

## Science Key Content Spring MTP 2021-2022

		Down on the Farm		Substantive Knowledge		Assessment				
		Unit of work	Spring Animals Growth Plants	Living things and their environment Reproduction, inheritance and evolution Earth and space		Assessment will be supported by Development Matters documentation through observations.				
EYFS	<b>Key Content</b>	Explore the natural world around them making observations and drawing pictures of animals and plants								
		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								
		Understand some important processes and changes in the natural world around them, including the seasons								
	<b>Second order concepts</b>	I can identify similarities and differences								
		I can use written and oral expression								
I understand cause and consequence										
I can discuss continuity and change										
YEAR 1	<b>Spring 1: Beside the seaside</b>	<b>Key Concepts</b>		<b>Prior Learning</b>		<b>At the end of this unit children will know:</b>		<b>5 Key Questions</b>		
	<b>Unit of work</b>	<b>Evolution</b>		<ul style="list-style-type: none"> <li>The names of common farm animals and their young</li> <li>The names of animals commonly kept as pets</li> <li>Animals need food, water, shelter and warmth to keep healthy</li> <li>How some animals grow from eggs e.g. chickens, frogs</li> </ul>		<ul style="list-style-type: none"> <li>How to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</li> <li>How to identified and name a variety of common animals that are carnivores, herbivores and omnivores</li> <li>How to describe and compare the structure of common animals</li> </ul>		Name the five common animal groups.  How are fish suited to water and birds suited to fly?  Why is it important for some animals to be nocturnal?  What does 'omnivore' mean?  What is similar and different about amphibians and reptiles? 		
	<b>Animals, including Humans</b>	<b>Organisms require a supply of energy and materials</b>								
<b>Suggested lessons</b>	Quick Quiz: Name three animals you might have as a pet. Name three animals you might find on a farm.		Quick Quiz: Name two features of mammals.  Children will examine the structures of reptiles and amphibians' bodies		Quick Quiz: Name two features of a reptile  Children will observe and compare fish, looking at real examples. They will		Quick Quiz: What is similar about an amphibian and a fish?  In this lesson, children will discover what		Quick Quiz: Why are birds not mammals?  Children will describe what a variety of different animals eat, then sort	
								Quick Quiz: A carnivore eats... A herbivore eats... An omnivore eats..		

	Children will look at a variety of animals on Earth before identifying a variety of mammals and compare and describe some of their features.  (LoA – L1)	and name the important body parts.  (LoA – L2)	compare fish with amphibians from the previous lessons considering similarities and differences.  (LoA – L3)	makes birds a distinct group of animals. They will observe and compare different birds and in particular examine feathers.  (LoA – L4)	animals using Venn diagrams or tables.	<b>What is special about an amphibian?</b>  Children learn about some familiar nocturnal animals that might be found in and around the local environment at night time.  Look at CCTV footage of school. Can we see any nocturnal animals?
<b>Key Content</b>	I can discuss the variety of animals living on Earth					
	I can examine the structures of animals' bodies and can name important body parts					
	I can observe and compare fish and amphibians					
	I can observe and compare bird and in particular examine the feathers					
	I can describe what a variety of animals eat					
	I can describe and discuss nocturnal animals that might be found in and around the local environment at night time					
<b>WS and Second order concepts</b>	I can identify and classify according to simple criteria I can identify similarities and difference					
	I can perform simple tests, including observations and the gathering and recording of data I can use written and oral expression in science					
	I can perform simple tests, involving observations and the gathering and recording of data I can identify similarities and differences					
	I can perform simple tests, involving observations and the gathering and recording of data I can identify similarities and differences					
	I can identify and classify according to simple criteria I can identify similarities and difference					
I can perform simple tests, including observations and the gathering and recording of data I can use written and oral expression in science						
<b>Spring 2: Beside the seaside</b>	<b>Key Concepts</b>	<b>Prior Learning</b>	<b>At the end of this unit children will know:</b>	<b>5 Key Questions</b>		
<b>Unit of work World</b>	<b>The Earth spins on its axis</b>	<ul style="list-style-type: none"> <li>The name of the four seasons</li> <li>Differences between hot and cold weather and that the weather changes</li> <li>Some plants and trees change with the seasons</li> <li>Objects are things you can touch and see</li> <li>Some materials are natural while others are man-made</li> <li>Name some common materials and their properties</li> </ul>	<ul style="list-style-type: none"> <li>How to continue to observe seasonal changes and how plants change</li> <li>How animal behaviour and activities change due to seasonal changes</li> <li>How to distinguish between an object and the material it is made</li> <li>How to describe further physical properties of a variety of everyday materials</li> </ul>		Look at this object. Identify the material from which is made.	
<b>Everyday Materials</b>	<b>Evolution</b>				What does 'waterproof' mean?	
	<b>Materials (Properties and Changes)</b>				Why are windows made out of glass?	
					Why are objects made out of lot of different materials?	
					How does the weather change from winter to spring?	
<b>Suggested lessons</b>	<b>DAILY OBSERVATION LESSONS</b>	<b>DAILY OBSERVATION LESSONS</b>	<b>Quick Quiz: Identify some common materials / name the materials (pic stimulus)</b>	<b>Quick Quiz: What materials are these objects made from?</b>	<b>Quick Quiz: Tick the stretchy and bendy objects.</b>	<b>Quick Quiz: Which materials are waterproof?</b>

