I can notice a pattern between the number of pulleys used and the force needed to lift a load.

I can identify gears in a range of everyday items.

I can make simple gears and explain how they work.

I can explain how gears convert a force

### **Summer 1: Everyday materials**

I can make comparisons between different materials, using technical vocabulary to accurately describe their properties.

I can identify specific criteria to help me compare and group materials.

I can create a key to help me classify different materials.

I can compare the properties of solid materials.

I can plan a test to group and classify solids according to their hardness.

I can sequence a range of solid materials according to the property of hardness.

I can describe how the hardness of solids differs.

I can explain what is different about the structure of a soft and a hard solid.

I can test the properties of liquids and compare them.

I can plan a test to compare the viscosity of different liquids.

I can sequence a variety of liquids according to how viscous they are.

I can identify the properties of a variety of different metals.

I can link the properties of metals to how they are used.

I can explain that particular metals are used for specific purposes because of their properties.

I can use the line on a line graph to answer questions about temperature change.

I can calculate a change in temperature over time.

I can explain how insulation in a cool bag can help to keep hot things hot and cool things cool.

### **Summer 2: Marvelous mixtures**

I can explain that materials can be mixed but often they can be separated.

I can describe the process of sieving mixtures to remove particles of different sizes.





I can successfully separate a complex dry mixture, identifying and separating the materials or explaining why they are impossible to separate in this way.

I can identify and name some solids that dissolve and some that do not.

I can describe my observations accurately using key vocabulary, such as using the term 'dissolve' correctly, distinguishing between a solid that forms a suspension and one that dissolves.

I can use what I have found out to make predictions for further tests.

I can identify when a solution has become saturated and explain why.

I can identify variables that might affect the rate at which a solid dissolves.

I can predict which variable I think will make the most difference.

I can plan a comparative to investigate a question about the dissolving rate of salt and/or sugar.

I can describe how dissolved material can be separated from a liquid.

I can follow instructions to set up equipment to produce drinkable water from seawater.

I can develop my own method to produce drinkable water from seawater.

I can explain why the amount of water produced varies.

I can produce pure salt from rock salt using my knowledge of separating mixtures of materials.

I can describe and explain the process of sieving and filtering mixtures to remove particles of a very small size and suggest a variety of equipment that might be used to do this.

I can describe and explain how to separate removing solids from solutions using the process of evaporation.



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic of the term						
Science unit	<u>The Nature Library</u>	<u>Body Pump</u>	<u>Everything Changes</u>	<u>Light up your world</u>	<u>Circuits</u>	<u>Body Health</u>
Year Group : 6	<p>Session 1 <b>Meeting Linnaeus</b> Meet the father of classification and have a look at his classic system still used today. Explore classification routes and make your own game of classification 'pairs'.</p> <p>Session 2 <b>Spot the Odd One Out</b> Can you win at 'odd one out'? Have a go, and then try your hand at using branching classification keys to see if you can unlock the subtle differences between certain plants and animals.</p> <p>Session 3 <b>Sweet Classification System</b> Develop your own feature-led sweets classification system then apply your classification</p>	<p>Session 1 <b>Blood Composition &amp; Function</b> Explore the composition of blood and the role it has to play in the human body. Create a painting of blood as seen under a powerful microscope and include a detailed description to accompany it.</p> <p>Session 2 <b>The Heart</b> Explore the structure and function of the human heart before creating your own heart sculptures. Can you feel the rhythm of your heartbeat? Discover how and why it changes across activity and compare human heartbeats with those of other animals. Create your own sound installation to celebrate the inner rhythm in us all.</p> <p>Session 3 <b>Nutrient Detective</b></p>	<p>Session 1 <b>Inheritance detective</b> Play inheritance detective and identify inherited and environmental characteristics. Score survival points by identifying examples of variation through the creation of your very own dog Top Trumps™ cards</p> <p>Session 2 <b>Mutations and adaptations</b> Take a look at mutations and how adaptation can prove useful in the real game of survival! Meet the man behind the theory of natural selection and play the variation game.</p> <p>Session 3 <b>Extreme survival</b> Play 'survivor' to see which creatures will survive in a range of environments and biomes. Can you score more survival points through</p>	<p>Session 1 <b>Light specialists required</b> Take part in a Crime Lab light expert selection challenge. Do you have what it takes to join the investigation? Take a look at the initial crime report and cast your eye over the key suspects.</p> <p>Session 2 <b>Light travels in straight lines</b> The thief was spotted on CCTV 'casing' the school, using a torch. Can you demonstrate that light travels in straight lines and calculate plausible heights of the suspect based on their torch beam?</p> <p>Session 3 <b>Up periscope</b> We know that the thief could see round corners, and likely used a periscope. All suspects have one, but are they using materials that reflect</p>	<p>Session 1: <b>Electrical festive challenge</b> Take part in a Dragons' Den briefing session and learn about the challenges that lie ahead as designers of festive lights and decorations with an electric buzz.</p> <p>Session 2: <b>Playing with electricity</b> Using your planning meeting outcomes from Session 1 to set up some exploratory circuits to identify how they work and how to achieve a range of effects.</p> <p>Session 3: <b>Designs, ideas and circuit diagrams</b> Your team needs to show that it has a technical flair for designing electrical circuits. Can you draw</p>	<p>Session 1 <b>Tantalising Turf (classification)</b> All sorts of pitches need good quality, durable and well looked after grass. Can you explore and classify a range of grasses and suggest the best for the job? Have a go at maintaining your own section of grass and investigate the best conditions to tantalising turf.</p> <p>Session 2 <b>Sports Kit &amp; Equipment Enquiry (materials)</b> Explore the science of sports kit materials and why some fabrics are better than others. Carry out an investigation and compare the materials different sports balls are made from. Examine the properties of Paralympian biomechanical materials and how they impact on disability sport.</p>



