



Bricknell Primary School

Science Medium Term Plan

Key concepts: (not exhaustive)

Through the science curriculum, pupils will develop an understanding of the following key concepts. These concepts are revisited through different units as pupils move through the school. By the end of primary school, children will know and understand these key concepts.

Biology

Organisms require a supply of energy and materials

Genetic information

Evolution

Chemistry

Materials (properties and changes)

States of matter

Physics

Forces

Energy

Earth Science

The earth in relation to the universe

The earth spins on its axis

Second Order Concepts:

Responsibility

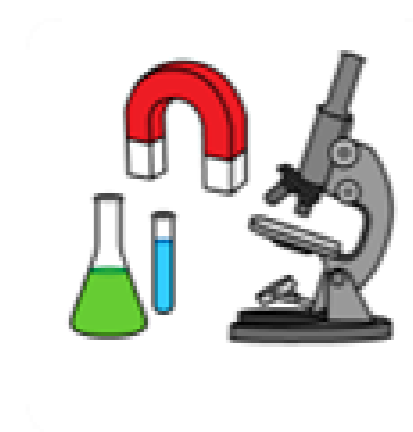
Similarity and difference

Cause and consequence

Continuity and change

Significance

Written and oral expression



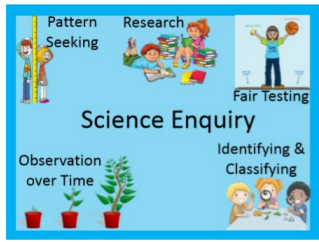


As scientists in EYFS, we will learn...

Overview	<p>Snap Science Foundation focuses on 'The world', and covers a wide range of topics in the natural and built environment, to develop children's awareness of everything around them.</p> <p>As specified in EYFS, Snap Science Foundation extends this awareness by providing opportunities to visit new places and to find out about different environments through looking at books and through using other secondary sources and technology.</p> <p>The Activity plans are arranged in groups to cover different aspects of science learning, and where possible should be used in the order specified to support a progression of ideas and skills. Each Activity plan includes:</p> <ul style="list-style-type: none">• A clear Learning intention linked to the big science idea• An Explore session which begins the activity for the whole class, using the Story slideshow and hands on exploration to introduce the scientific ideas, spark curiosity and give children the chance to share previous understanding and raise questions• Enquire activities where a group of children work with an adult on a Focus activity to investigate the enquiry question• Enquire activities for children to investigate the enquiry question independently• A Reflect and review activity which provides the opportunity for children to consolidate the key learning from the activities• Evidence of learning to guide teacher assessment of children's learning• Key words, Resources and Science at home activities for children to do with their families
Working Scientifically	<p>In EYFS pupils begin to develop simple scientific thinking. They make simple observations, predictions and begin to conduct discussions about what has happened. EYFS at Bricknell creates a safe space for children to express their thoughts and ideas and provides them with the communication skills necessary to succeed in science at KS1.</p>



As scientists in Year 1, we will learn...