		<p>In these lessons children are introduced to the idea of recording the weather over time. They collect daily records of the weather for a period of two weeks, and use their completed records to look for patterns and link these to seasonal change.</p> <p>(OCW SS – L3)</p>	<p>In this series of lessons children make regular observations of birds that visit a feeding station, bird table or feeders close to their classroom.</p> <p>(OCW AA - L2)</p> <p>Pupils will also look at the how different plants will flower at different times of the year.</p> <p>(OCW P- L3/4)</p>	<p>Children investigate objects made from several of the materials they have investigated in previous lessons, and use simple tables and overlapping sorting circles to classify them</p> <p>(EM – L5/6)</p>	<p>In this lesson, children learn that materials stretch and bend. Investigate which materials stretch the most/ least and bend the most/ least. Do any materials not stretch?</p> <p>(EM – L8)</p>	<p>Children will devise methods for testing materials to determine whether or not they are waterproof. They will test materials to see which is the most absorbent or waterproof.</p> <p>(EM – L9)</p>	<p>This lessons in an opportunity for children to explore ice first-hand as a material and compare its properties to those of water.</p> <p>(EM – E1)</p>
YEAR 2	<b>Key Content</b>	I can observe and record the weather over time					
		I recognise that different plants will flower at different times of the year and I can observe birds and their feeding habits.					
		I can investigate a range of objects and identify the materials they are made from					
		I can compare objects based on their properties of bending and stretching					
		I can demonstrate my knowledge of the properties of materials					
		I can investigate the properties of ice and water and compare them					
	<b>WS and Second order concepts</b>	I can perform simple tests, involving observations and the gathering and recording of data I understand continuity and change					
		I can perform simple tests, involving observations and the gathering and recording of data I understand continuity and change					
		I can identify and classify according to simple criteria I can identify similarities and differences					
		I can perform simple tests, involving observations and the gathering and recording of data I can use oral and written expression in science					
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<b>Spring 1: Into the Blue</b>	<b>Key Concepts</b>	<b>Prior Learning</b>	<b>At the end of this unit children will know:</b>	<b>5 Key Questions</b>			
<b>Unit of work</b>	<b>Evolution</b>						
<b>Living Things and their Habitats</b>	<b>Organisms require a supply of energy and materials</b>	<ul style="list-style-type: none"> <li>The names of some common plants and trees</li> <li>What living and dead means</li> <li>Some animals are suitable to be kept as pets, others are not</li> <li>All animals need water, air and food to survive</li> <li>Common animals with backbones can be split into fish, amphibians, reptiles, birds and mammals</li> </ul>	<ul style="list-style-type: none"> <li>The differences between things that are living, dead and things that have never been alive</li> <li>Most living things live in habitats to which they are suited and describe how different habitats provided the basic needs for different kinds of animals and plants and how they depend on each other</li> <li>How to name a variety of plants and animals in their</li> </ul>	 List three different habitats.  How are X suited to their habitats?  Which is the most important part of a food chain and why?  Define 'predator'.  How do habitats change throughout the year?			

			<ul style="list-style-type: none"> <li>Insects and bugs are commonly known as minibeasts</li> <li>Animals can be grouped into carnivores, herbivores and omnivores dependent on what they eat</li> <li>Animals, including humans, have offspring which grow into adults</li> </ul>	<ul style="list-style-type: none"> <li>habitats, including micro-habitats</li> <li>How animals obtain their food from plants and other animals using the idea of a simple food chain</li> </ul>		
<b>Suggested lessons</b>	<p>Quick Quiz: Name the five different common animal groups. Where do worms live? Where does a bird live?</p> <p>Children will begin to identify some life processes which indicate that animals and plants are alive. They will then sort objects and organisms into groups: living things and non-living things. (WIIYH – L1)</p>	<p>Quick Quiz: Tick the objects that have never been alive. Name two materials that are bendy.</p> <p>Children will learn what a habitat is and what animals and plants need to survive in them. They will then identify and group animals by their habitats.  (OCW – L1)</p>	<p>Quick Quiz: Match the animal to its habitat.</p> <p>Children will explore how habitats change throughout the year and what animals are visible at different times of the year and why.  (OCW – L2)</p>	<p>Quick Quiz: Name some animals which are not visible in winter. What are the 5 different animal groups?</p> <p>In this lesson children consider how living things are suited to live in different habitats. They will discuss what a variety of habitats are like, then either describe what they provide for the organisms that live in them, or how organisms are adapted to suit their environment.</p>	<p>Quick Quiz: List three animals that live under the sea. List three animals that live in forests.</p> <p>Children will learn about micro-habitats and the organisms that live in them. They may then either explore micro-habitats outside, or describe and categorise given sets of mini-beasts according to some of their characteristics.</p>	<p>Quick Quiz: What are the three main parts of a food chain? Which animal groups have I missed out? amphibians, birds, fish</p> <p>In this series of lessons, the children use what they have learned throughout the year from studying habitats in Lessons 1 and 2 to construct a food chain.  (OCW – L3/ WIIYH L2)</p>
<b>Key Content</b>	<p>I can identify whether things are alive, dead or have never lived and I understand what makes up a range of different habitats</p> <p>I can identify the animals and plants that live in particular habitats</p> <p>I can describe how a habitat might change throughout the year</p> <p>I can explore plants and animals in an unfamiliar habitat</p> <p>I can explore and describe a micro-habitat</p> <p>I can describe how animals depend on each other and I can create a simple food chain</p>					
<b>WS and Second order concepts</b>	<p>I can ask questions about what I notice and I can observe closely I can identify similarities and differences</p> <p>I can ask questions about what I notice and I can observe closely I can identify similarities and differences</p> <p>I notice patterns and I can gather and record data to help me answer questions I can identify similarities and differences</p> <p>I can find things out using secondary sources of information I can use oral and written expression in science</p>					