	<p>knowledge and skills as you start creating more challenging zoological classification keys.</p> <p>Session 4 <b>Back Yard Classification</b> Collect the next bit of the 'classification code' as you begin to put your classification skills to work: collect, record, classify and name some of the botanical beauties found on your doorstep.</p> <p>Session 5 <b>Unusual Creatures</b> The world is awash with unusual creatures, plants and organisms that need to be classified. Your studying is entering its advanced stages now and you need to show application of your skills.</p> <p>Session 6</p>	<p>Explore how nutrients and water are transported throughout your body in your blood and the processes used to pass in and out of your blood through capillary walls. Create your own abstract art to celebrate these processes</p> <p>Session 4 <b>The Circulatory System</b> Have you ever wondered what your blood gets up to inside your body? Here is your chance to join your platelets on their journey around your body. Share your discoveries in the form of a dramatic re-enactment.</p> <p>Session 5 <b>A Healthy Body: Diet, Exercise &amp; Lifestyle</b> Discover the true impact (both visible and hidden) of diet, exercise and lifestyle on the human body. Produce a creative TV advert that explores this impact and how to keep our bodies healthy. Explore the truths and myths about the effects of</p>	<p>your own living thing 'survivor' designs?</p> <p>Session 4 <b>Meet the evolutionary pioneers</b> Meet Darwin, Anning and Wallace - the evolutionary dream team - and find out the scientific importance of their work and have a go at proving their theories. Play fossil, 'what if' to top up your survivor score.</p> <p>Session 5 <b>Evolutionary trees and fossils</b> Have you ever wondered how the humble biscuit has evolved over the past 100 years? Well, this is your chance! Create a biscuit cladogram and use your evolutionary expertise in the exploration of bird flight and animal cladograms.</p> <p>Session 6 <b>The tale of the giraffe's neck</b> How did the giraffe get a long neck and why does the camel have a hump?</p>	<p>well enough to see? Can you investigate and eliminate another suspect?</p> <p>Session 4 <b>Shadow giants</b> Many witnesses saw the thief in shadow form, but none of the sightings add up to the same person - each shadow was a different size! Explore how shadows can be deceptive and recreate each sighting to help identify the possible height of our thief.</p> <p>Session 5 <b>It's a rainbow world</b> How did our criminal read the encrypted laptop password that is too high up on the wall to see with the naked eye? And how did they decode it? Have a go at splitting white light into rainbow colours to help you crash through the password code.</p> <p>Session 6 <b>A trick of the colourful light filters</b></p>	<p>accurate circuit diagrams as a 'blueprint' for your design?</p> <p>Session 4: <b>Create a dimmer switch</b> The dragons have added in a last minute design tweak - can you develop and include a dimmer switch into your design?</p> <p>Session 5: <b>Create festive lights prototype</b> Start putting your ideas and research into action as you create your festive lights and decorations</p> <p>Session 6: <b>Entering the Dragons' Den</b> It's time for some final tweaks before entering the Dragons' Den. You will need to impress the dragons with your scientific know-how and the rigorous testing processes you have adopted.</p>	<p>Session 3 <b>Harnessing Sports Forces (air resistance &amp; friction)</b> Can you identify the invisible impact of forces on a sport? Explore how friction and air resistance can be used to improve performance and have a go at creating exact sizes of impact forces needed to score goals.</p> <p>Session 4 <b>Human Body and Sports (exercise, nutrition &amp; injury)</b> Explore the ways that nutrition, exercise and injury prevention impact on sports performance. Design an eating and exercise plan as well as your own warm up and warm down routine.</p> <p>Session 5 <b>Sports Talent (inheritance)</b> Are you born with sports talent or can training alone get you to the top? Explore the science behind biological and environmental</p>
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	<p><b>New Creature Features:</b> <b>Classification</b> This is your opportunity to apply your skills and further develop your drawing skills to complement your classification skills. Earn a bonus clue as you design your own 'new' creatures to fit into the Animalia classification system.</p>	<p>drugs and alcohol on the human body, before creating your own artistic 'montage' advert that reflects this topic in a creative and informative manner.</p>	<p>Read some traditional folk tales to explain these features then find out the evolutionary facts behind the myths and write your own fact-based versions. Add up your survivor score</p>	<p>Our thief was spotted wearing not only a blue outfit, but also a red one and a yellow one. How is this possible and does it have something to do with the coloured transparencies found in the bin? Can you gather all of your evidence together to identify our key suspect?</p>		<p>characteristics in the sports arena.</p> <p>Session 6 <b>Lighting up Sports Stadiums (electricity)</b> Can you ensure the stadium lights are positioned correctly to avoid distracting shadows? Can you make sure that the flood lights are bright enough and can be switched on and off manually and by timer? Can you make the case for alternative forms of energy to run sports stadiums?</p>
<p><b>Links to National Curriculum</b></p>	<p><b><u>Living things and their habitats</u></b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>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><u>Animals including humans</u></b> Pupils should be taught to:</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 human</li> </ul> <p><b><u>Evolution and inheritance</u></b> Pupils should be taught to:</p> <ul style="list-style-type: none"> <li>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> </ul>					