	Autumn	Spring	Summer
Prior Knowledge	<p>Pupils should be able to: Children know similarities and differences between living things. Children should also be able to identify similarities and differences between themselves and others Make observations about animals.</p>	<p>Pupils should be able to: Talk about the features of their own environments. Make observations of plants. Explain why some things occur.</p>	<p>Pupils should be able to: Talk about the features of their own environments. Explain why some things occur. Talk about simple changes.</p>
Key Vocabulary—Knowledge	amphibians fish reptiles birds mammals nose humans ear carnivores mouth herbivores hands omnivores feet gills head claws skull	wood plastic glass paper metal rock	autumn spring deciduous petal summer winter evergreen trunk change frost seed branches heat storm roots stem weather soil flower
Key learning intentions	<p style="text-align: center;">Looking at Animals Biology <i>Key Concept: Organisms</i> I can describe and compare the features of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). I can group animals according to what they eat.</p> <p style="text-align: center;">Our Changing World Biology <i>Key Concept: Organisms</i> I can explain how the weather changes throughout the year and name the seasons.</p>	<p style="text-align: center;">Everyday Materials Chemistry <i>Key Concept: Materials (properties and changes)</i> I can name, compare and group a variety of everyday materials and describe their simple, physical properties. I can distinguish between an object and the materials from which it is made.</p> <p style="text-align: center;">Our Changing World Biology <i>Key Concept: Organisms</i> I can explain how the weather changes throughout the year and name the seasons.</p>	<p style="text-align: center;">Plant Detective Biology <i>Key Concept: Organisms</i> I can name, identify and describe the basic structure of a variety of common flowering plants including trees.</p> <p style="text-align: center;">Using our Senses Biology <i>Key Concept: Organisms</i> I can identify, name, draw and label the basic parts of the human body. I can say which part of the body is associated with each sense.</p> <p style="text-align: center;">Our Changing World Biology <i>Key Concept: Organisms</i> I can explain how the weather changes throughout the year and name the seasons.</p>
Second order concepts 	I can identify and classify according to simple criteria (similarity and difference) I can perform simple tests, involving observations and the gathering and recording of data (similarity and difference) I can use observations and ideas to suggest answers to questions (continuity and change)	I can identify and classify according to simple criteria (similarity and difference) I can perform simple tests, involving observations and the gathering and recording of data (similarity and difference) I can use observations and ideas to suggest answers to questions (continuity and change)	I can identify and classify according to simple criteria (similarity and difference) I can perform simple tests, involving observations and the gathering and recording of data (similarity and difference) I can use observations and ideas to suggest answers to questions (continuity and change)
Scientific Vocabulary	question identify answer compare observe contrast equipment describe sort group map		

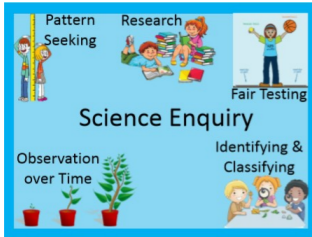


Developing working scientifically skills in Year 1.

Basic Skills	Advanced Skills
<ul style="list-style-type: none">• Make simple predictions• Share simple ideas for tests• Make observations using appropriate senses• Explore using the five senses• Classify and group with simple criteria• Communicate findings in simple ways - talking to their peers and teacher, simple written recording.	<ul style="list-style-type: none">• Organise and direct a group of other when carrying out simple tests• More elaborate and detailed recording—drawing, labelling, simple writing• Carry out simple evaluations of tests—Did they expect that to happen?



As scientists in Year 2, we will learn...