		I notice patterns and I can gather and record data to help me answer questions I can identify similarities and differences						
		I can find things out using secondary sources of information I understand the significance of plants and animals in food chains						
Spring 2: Into The Blue	Key Concepts	Prior Learning	At the end of this unit children will know	5 Key Questions				
<b>Unit of work:</b>  <b>Animals, including Humans</b>	<b>Organisms require a supply of energy and materials</b>	<ul style="list-style-type: none"> <li>What animals need to survive</li> <li>Example of healthy food</li> <li>Know and understand that exercise keeps humans fit and healthy</li> </ul>	<ul style="list-style-type: none"> <li>The basic needs of animals, including humans, for survival (water, food and air)</li> <li>The importance for humans of exercise, eating the right amount of different types of food and hygiene</li> </ul>	What are the three key things humans needs to survive?	Which foods should we eat the most of and why?	Imagine you're teaching EYFS or Year 1. What do the younger children need to know about keeping healthy?	What does 'growth' mean?	What is the most important way to take care of yourself?
<b>Suggested lessons</b>	<b>Quick Quiz:</b> Name two habitats What are the three parts which make up a food chain?  Children will think about the basic needs of animals, such as eating, drinking and breathing. They will consider how these needs vary between species, then explain the needs of various animals in their own words.	<b>Quick Quiz:</b> What are the three basic needs of animals? Name the five senses. Which part of the body is used for each sense?  In this lesson children first think about what they need to do to stay safe and healthy. They then sort food, choosing their own ways of grouping.  (TC – L1)	<b>Quick Quiz:</b> List two ways humans can stay safe and healthy. Which three animal groups are covered in scales?  In this lesson children explore different types of food, sorting them into different categories and planning meals.  (TC – L2)	<b>BIG BOOK PRACTICAL LESSON</b>  In this lesson, children explore how it feels to take part in a physical activity.  (TC – L3)	<b>Quick Quiz:</b> What happens to your body when you take part in a physical activity? <b>Identify some of the changes that take place in our body when we exercise.</b>  In this lesson children learn about keeping their bodies clean.  (TC – L4)	<b>Quick Quiz:</b> Give me three ways we can keep our bodies clean.  Children to create a picture book demonstrating what they know about keeping healthy.  (TC – E1)		
<b>Key Content</b>	I understand the basic needs of animals I can describe what I need to stay safe and healthy I can plan a healthy meal I understand why exercise is so important for humans							

		I understand the importance of keeping our bodies clean				
		I understand how we can keep healthy				
	<b>WS and Second order concepts</b>	I can find things out using secondary sources of information I can identify similarities and differences				
		I can group and classify things I can identify similarities and differences				
		I can group and classify things and I can gather and record data to help me answer questions I can identify similarities and differences				
		I can find things out using secondary sources of information and I can communicate my ideas about what I do and what I find out in a variety of ways I can use written and oral expression in science				
		I can find things out using secondary sources of information and I can communicate my ideas about what I do and what I find out in a variety of ways I can use written and oral expression in science				
		I can communicate my ideas about what I do and what I find out in a variety of ways I can use written and oral expression in science				
<b>YEAR 3</b>	<b>Spring 1: Location, Location, Location</b>	<b>Key Concepts</b>	<b>Prior Learning</b>	<b>At the end of this unit children will know</b>	<b>5 Key Questions</b>	
	<b>Unit of work</b>	<b>Forces</b>	<ul style="list-style-type: none"> <li>The names and properties of common everyday materials and that the shape of some materials can be stretched, twisted, bent and squashed</li> <li>Know how different toys move</li> <li>Explain what a force is e.g. push/pull</li> <li>Strength of force can determine speed</li> </ul>	<ul style="list-style-type: none"> <li>How and why things move on different surfaces</li> <li>Some forces need contact between two objects but magnetic forces act at a distance</li> <li>Magnets attract and repel each other and attract some materials and not others</li> <li>That some materials are magnetic and others are not</li> <li>Magnets have two poles and will attract or repel one another dependent on which poles are facing</li> </ul>	 Name the two poles of a magnet.  Why does an object move quicker on a smooth surface?  Are magnets always attracted to other magnets?  What is a 'force'? How have plants changed during winter in comparison to autumn? 	
	<b>Forces and Magnets</b>	<b>Evolution and the Earth spins on its axis</b>	<ul style="list-style-type: none"> <li>The name of the four seasons</li> <li>Some plants and trees change with the seasons</li> </ul>	<ul style="list-style-type: none"> <li>How to continue to observe seasonal changes and how plants change</li> </ul>		
<b>Suggested lessons</b>	<b>Quick Quiz: Name the four seasons. List the three different types of rock.</b> In this lesson, children will begin to learn about forces by looking at the different ways	<b>Quick Quiz: Give two examples of forces. What happens to deciduous trees in autumn? What happens to deciduous trees in winter?</b> Children will develop their understanding of	<b>Quick Quiz: What happens to evergreen trees in winter? How can humans stay healthy?</b> Children will explore a range of materials to identify which are magnetic and which are not. This builds on work on	<b>Quick Quiz: List five everyday materials. Give an example of a stretchy material. Give any example of a shiny materials.</b> Children will use a magnet in a variety of activities to see how it	<b>Quick Quiz: What are fish and amphibians covered in? What two things are mammals usually covered in?</b> Children will build on their work in the previous lesson to test different magnets to compare their strength in	<b>Quick Quiz: Label the different parts of the plants.</b> During this series of lessons, the children will look for berries at different times of the year to identify when berries are most likely to be found. Children will revisit the same two tree, shrubs and

	<p>objects can be made to start moving</p> <p>(TPOF – L1)</p> <p><b>Quick Quiz: Give an example of sedimentary, igneous and metamorphic rock.</b> Children will explore how air can be used to make a windmill move.</p> <p>(TPOF – L2)</p>	<p>how objects move on different surfaces.</p> <p>(TPOF – L3)</p>	<p>properties of materials from KS1.</p> <p>(TPOF – L4)</p>	<p>attracts certain materials. They will investigate how strong their magnet is. They will use what they observe in this lesson to help them in the subsequent lesson.</p> <p>(TPOF – L5)</p>	<p>order to test a number of given statements.</p> <p>(TPOF – L6)</p> <p><b>Quick Quiz: Label the different parts the tree.</b> Children will look at magnets in more detail, focusing on the fact they have two poles, and will investigate the effect of holding two magnets together.</p> <p>(TPOF – L7)</p>	<p>flowering plants from autumn term to look at how leaves changes, seeds and whether flowers are there.</p> <p>(OCW – L1,2,3 and 4)</p>
<b>Key Content</b>	I understand what makes an object move					
	I am beginning to explain what makes an object move and I am beginning to understand what a force is					
	I can compare how things move on different surfaces					
	I can describe magnets as having two poles and I can recognise magnetic and non-magnetic materials					
	I can investigate the strength of a magnet and I can describe how magnetic forces act at a distance					
	I can investigate the strength of magnetic force					
	I can describe magnets as having two poles and I understand and can describe what happens when magnets attract and repel each other					
	I can identify how plants change through the year and I can describe the time I am most likely to find particular berries and flowers					
<b>WS and Second order concepts</b>	I can identify differences, similarities or changes related to simple scientific ideas and process I can identify similarities and differences					
	I can ask relevant questions and use different types of scientific enquiry to answer them, including comparative and fair tests I understand responsibility in science					
	I can use results to draw simple conclusions, suggest improvements and ask new questions I can use written and oral expression in science					
	I can gather, record, classify and present data in a variety of different ways to help answer questions I can identify similarities and differences and use written and oral expression in science					
	I can record findings and present data using simple scientific language, written and oral explanations, diagrams, pictures, keys, bar charts and tables I can use written and oral expression					
	I can record findings and present data using simple scientific language, written and oral explanations, diagrams, pictures, keys, bar charts and tables and I can make systematic and careful observations and record accurate measurements using standard units I can use written and oral expression					
	I can make systematic and careful observations and record accurate measurements I understand continuity and change when observing					
I can record findings and present data using simple scientific language, written and oral explanations, diagrams, pictures, keys, bar charts and tables I can discuss continuity and change through written and oral expression						
<b>Spring 2:</b>	<b>Key Concepts</b>	<b>Prior Learning</b>	<b>At the end of this unit children will know</b>	<b>5 Key Questions</b>		
<b>Location, Location, Location</b>						