	<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><b>Light</b> Pupils should be taught to:</p> <ul style="list-style-type: none"><li>• 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>Electricity</b> Pupils should be taught to:</p> <ul style="list-style-type: none"><li>• associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</li><li>• 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</li><li>• use recognised symbols when representing a simple circuit in a diagram</li></ul>
<b>Skills</b>	<p><b>Autumn 1:</b> Children will:</p> <ul style="list-style-type: none"><li>• Meet Linnaeus and learn about his classification system (Yr5&amp;6)</li><li>• Create (Yr6) and explore (Yr5) classification routes for given living things, identifying relatedness (Yr5&amp;6)</li><li>• Note and identify similarities and differences between animals, micro-organisms and plants (Yr5&amp;6)</li><li>• Group animals and plants into broad groups then sub groups according to observable features (Yr5 – with support/ Yr6 - independently)</li><li>• Create a feature-led classification system (Yr5&amp;6)</li><li>• Design and test out a classification key for birds (Yr5), bees or butterflies (Yr6)</li><li>• Observe and record features and names of leaves found in the local environment (Yr5&amp;6)</li><li>• Design, make and test classification keys to classify leaves found in the local environment (Yr5&amp;6)</li><li>• Write scientific descriptions of unusual living things from around the world (Yr5&amp;6)</li><li>• Classify unusual living things using their descriptions and online research (Yr5&amp;6)</li><li>• Design, describe, name and sketch a new creature that sits within a known classification route (Yr5&amp;6)</li><li>• Attempt to identify where ‘new’ creatures sit within the Animalia classification system (Yr5&amp;6)</li></ul>



### **Autumn 2:**

Children will

- Identify and describe components of blood and their respective functions, noting the different blood groups
- Sketch and paint magnified blood cells, using texture and form
- Be able to name the three types of blood vessel: arteries, veins and capillaries
- Explore the structure and function of the human heart
- Create anatomically correct sculptures of a heart
- Investigate and recreate heart rates for varying levels of exertion, giving explanations for observation
- Explain how nutrients and water are transported through the body
- Investigate diffusion and osmosis
- Create a dye art work
- Explore how the circulatory system works and be able to identify the role blood has within this
- Accurately dramatise the processes of the circulatory system
- Record and edit their dramatization
- Examine the impact of a healthy or unhealthy diet on the human body
- Examine the impact of exercise and lifestyle choices on the human body
- Create a TV advert that explores the impact of diet, exercise and lifestyle on the body
- Identify the effects of drugs on the human body
- Create a print advert that explores the impact of drugs and alcohol on the human body
- Exhibit all art from the block in a 'human body' exhibition