	Autumn	Spring	Summer	
Prior Knowledge	Pupils should be able to: Name, group and compare a variety of everyday materials. Describe simple properties of materials.	Pupils should be able to: Name, identify and describe the basic structure of a variety of common flowering plants including trees.	Pupils should be able to: Describe and compare the structure of a variety of everyday animals. Say which part of the body is associated with each sense. I can identify, name, draw and label the basic parts of the human body.	
Key Vocabulary	waterproof stretchy absorbent stiff opaque dull transparent shiny fabric states shape	Plants seedlings shoot bud germination reproduction nutrients	Living things in their Environment living prey dead source alive basic needs food chain predator	habitat growth offspring hygiene adult air reproduction water survival offspring exercise nutrition
Key learning intentions	<p>What is in your Habitat? Biology <i>Key Concept: Organisms</i> I can identify whether things are alive, dead or have never lived. I can name different plants and animals and describe how they are suited to different habitats. I can describe how animals get their food from plants and other animals, using the idea of a simple food chain to describe this relationship.</p> <p>Our Changing World Biology <i>Key Concept: Organisms</i> I can identify whether things are alive, dead or have never lived. I can name different plants and animals and describe how they are suited to different habitats.</p> <p>Materials: Good Choices Chemistry <i>Key Concept: Materials (properties and change)</i> I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p>	<p>Materials: Shaping Up Chemistry <i>Key Concept: Materials (properties and change)</i> I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.</p> <p>The Apprentice Gardener Biology <i>Key Concept: Organisms</i> I can describe the basic needs of plants for survival and the impact of changing these. I can observe and describe the main changes as seeds and bulbs grow into mature plants.</p> <p>What is in your Habitat? Biology <i>Key Concept: Organisms</i> I can identify whether things are alive, dead or have never lived. I can name different plants and animals and describe how they are suited to different habitats. I can describe how animals get their food from plants and other animals, using the idea of a simple food chain to describe this relationship.</p>	<p>Growing Up Biology <i>Key Concept: Organisms</i> I can describe the basic needs of animals for survival and the main changes as young animals (including humans) grow into adults I notice that animals, including humans, have offspring that grow into adults.</p> <p>What is in your Habitat? Our Changing World Biology <i>Key Concept: Organisms</i> I can identify whether things are alive, dead or have never lived. I can name different plants and animals and describe how they are suited to different habitats. I can describe how animals get their food from plants and other animals, using the idea of a simple food chain to describe this relationship.</p> <p>Take Care Biology <i>Key Concept: Organisms</i> I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p>	
Second order concepts	 <p>I can ask questions about what I notice (written and oral expression) I can use different types of Scientific enquiry to gather and record data, using simple equipment (responsibility) I can observe changes over time (continuity and change) I notice patterns (similarity and difference) I can group and classify things (similarity and difference) I can carry out simple comparative tests (responsibility) I can find things out using secondary sources of information (significance) I communicate my ideas about what I do and what I find out in a variety of ways (written and oral expression) I can observe closely (continuity and change) I can gather and record data to help me answer questions (written and oral expression)</p>	<p>I can ask questions about what I notice (written and oral expression) I can use different types of Scientific enquiry to gather and record data, using simple equipment (responsibility) I can observe changes over time (continuity and change) I notice patterns (similarity and difference) I can group and classify things (similarity and difference) I can carry out simple comparative tests (responsibility) I can find things out using secondary sources of information (significance) I communicate my ideas about what I do and what I find out in a variety of ways (written and oral expression) I can observe closely (continuity and change) I can gather and record data to help me answer questions (written and oral expression)</p>	<p>I can ask questions about what I notice (written and oral expression) I can use different types of Scientific enquiry to gather and record data, using simple equipment (responsibility) I can observe changes over time (continuity and change) I notice patterns (similarity and difference) I can group and classify things (similarity and difference) I can carry out simple comparative tests (responsibility) I can find things out using secondary sources of information (significance) I communicate my ideas about what I do and what I find out in a variety of ways (written and oral expression) I can observe closely (continuity and change) I can gather and record data to help me answer questions (written and oral expression)</p>	
Scientific Vocabulary	question identify answer compare observe contrast equipment describe sort group map			



Developing working scientifically skills in Year 2.

Basic Skills	Advanced Skills
<ul style="list-style-type: none">• With some teacher support and directions, suggest some ideas and questions• Share ideas about how to collect evidence• Predict what they think might happen• With the support of the teacher, begin to consider the concept of fair and unfair• Make observations• Use simple equipment• Follow simple instructions to carry out a test• Record results in simple tables	<ul style="list-style-type: none">• Choose appropriate equipment for testing and explain why it is the best choice• Recognise when a test is unfair - suggest changes that could be made• Use comparative adjectives when explaining what has happened - bigger, smaller, greater, higher



As scientists in Year 3, we will learn...