<p><b>Unit of work</b></p> <p><b>Plants</b></p>	<p><b>Organisms require a supply of energy and materials</b></p> <p><b>Evolution and the Earth spins on its axis</b></p>		<ul style="list-style-type: none"> <li>Plants grow from seeds or bulbs</li> <li>Plants need light, water and warmth to grow and survive</li> <li>Flowers make seeds to make more plants</li> <li>We need plants to survive (to clean air, to eat)</li> <li>We can eat different parts of plant (leaves, stems, roots, seeds, fruit)</li> </ul>	<ul style="list-style-type: none"> <li>The functions of different parts of flowering plants</li> <li>Air, light, water, nutrients from soil and room to grow are all requirements of plants for life and growth and how they vary from plant to plant</li> <li>The way water is transported within plants</li> </ul>	 Note down the different functions of the labelled parts of the flowering plant  Why are the leaves important on a plant?  Which is the most important part of a plant and why?  Define 'function'  How do plants' leaves, seeds and flowers change over time?	
<p><b>Suggested lessons</b></p>	<p><b>Quick Quiz:</b> List the five senses and the body parts associated with that sense. Children will be able to share what they have previously learnt about the parts of flowering plants and their different functions.  (HDYGG – L1)</p>	<p><b>Quick Quiz:</b> Give an example of an omnivore, a carnivore and a herbivore. Name the two poles of a magnet. Children will set up a fair test investigation to find out the effect of removing the leaves from a plant. They will make observations over the next few weeks and summarise their findings in Lesson 11.  (HDYGG – L3)</p>	<p><b>Quick Quiz:</b> List some magnetic materials. Identify and name these common flowering plants. Children will make close observations of a variety of roots using manual and digital magnifiers.  Continue to make observations from removing leaves from plant.  (HDYGG – L4)</p>	<p><b>Quick Quiz:</b> What is friction? What does it do? Are all magnets the same strength? Children will observe the transport of coloured water in carnations and celery and will set up an observation over time to investigate this in more detail in Lesson 6.  Continue to make observations from removing leaves from plant. (HDYGG – L5)</p>	<p><b>Quick Quiz:</b> What are the properties of roots? What are the functions of leaves? What do plants need to grow and stay healthy? Children will use the results of the observation over time investigation that they set up last lesson and information from a video to produce information texts to explain the function of stems.  (HDYGG – L6)</p>	<p><b>Quick Quiz:</b> Name these common mini-beasts. Children will revisit the same two tree, shrubs and flowering plants from autumn term to look at how leaves change, seeds and whether flowers are there. They will also observe the variety of flying insects that come to the flowering plants.  (OCW –L5)</p>
<p><b>Suggested lessons</b></p>	<p><b>Quick Quiz:</b> Dead, alive or have never lived? Children will make close observations of a variety of leaves, using manual and digital magnifiers  (HDYGG – L2)</p>					
<p><b>Key Content</b></p>	<p>I can explain and describe the different parts of a flowering plant</p> <p>I can investigate and describe the function of leaves</p> <p>I can investigate what would happen if a plant lost its leaves</p> <p>I can investigate and describe the properties of roots</p> <p>I can describe how water is transported through a plant</p> <p>I can investigate and describe the function of a stem</p> <p>I can identify how plants change through the year and I can observe how often insects visit flowering plants</p>					
<p><b>WS and Second</b></p>	<p>I can ask relevant questions and use different types of scientific enquiry to answer them, including comparative and fair tests I can use written and oral expression</p> <p>I can identify similarities, differences or changes related to simple scientific ideas and processes I can identify similarities and differences</p>					

	<b>order concepts</b>	I can ask relevant questions and use different types of scientific enquiry to answer them, including comparative and fair tests I understand how to be a responsible scientist
		I can record findings and present data using simple scientific language, written and oral explanations, diagrams, pictures, keys, bar charts and tables I can identify similarities and differences using written and oral expression
		I can use results to draw simple conclusions, suggest improvements and ask new questions I understand continuity and change and show this through written and oral expression
		I can record findings and present data using simple scientific language, written and oral explanations, diagrams, pictures, keys, bar charts and tables I understand continuity and change and show this through using written and oral expression
		I can notice patterns and I can record findings and present data using simple scientific language, written and oral explanations, diagrams, pictures, keys, bar charts and tables I can discuss continuity and change