### **Spring 1:**

Children will

- Play class Guess Who and note characteristics that are inherited
- Identify variations between themselves and a classmate
- Create dog breed Top Trumps™ cards, noting variation across breeds
- Use observed characteristics and simple dominant and recessive genes model to 'breed' dogs
- Investigate variation across specific animals and plants
- Identify subtle adaptations to environments in the animal and plant world
- Identify advantages and disadvantages of certain characteristics
- Play 'Extreme Survivor' to see which creatures and plants survive in given environments
- Suggest how animals and plants are adapted to extreme environments
- Design an animal and a plant that should thrive and survive in a given environment
- Research the life and work of Anning, Darwin or Wallace and share as a presentation
- Use given evidence to attempt to back up evolutionary ideas, presenting logical findings



- Play fossil 'what if'
- Explore online the evolution of flight in birds through the fossil record
- Create a cladogram using modern animals
- Write a 'Just So' story about a living creature and a distinguishing characteristic
- Explain scientifically how a given creature has evolved in terms of a specific characteristic

### **Spring 2:**

Children will

- Plan and carry out 5 light investigations in response to given enquiry questions
- Identify variables that need to be controlled in order to achieve a fair test
- Record and present findings, identifying patterns and drawing conclusions
- Demonstrate and conclude that light travels in a straight line
- Know that a light source is needed in order to see
- Convert feet and inches to cm
- Make viable suggestions for given angles
- Demonstrate and describe the movement of light off mirrors
- Plan and carry out an investigation into the reflectiveness of given materials
- Record results in graphic form and identify patterns
- Suggest further investigations for their findings
- Be able to explain that a human shadow has the same shape as the person casting it
- Independently plan and carry out an investigation into shadow size and position of a light source
- Draw a line graph from investigation data and note any patterns
- Investigate magnifying lenses, suggesting which cannot magnify enough in given circumstances
- Explain and demonstrate that light can be bent when it is slowed down
- Split white light into rainbow colours
- Plan and carry out a light colour mixing investigation
- Mix light colours
- Present findings in a chart
- Plan a further investigation into the effect of coloured light on coloured materials

### **Summer 1:**

Children will

- Plan and carry out a series of simple electrical circuit investigations
- Identify current electrical knowledge and areas to explore further
- Create success criteria for their Dragons' Den electrical challenge



- Carry out a series of enquiries that explore the effects of voltage on electrical circuit components
- Record and present results graphically
- Look at examples of festive lights and list key features
- Create annotated drawings to represent their design ideas
- Draw a circuit diagram with a summary of the brightness, volume and speed of components within it
- Annotate their circuit diagram with explanations of the role of resistance in making components work
- Feedback on others' designs
- Use feedback to improve their design
- Investigate and develop a dimmer switch
- Identify materials and tools for their design
- Create a working electrical prototype and identify possible improvements
- Effectively use appropriate materials, tools and equipment
- Explain clearly how components work
- Explain clearly the effect that different voltages have on components in a circuit
- Demonstrate how their decoration works and to link their circuits to their diagrams
- Link findings from previous electrical investigations to their circuits
- Outline how their design meets all success criteria
- Demonstrate electrical knowledge and skills through presentation

### **Summer 2:**

Children will

- Identify characteristics of grass and create their own classification key for given grasses
- Recommend a seed mix for sports pitch turf
- Set up an investigation to determine the best methods for turf maintenance
- Identify and compare the properties of sports top materials
- Investigate the properties of modern football shirt material in comparison to cotton shirts
- Identify the properties of Paralympian biomechanics materials and understand the positive impact they have on disability sport
- Identify the forces that can impact on a sports game
- Suggest how friction, air resistance and gravity can be exploited in sports
- Try and control the level of a force exerted on a ball in order to successfully score a goal
- Investigate the impact of exercise on the human body
- Investigate the impact of nutrition on sports performance
- Make recommendations for protecting against and treating sports injuries
- Identify the influence of inheritance and environmental factors on sports performance
- Create a sports information leaflet on factors that impact on sports talent





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|  | <ul style="list-style-type: none"><li>• Identify some inherited personal traits that may impact on sports performance</li><li>• Investigate and suggest effective positioning of stadium floodlights for a night time game</li><li>• Design and create circuits to ensure floodlights in a stadium are bright enough</li><li>• Research and outline viable alternative energy sources for sports stadiums</li></ul> |
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