	Autumn	Spring	Summer
Prior Knowledge	<p>Pupils should be able to:</p> <p>Living things and their environment: Describe how animals obtain food. Develop an understanding of food chains.</p> <p>Animals including humans: The importance of exercise for humans, The basic needs for human survival.</p>	<p>Pupils should be able to:</p> <p>Materials: Group a variety of everyday materials and describe simple physical properties. Identify and compare suitability for a given purpose.</p>	<p>Pupils should be able to:</p> <p>Plants: Name the key parts of a plant. Describe the changes as a plant grows. Develop an understanding of what plants need to survive.</p>
Key Vocabulary	<p>Animals including Humans skeleton carbohydrates muscles proteins skull fats ribs sugar hips balanced diet protection healthy Light Shadow, reflect, source, reflective, transparent, translucent, opaque, bright and dull.</p>	<p>Materials permeable matter impermeable granite formation chalk property limestone sedimentary marble organic igneous fossil metamorphic.</p> <p>Animals including Humans skeleton carbohydrates muscles proteins fats ribs sugar hips balanced diet protection healthy</p>	<p>Plants pollination pollen seed formation nectar seed dispersal stamen style stigma fertiliser</p> <p>Forces Poles, push, pull, distance, direct, contact, properties, force, magnet, attract, repel.</p>
Key learning intentions	<p>Our Changing World Biology <i>Key Concept: Organisms</i> I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>Amazing Bodies Biology <i>Key Concept: Organisms</i> I can 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. I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p> <p>Can you see me? Physics <i>Key Concept: Energy</i> I recognise and understand the properties of light. I recognise that shadows are formed when the light from a light source is blocked by a solid object. I can find patterns in the way that the size of shadows changes.</p>	<p>Our Changing World Biology <i>Key Concept: Organisms</i> I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p> <p>Rock Detectives Chemistry <i>Key Concept: Materials (properties and change)</i> I can compare and group together different kinds of rocks and soil on the basis of their appearance and simple physical properties.</p> <p>How does your garden grow? Biology <i>Key Concept: Organisms</i> I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers I can 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 I understand the way in which water is transported within plants I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. I can compare and group together different kinds of rocks and soil on the basis of their appearance and simple physical properties.</p>	<p>How does your garden grow? Biology <i>Key Concept: Organisms</i> I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers I can 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 I understand the way in which water is transported within plants I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. I can compare and group together different kinds of rocks and soil on the basis of their appearance and simple physical properties.</p> <p>The Power of Forces Physics <i>Key Concept: Energy</i> I notice contact and non-contact forces and observe similarities and differences. I can describe how magnetic forces act at a distance I can describe magnets as having two poles. I can compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet. I can predict and explain whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Our Changing World Biology <i>Key Concept: Organisms</i> I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.</p>
Second order concepts	<p>I can ask relevant questions and use different types of scientific enquiry to answer them, including comparative and fair tests (responsibility) I can make systematic and careful observations and record accurate measurements using standard units (continuity and change) I can record findings and present data using simple scientific language, written and oral explanations, diagrams, pictures, keys, bar charts and tables. (written and oral expression) I can use straightforward scientific evidence to answer questions or to support my findings (significance) I can identify differences, similarities or changes related to simple scientific ideas and processes (cause and consequence) I can gather, record, classify and present data in a variety of different ways to help me answer questions (written and oral expression) I can use results to draw simple conclusions, suggest improvements and ask new questions (written and oral expression)</p>	<p>I can ask relevant questions and use different types of scientific enquiry to answer them, including comparative and fair tests (responsibility) I can make systematic and careful observations and record accurate measurements using standard units (continuity and change) I can record findings and present data using simple scientific language, written and oral explanations, diagrams, pictures, keys, bar charts and tables. (written and oral expression) I can use straightforward scientific evidence to answer questions or to support my findings (significance) I can identify differences, similarities or changes related to simple scientific ideas and processes (cause and consequence) I can gather, record, classify and present data in a variety of different ways to help me answer questions (written and oral expression) I can use results to draw simple conclusions, suggest improvements and ask new questions (written and oral expression)</p>	<p>I can ask relevant questions and use different types of scientific enquiry to answer them, including comparative and fair tests (responsibility) I can make systematic and careful observations and record accurate measurements using standard units (continuity and change) I can record findings and present data using simple scientific language, written and oral explanations, diagrams, pictures, keys, bar charts and tables. (written and oral expression) I can use straightforward scientific evidence to answer questions or to support my findings (significance) I can identify differences, similarities or changes related to simple scientific ideas and processes (cause and consequence) I can gather, record, classify and present data in a variety of different ways to help me answer questions (written and oral expression) I can use results to draw simple conclusions, suggest improvements and ask new questions (written and oral expression)</p>
	<p>relevant questions gather drawings careful observations record diagrams accurate measurements classify conclusion thermometer present prediction</p>	<p>difference evidence similarity change improve</p>	
Scientific Vocabulary			

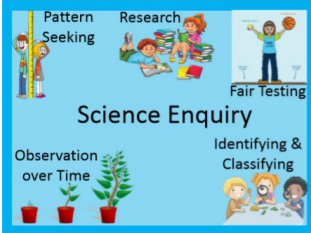


Developing working scientifically skills in Year 3.