<b>YEAR 4</b>	<b>Spring 1: Cloud to Coast</b>	<b>Key Concepts:</b>		<b>Prior Learning</b>	<b>At the end of this unit children will know</b>	<b>5 Key Questions</b>	
	<b>Unit of work:</b>  <b>States of Matter</b>	<b>States of Matter</b>		<ul style="list-style-type: none"> <li>Names and properties of varying everyday materials</li> <li>Some materials are heavier than others even though they are the same size</li> <li>Materials change when heated or cooled</li> <li>Some changes can be reversed e.g. observations of snow melting, ice</li> </ul>	<ul style="list-style-type: none"> <li>Materials can be grouped together according to whether they are solids, liquids or gases</li> <li>Some materials change state when they are heated or cooled and measure/research the temperature at which this happens</li> <li>Understand what evaporation is and the rate of evaporation in relation to temperature</li> </ul>	<ul style="list-style-type: none"> <li> List the three states of matter.</li> <li> Why is can water be classed as all three states of matter?</li> <li> What is the most important factor for fabric drying?</li> <li> Define 'evaporation'.</li> <li> Discuss the similarities and differences between the three states of matter.</li> </ul>	
	<b>Suggested lessons</b>	<p><b>Quick Quiz:</b> Label the key parts of flowering plants. Children will look at deciduous trees and consider features other than leaves that can be used to classify them. By the end of the lesson the children will be aware of different trees shapes, the type of bark, buds and vein patterns. They will have</p>	<p><b>Quick Quiz:</b> What are the functions of the following parts of plants? <b>Roots, stem, petals, leaves</b></p> <p>Children will explore the properties of solids and liquids, demonstrating what they already know. By the end of the lesson, they will be able to use key properties to distinguish between solids and liquids.</p> <p>(IAS – L1)</p>	<p><b>Quick Quiz:</b> What is soil made from? <b>Match the rocks to their correct group (M/S/I)</b></p> <p>Children will carry out the investigations planned in the previous lesson and present and interpret the data. By the end of this lesson, children will be able to describe the effect of temperature, shape and size on how fast ice blocks melt.</p> <p>(IAS – L3)</p>	<p><b>Quick Quiz:</b> What is the process of a solid becoming a liquid called? What is the process of a liquid becoming a solid called? <b>When water freezes it becomes...</b></p> <p>Children consolidate their understanding of the processes of melting and freezing and explore how materials behaves when they are heated</p>	<p><b>Quick Quiz:</b> True or false? <b>Statements about the three states of matter.</b></p> <p>Children will explore the properties of air. By the end of this lesson children will know that gases are materials with substance and weight.</p> <p>(IAS – L5)</p>	<p><b>Quick Quiz:</b> The process where a liquid becomes a gas is called...</p> <p><b>Give an example of the following types of animal: Herbivore, carnivore, omnivore</b></p> <p>Children will observe and measure water boiling, interpret temperature graphs from a data logger and research boiling of other liquids. By the end of this lesson, children will that liquids have characteristic boiling</p>

	<p>looked for similarities and differences between trees and identified possible patterns. These patterns can be turned into questions that will require a follow-on visit to gather evidence to support or refute the pattern. (OCW – L2)</p>	<p><b>Quick Quiz: List the key properties of the three states of matter.</b> <b>List the five groups of animals with backbones.</b> Children will use ideas from melting ice to help them to plan a fair test investigation to answer a question. In the next lesson, they will carry out their investigation and draw conclusions. By the end of the lesson, children will have planned a fair test and will know that melting and freezing are changes of stage  (IAS – L2)</p>		<p>or cooled. By the end of this lesson, children will know that different materials melt at different temperatures and will be able to define melting and freezing.  (IAS – L4)</p>	<p><b>Quick Quiz: True or false statements about gases.</b> Children will investigate factors that affect how fast fabric dries and learn the term evaporation. Children will collect data and record in a table. They will then draw conclusions from their data developing their understanding of evaporation.  (IAS – L7/8)</p>	<p>points, including water which boils at 100C and will be able to identify the boiling point on a time and temperature graph.  (IAS – L9)</p>
<b>Key Content</b>	I can explore and classify deciduous trees and can identify and discuss any patterns I observe					
	I can explore the properties of solids, liquids and gases					
	I understand that melting and freezing are changes of state					
	I understand the melting and freezing are changes of state					
	I can describe the properties of air					
	I understand the term evaporation					
<b>WS and Second order concepts</b>	I can ask relevant questions and use different types of scientific enquiry to answer them including comparative and fair tests I can identify similarities and differences whilst understanding how to be responsible scientist					
	I can ask relevant questions and use different types of scientific enquiry to answer them including comparative and fair tests I can identify similarities and differences					
	I can ask relevant questions and use different types of scientific enquiry to answer them including comparative and fair tests I can identify continuity and change whilst understanding how to be responsible scientist					
	I can ask relevant questions and use different types of scientific enquiry to answer them including comparative and fair tests I can understand how to be responsible scientist					
	I can record and present findings using simple scientific language, written and oral presentations, drawings, diagrams, keys, bar charts and tables and I can make careful observations and take accurate measurements using standard units I can use written and oral expression					
	I can identify differences, similarities or changes related to simple scientific ideas and processes and I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions I can identify similarities and differences and use written and oral expression					
<b>Spring 2: Cloud to Coast</b>	<b>Key Concepts</b>	<b>Prior Learning</b>		<b>At the end of this unit the children will know:</b>	<b>5 Key Questions</b>	

<p><b>Unit of work</b></p> <p><b>Living Things and their Habitats</b></p> <p><b>State of Matter</b></p>	<p><b>Organisms require a supply of energy and materials.</b></p> <p><b>Evolution</b></p> <p><b>States of Matter</b></p>	<ul style="list-style-type: none"> <li>Requirements for animals' survival</li> <li>What a habitat is and how animals adapt to their habitat</li> <li>What litter is</li> <li>How animals are dependent on one another and what happens when there is a break in a food chain</li> <li>The three states of matter</li> <li>How materials can change states through freezing, melting and boiling</li> <li>What evaporation is</li> </ul>	<ul style="list-style-type: none"> <li>Environments can change and this can sometimes pose dangers to living things</li> <li>Humans are having a negative impact on the environment</li> <li>How to have a positive impact on the environment</li> <li>The part played by both evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</li> </ul>	<p> List the different parts of a food chain.</p> <p> Why are environmentalists trying to fight for positive human impact on the environment?</p> <p> Why is it important to recycle?</p> <p>Define 'condensation'.</p> <p> What impact are humans having on the environment?</p>		
<p><b>Suggested lessons</b></p>	<p>Children will consider the impact that humans have on the local environment. They will identify some positive and negative ways that humans change the environment.</p> <p>HOMEWORK: note, drawings/ photos of waste/littering in the local area.</p> <p>(HI – L1)</p>	<p><b>Quick Quiz: How are sounds made?</b>  <b>What do we need light for?</b>  <b>What is darkness?</b></p> <p>Children will interpret data about waste and plan a litter survey. By the end of the lesson, children will be able to interpret data presented in a bar chart and draw up a data collection sheet.</p> <p><b>Use the notes, drawings and/or photos from L1 to make a display of human impact that is evident locally.</b></p> <p>(HI – L2)</p> <p><b>Quick Quiz: Name the different types of teeth and their functions.</b></p> <p>Children will carry out the litter survey planned in the previous lesson. By the end of this lesson, they will have collected and presented data about an aspect of</p>	<p><b>Quick Quiz: Name the different parts of the digestive system. Pick two of the parts and identify their function.</b></p> <p>Children will learn about the impact that different types of litter can have on wildlife. By the end of the lesson, they will understand why it is important to dispose of waste. <b>Ask colleagues and/or children to bring in items of clean rubbish.</b></p> <p>(HI – L4)</p>	<p><b>Quick Quiz: Identify two ways humans are having a positive impact on the environment. Identify two ways humans are having a negative impact on the environment.</b></p> <p>Children will learn about what a food chain is and link changes in a food chain. They will relate this to a real life situation for a new building project. By the end of the lesson, children will understand and appreciate the impact that humans can have on the stability of the food chain</p> <p>(HI – L5)</p>	<p><b>Quick Quiz: Name the two poles of a magnet. Name a magnetic material. Fill in the gaps: Magnets ____ or ____ objects.</b></p> <p>Children will observe and discuss condensation happening in a range of contexts. By the end of this lesson, children will be able to recognise where condensation is occurring and annotate a drawing to show changes of state.</p> <p>(IAS – L10)</p>	<p><b>Quick Quiz: Name the following processes: Solid turning to liquid Liquid turning to a gas Gas turning to a liquid Liquid turning to a solid</b></p> <p>Children will explore the role of evaporation and condensation in the water cycle through a physical model and an animation. By the end of this lesson, they will be able to label the process on a diagram of the water cycle.</p> <p>(IAS – L11)</p>

			human impact on the environment. (HI – L3)			
	<b>Key Content</b>	I can describe the impact that humans have on the local environment				
		I can present evidence detailing the impact that humans have on the local environment				
		I can present evidence detailing the impact that humans have on the local environment				
		I can describe the impact that different types of litter can have on wildlife				
		I understand and appreciate the impact that humans can have on the stability of the food chain				
		I can observe and discuss condensation happening in a range of contexts				
		I can explain the role of condensation and evaporation in the water cycle				
	<b>WS and Second order concepts</b>	I can identify differences, similarities or changes related to simple scientific ideas or processes I can identify similarities and differences				
		I can record and present findings using simple scientific language, written and oral presentations, drawings, diagrams, keys, bar charts and tables I can identify similarities and differences using written and oral expression				
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I can ask relevant questions and use different types of scientific enquiry to answer them including comparative and fair tests I can use written and oral expression						
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I can record and present findings using simple scientific language, written and oral presentations, drawings, diagrams, keys, bar charts and tables I can use written and oral expression						
<b>YEAR 5</b>	<b>Spring 1: Land, Sea and Space</b>	<b>Key Concepts</b>	<b>Prior Learning</b>	<b>At the end of the unit children will know:</b>	<b>5 Key Questions</b>	
	<b>Unit of work</b>  <b>Earth and Space</b>	<b>The Earth in relation to the universe</b>  <b>The Earth spins on its axis</b>  <b>Light</b>	<ul style="list-style-type: none"> <li>We have four seasons (autumn, winter, spring and summer)</li> <li>The number of days and months in a year</li> <li>Know that a shadow is caused when an object blocks light from passing through it</li> <li>The properties of a sphere</li> <li>The moon is not a source of light</li> </ul>	<ul style="list-style-type: none"> <li>How the Earth and other planets move in relation to the Sun in the Solar System</li> <li>The movement of the moon relative to the Earth</li> <li>To describe the Sun, Earth and moon as approximately spherical bodies</li> <li>The idea of Earth's rotation to explain day and night and the apparent movement of the Sun across the sky</li> </ul>	 What causes the seasons and changes in daylight hours?  Why do Sun people think the Sun moves across the sky?  Do all countries experience the seasons at the same time? Discuss. Define 'orbit'.   How have theories changed about the position of the Earth in the solar system?	

	<p><b>Suggested lessons</b></p>	<p><b>Quick Quiz:</b> List the four seasons. Note down typical weather associated with each season. What happens to deciduous trees in autumn? Children makes observations of the night sky. Using secondary sources of information they consider explanations for, and raise questions about, their observations. They find answers to some of their questions through a 'journey into space' during which they explore diagrams and photographs of the solar system and beyond.  (TEAB – L1)</p>	<p><b>Quick Quiz:</b> Name these common flowering plants. What is in the centre of our solar system? Name three planets. Children will draw a large 'plan' of the solar system and an annotated scientific diagram of Earth's orbit which they use to explain the year, number of days in a year, leap years and how astronomers in the past used the stars as markers for the start and finish of an orbit.  (TEAB – L2)</p>	<p><b>Quick Quiz:</b> How many days are in a year? How many more days are in a leap year? What orbits the Earth? What does the Earth orbit? Children investigate how the Earth's rotation causes the apparent movement of the Sun across the sky.  (TEAB – L3)</p>	<p><b>Quick Quiz:</b> Which mechanism lifts objects? Name the form of friction that occurs in water. Name the form of frictions that occurs in the air. Children explore how the Earth's tilt on its axis causes seasonal changes and changes in daylight hours.  (TEAB – L6)</p>	<p><b>Quick Quiz:</b> What causes seasonal changes? Reversible or irreversible? – Frying an egg - Boiling water - Mixing salt and water Children develop their learning on time and seasons investigating and explaining changes in the times of sunrise and sunset in different parts of the UK and different parts of the world.  (TEAB – L7)</p>	<p><b>Quick Quiz:</b> What requirements do plants need for life and growth? Note down the functions of different parts of flowering plants. Children investigate how the Moon appears to change over a month.  (TEAB – L8)</p>
	<p><b>Key Content</b></p>	<p>I can make careful observations of the night sky I can create a diagram of the solar system and can explain the Earth's orbit I can explain how the Earth rotates and how this links to the sun I can describe how the Earth's tilt on its axis causes seasonal changes and changes in daylight hours I can explain how sunrise and sunset times vary in the UK and globally I can explain how the Moon appears to change shape over a month</p>					
	<p><b>WS and Second order concepts</b></p>	<p>I can report and present findings from enquiries including conclusions, explanations, data and diagrams I can use written and oral expression I can report and present findings from enquiries including conclusions, explanations, data and diagrams I can use written and oral expression] I can report and present findings from enquiries including conclusions, explanations, data and diagrams I can identify similarities and differences using written and oral expression I can report and present findings from enquiries including conclusions, explanations, data and diagrams I can discuss continuity and change using written and oral expression I can identify scientific evidence that been used to support or refute ideas or arguments I can use written and oral expression I can use test results to make predictions to set up further comparative and fair tests I can discuss continuity and change whilst being a responsible scientist</p>					