Basic Skills	Advanced Skills
<ul style="list-style-type: none">• Participate in discussions with peers—offer suggestions and respond to the suggestions of others• Make clear predictions• Begin to understand the necessary elements for fair testing• With help from the teacher, plan and carry out simple tests• Make observations• Make comparisons• Measure using standard measures and simple measuring equipment• Begin to use their knowledge of the world to support their ideas• Communicate findings in a variety of ways• Make simple conclusions	<ul style="list-style-type: none">• Plan out how to carry out a test• Explain when a test is unfair• Communicate their findings and ideas to their peers—this could be as part of a group or individually



As scientists in Year 4, we will learn...

	Autumn	Spring	Summer
Prior Knowledge		Materials: Group a variety of everyday materials and describe simple physical properties. Identify and compare suitability for a given purpose.	Animals including humans: The importance of exercise for humans, Understand the purpose of a skeleton and muscles. Understand basic needs of humans and begin to understand nutrition. Living things in their environment: Describe how animals obtain food. Develop an understanding of food chains.
Key Vocabulary	Electricity: buzzer insulator conductor current cell battery lamp switch circuit open closed series parallel Animals including humans: Digestive system enamel oesophagus root stomach gum intestine incisors molars	Sound: pitch vibrations volume waves frequency vibrate insulate particles Materials: temperature matter Celsius climate soluble pressure dissolve solids humidity liquids condensation gases evaporation precipitation vapour	Living things in their environment: adaptation classification deforestation pollution environment population prey
Key learning intentions	<p>Our Changing World Biology <i>Key Concept: Organisms</i></p> <p>I can explore and use classification keys to help group, identify and name a variety of living things in their local environment.</p> <p>Where does all that food go? Biology <i>Key Concept: Organisms</i></p> <p>I can describe the simple functions of the basic parts of the digestive system in humans.</p> <p>I can identify the different types of teeth in humans and their simple functions.</p> <p>Switched On Physics <i>Key Concept: Energy</i></p> <p>I can construct and name the basic parts of a simple series circuit, including cells, wires, bulbs, switches and buzzers.</p> <p>I can identify whether or not a lamp will light in a simple series circuit, based on whether a lamp is part of a complete loop with a battery</p> <p>I recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a series circuit</p> <p>I can recognise and can explain why materials are good conductors and insulators.</p> <p>I can identify common appliances that run on electricity.</p>	<p>Our Changing World Biology <i>Key Concept: Organisms</i></p> <p>I can explore and use classification keys to help group, identify and name a variety of living things in their local environment.</p> <p>In a State Chemistry <i>Key Concept: Materials (properties and change)</i></p> <p>I can describe the characteristics of different states of matter and group materials on this basis</p> <p>I can describe how materials change state at different temperatures</p> <p>I can observe that some materials change state when they are heated or cooled and measure or research the temperature at which this happens in degrees Celsius.</p> <p>I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>Good Vibrations Physics <i>Key Concept: Energy</i></p> <p>I can identify how sounds are made, associating some of them with something vibrating.</p> <p>I recognise that vibrations from sounds travel through a medium to the ear.</p> <p>I recognise that sounds get fainter as the distance from the sound source increases</p> <p>I can describe the relationship between the pitch of a sound and the features of its source.</p> <p>I can describe the relationship between the volume of a sound, the strength of the vibrations and the distance from its source.</p>	<p>Where does all that food go? Biology <i>Key Concept: Organisms</i></p> <p>I can construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.</p> <p>I recognise that living things can be grouped in a variety of ways.</p> <p>Human Impact Biology <i>Key Concept: Organisms</i></p> <p>I recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>Our Changing World Biology <i>Key Concept: Organisms</i></p> <p>I can explore and use classification keys to help group, identify and name a variety of living things in their local environment.</p>
Second order concepts	 <p>I make careful observations and take accurate measurements using standard units (continuity and change)</p> <p>I can record and present findings using simple scientific language, written and oral presentations, drawings, diagrams, keys, bar charts and tables (written and oral expression)</p> <p>I can identify differences, similarities or changes related to simple scientific ideas and processes (cause and consequence)</p> <p>I can ask relevant questions and use different types of scientific enquiry to answer them including comparative and fair tests (responsibility)</p> <p>I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (written and oral expression)</p> <p>I can identify scientific evidence that has been used to support or refute ideas or arguments (significance)</p>	<p>I make careful observations and take accurate measurements using standard units (continuity and change)</p> <p>I can record and present findings using simple scientific language, written and oral presentations, drawings, diagrams, keys, bar charts and tables (written and oral expression)</p> <p>I can identify differences, similarities or changes related to simple scientific ideas and processes (cause and consequence)</p> <p>I can ask relevant questions and use different types of scientific enquiry to answer them including comparative and fair tests (responsibility)</p> <p>I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (written and oral expression)</p> <p>I can identify scientific evidence that has been used to support or refute ideas or arguments (significance)</p>	<p>I make careful observations and take accurate measurements using standard units (continuity and change)</p> <p>I can record and present findings using simple scientific language, written and oral presentations, drawings, diagrams, keys, bar charts and tables (written and oral expression)</p> <p>I can identify differences, similarities or changes related to simple scientific ideas and processes (cause and consequence)</p> <p>I can ask relevant questions and use different types of scientific enquiry to answer them including comparative and fair tests (responsibility)</p> <p>I can use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions (written and oral expression)</p> <p>I can identify scientific evidence that has been used to support or refute ideas or arguments (significance)</p>
Scientific Vocabulary	relevant questions gather drawings careful observations record diagrams accurate measurements classify conclusion thermometer present prediction	difference evidence similarity change improve	