Spring 2: Land, Sea and Space	Key Concepts		Prior Learning	At the end of this unit children will know:	5 Key Questions	
<p><b>Unit of work</b></p> <p><b>Forces</b></p>	<p><b>Forces</b></p>		<ul style="list-style-type: none"> <li>Forces are pushes and pulls</li> <li>Forces change the motion of an object. They will make it start to move or speed up, slow it down or even make it stop</li> <li>Friction is a force that holds back the motion of an object</li> <li>Some surfaces create more friction than others which means that object move across them slower</li> </ul>	<ul style="list-style-type: none"> <li>That unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>The effects of air resistance, water resistance, upthrust and friction, that act between moving surfaces</li> <li>Some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</li> </ul>	<p> List three different mechanisms.</p> <p> Why do is a pulley useful mechanism?</p> <p> Who do you think had a more plausible argument, Newton, Aristotle or Galileo?</p> <p> Explain 'friction' providing clear examples to validate your definition.</p> <p> What are the significance of Galileo and Newton's theories of gravitation?</p>	
<p><b>Suggested lessons</b></p>	<p><b>Quick Quiz:</b> What is a force? List two properties for the following materials: <b>Metal, wood, plastic</b> Children extend their understanding of friction by learning how to measure forces using a Newton meter.</p> <p>(FTF – L1)</p>	<p><b>Quick Quiz:</b> Name three different types of plastic. Give an example of a transparent material. Give an example of an opaque material. Children identify how scientific evidence is used to support and refute ideas, testing the explanations of Aristotle, Newton and Galileo about how things fall. Children investigate and find evidence for these ideas, exploring gravity as a non-contact force</p> <p>(FTF – L2)</p>	<p><b>Quick Quiz:</b> Name the following processes: Solid turning to liquid Liquid turning to a gas Gas turning to a liquid Liquid turning to a solid Children learn the water resistance is a form of friction that opposes movement in water. They explore how the shape of an object affect its movement through a liquid.</p> <p>(FTF – L5)</p>	<p><b>Quick Quiz:</b> List some soluble materials. List some insoluble materials. Children investigate what happens to rubber bands and springs when a force is applied.</p> <p>(FTF – L7)</p>	<p><b>Quick Quiz:</b> True or false statements relating to separating mixtures. This lesson introduces mechanisms – devices that change the effect of a force. Children investigate levers for moving things and increasing/decreasing a force.</p> <p>(FTF – L8)</p> <p><b>Quick Quiz:</b> What happens to rubber bands when a force is applied? What happens to a spring when a force is applied? What is water resistance? Children use pulleys to lift objects.</p>	<p><b>Quick Quiz:</b> Name two different mechanisms. List some different forces. Children learn about gears, a third type of mechanism that helps us to do things by changing the effect of forces. Children identify where gears are used in everyday life.</p> <p>(FTF – L10)</p>

					(FTF – L9)		
	<b>Key Content</b>	I am beginning to measure forces using a Newton meter					
		I can investigate scientific evidence linked to theories about how things fall					
		I can describe and explain air resistance					
		I can describe and explain water resistance and know that this is a form of friction					
		I am beginning to investigate what happens to objects when a force is applied					
		I understand that mechanisms are devices that change the effect of a force					
		I can explore how a pulley is used to lift objects					
		I can identify and describe where gears are used in everyday life					
	<b>WS and Second order concepts</b>	I can plan and carry out scientific enquiry using a range of scientific equipment and variables in order to answer questions I can identify similarities and differences whilst ensuring I am a responsible scientist					
		I can identify scientific evidence that has been used to support or refute ideas or arguments I can discuss significant individuals' scientific theories					
I can use test results to make predictions to set up further comparative and fair tests I understand how to be a responsible scientist							
I can plan and carry out scientific enquiry using a range of scientific equipment and variables in order to answer questions I understand how to be a responsible scientist							
I can report and present findings from enquiries including conclusions, explanations, data and diagrams I can identify similarities and differences using written and oral expression							
I can plan and carry out scientific enquiry using a range of scientific equipment and variables in order to answer questions I understand how to be a responsible scientist							
	I can report and present findings from enquiries including conclusions, explanations, data and diagrams I can identify similarities and differences using written and oral expression						
	I can report and present findings from enquiries including conclusions, explanations, data and diagrams I can identify similarities and differences using written and oral expression						
<b>Spring 1: Journeys and Justice</b>	<b>Key Concepts</b>	<b>Prior Learning</b>	<b>At the end of this unit child will know:</b>	<b>5 Key Questions</b>			
<b>Unit of work</b>	<b>Energy</b>	<ul style="list-style-type: none"> <li>• What a light source is and why we need light</li> <li>• Shiny materials do not make light but do reflect it</li> <li>• Shadows are caused by blocking a light source</li> <li>• Shadows change size dependent on position of light source</li> </ul>	<ul style="list-style-type: none"> <li>• Light appears to travel in straight lines</li> <li>• Objects are seen because they give out or reflect light into the eye</li> <li>• 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>• How to use the idea of light travelling in straight lines to explain why shadows have the same shape as the objects that cast them</li> </ul>	 How does light travel?  Why do objects look different in water?  Describe how variables affect shadows.  Define 'dispersion'  Explain how a mirror works.			
<b>Light</b>							

YEAR 6	Suggested lessons	<p><b>Quick:</b> Name the five vertebrate groups. Name some invertebrate groups. Children carry out illustrative practical activities to review their knowledge and understanding about the behaviour of light, including light sources and shadows from Y3.</p> <p>(LUYW – L1)</p>	<p><b>Quick Quiz:</b> List some inherited characteristics human offspring get from their parents. Children carry out illustrative practical activities to review and develop their knowledge and understanding of how mirrors work from Y3.</p> <p>(LUYW – L2)</p>	<p><b>Quick:</b> What common characteristics do birds have? What common characteristics do reptiles have? What do fish and amphibians have in common? Children develop their understanding of mirrors from L2 and use this to develop a model of how light travels.</p> <p>(LUYW – L3)</p>	<p><b>Quick Quiz:</b> Match the invertebrate to the amount of parts that make up the body. How are zebras adapted to their environment? How are camels adapted to their environment? The idea that light travels in straight line is reinforced through an illustrative practical activity where children investigate how a pinhole camera works.</p> <p>(LUYW – L4)</p>	<p><b>Quick Quiz:</b> How does light travel? How does a mirror work? What is darkness? What causes a shadow? Children build on their learning about shadows from Y3 and about the movement of Earth in space in Y5 to plan fair tests to investigate how different variables affect the size of a shadow.</p> <p>(LUYW – L5)</p>	<p><b>Quick Quiz:</b> Classify these animals. Children explore the refraction of light and some the phenomena it creates.</p> <p>(LUYW – L7)</p> <p><b>Quick Quiz:</b> Name some light sources. What causes seasonal changes? What orbits the Earth? What does the Earth orbit? Children carry out illustrative practical activities to investigate how rainbows are made, together with other light and colour effects.</p> <p>(LUYW – L8)</p>
	Key Content	<p>I can describe the behaviour of light and how shadows are formed</p> <p>I can describe how mirrors work</p> <p>I can accurately describe how light travels</p> <p>I can deepen my understanding of how light travels</p> <p>I can explain how different variables affect the size of a shadow</p> <p>I understand what refraction is</p> <p>I can investigate light dispersion</p>					
	WS and Second order concepts	<p>I can identify scientific evidence that has been use to support or refute ideas or arguments I understand significance in science</p> <p>I raise further questions that could be investigate, based on data and observations I can identify similarities and differences and discuss continuity and change</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I use written and oral expression</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I use written and oral expression</p> <p>I ask my own questions about the scientific phenomena that I am studying, and select the most appropriate ways to answer these questions, recognising and controlling variables where necessary I understand how to be a responsible scientist</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I use written and oral expression</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I use written and oral expression</p>					
	Spring 2: Journeys and Justice	Key Concepts	Prior Learning	At the end of the unit children will know:	5 Key Questions		
	Unit of work	Energy	<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</li> <li>Identify whether a lamp will light in a simple series circuit, based on whether the lamp is part of a complete loop with a battery</li> </ul>	<ul style="list-style-type: none"> <li>The brightness of a lamp or the volume buzzer is affected by the number and voltage of cells used in the circuit</li> <li>How components function, including the brightness of bulbs, loudness of</li> </ul>	<p> Label these circuit symbols.</p> <p> Why does resistance occur in this circuit?</p> <p> Why is electricity important to human life?</p> <p> Define 'electricity generation'.</p>		
	Electricity						

			<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>	<ul style="list-style-type: none"> <li>buzzers and the on/off position of switches</li> <li>Recognised symbols when representing a simple circuit in a diagram</li> </ul>	 <p>How has electricity generation altered over time and why?</p>	
<b>Suggested lessons</b>	<p><b>Quick Quiz:</b> Name the basic parts of a simple series circuit. How are sounds made? Name some common electrical appliances. Children revise and build their work from Y4 on how to construct simple circuits.  (DLV – L1)</p>	<p><b>Quick Quiz:</b> What force causes unsupported objects to fall towards the Earth? How many poles does a magnet have? What are they called? Name a magnetic material. Children make and control simple circuits using purchased and classroom-made switches.  (DLV – L2)</p>	<p><b>Quick Quiz:</b> Name a good electrical insulator. Name a good electrical conductor. Name some materials which dissolve in liquids. Children add different components to electrical circuits and role play the flow of electrons in a circuit to explain the idea of resistance.  (DLV – L3)</p>	<p><b>Quick Quiz:</b> True or false statements based on complete/ incomplete circuits. Children consolidate their learning on circuits and recognised electrical symbols from the previous three lessons.  (DLV – L4)</p>	<p><b>Quick Quiz:</b> Name the following processes: Solid turning to liquid Liquid turning to a gas Gas turning to a liquid Liquid turning to a solid  Children prepare debates about different methods of electricity generation, transmission and the siting of generating plants, which they present in the next lesson. Learn to recognise which secondary sources are most useful to research their ideas and to use relevant scientific language in their debates.  (DLV – L5)</p>	<p><b>Quick Quiz:</b> List three ways humans are having a positive impact on the environment. List three ways humans are having a negative impact on the environment. <b>Reversible or irreversible?</b> Children are researching how electricity is generated in different ways.  (DLV – I6)</p>
<b>Key Content</b>	<p>I can construct a simple circuit</p> <p>I can construct a simple circuit using a switch</p> <p>I can add different components to electrical circuits and I can explain the ideas of resistance in an electrical circuit</p> <p>I can use recognised electrical symbols in diagrams of electrical circuits</p> <p>I can investigate the everyday use of electricity</p> <p>I can investigate the everyday use of electricity</p>					
<b>WS and Second order concepts</b>	<p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I use written and oral expression</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I use written and oral expression</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I use written and oral expression</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs I use written and oral expression</p> <p>I draw conclusions, explain and evaluate my methods and findings, communicating these in a variety of ways I can use written and oral expression</p> <p>I can identify scientific evidence that has been used to support or refute ideas or arguments I understand significance in science</p>					