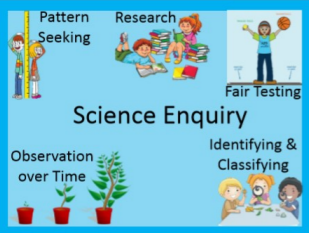
Developing working scientifically skills in Year 4.

Basic Skills	Advanced Skills
<ul style="list-style-type: none">• Recognise the importance of data and evidence to help answer questions• Through class discussions, suggest test ideas• Make predictions• Continue to develop understanding of a fair test• Make relevant and focussed observations and comparisons• Make measurements using standard equipment• Explain what evidence shows in a scientific way and whether it supports predictions• Suggest improvements or ways forward	<ul style="list-style-type: none">• Decide on an appropriate approach to carry out a test that will ensure the investigative question is answered• Suggest improvements and ways forward and give reasons.



As scientists in Year 5, we will learn...

	Autumn	Spring	Summer
Prior Knowledge	<p>Forces: I notice contact and non-contact forces and observe similarities and differences. I can describe how magnetic forces act at a distance. I can predict and explain whether two magnets will attract or repel each other, depending on which poles are facing.</p> <p>Materials: I can describe the characteristics of different states of matter and group materials on this basis. I can describe how materials change state at different temperatures. I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Materials: I can describe the characteristics of different states of matter and group materials on this basis. I can describe how materials change state at different temperatures. I can identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<p>Animals including Humans: I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. I can construct and interpret a variety of food chains, identifying producers, predators and prey.</p> <p>Living things and their Environments: I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. I recognise that environments can change and that this can sometimes pose dangers to living things.</p> <p>Plants: I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I can 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. I understand the way in which water is transported within plants. I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>
Key Vocabulary	<p>Forces: Gravity resistance air resistance water resistance mechanisms lever pulley gear Force</p> <p>Materials: Solubility transparency conductivity filter evaporation dissolving sieving reversible/irreversible thermal solution mixture</p>	<p>Earth and Space: Sun / Moon lunar all planets of solar system equator Solar System hemisphere orbit planets spherical / rotate axis / poles star tilt gravity elliptical orbit asteroid eclipse Satellite</p> <p>Materials: Solubility transparency conductivity filter evaporation dissolving sieving reversible/irreversible thermal solution mixture</p>	<p>Animals including Humans: puberty sibling offspring young adult teenager elderly retirement, gestation life cycle period</p> <p>Living things and their Environments reproducing reproduction fertilise(ation) germinate(ation) movement sensitivity growth retirement asexual/sexual puberty organism offspring nutrition excretion respire sibling</p> <p>Plants stamen stigma sepal filament anther ovary ovules</p>

<p>Key learning intentions</p>	<p style="text-align: center;">Good Vibrations Physics <i>Key Concept: Energy</i></p> <p>I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces. I recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p> <p style="text-align: center;">Get Sorted Everyday Materials Chemistry <i>Key Concept: Materials (properties and change)</i></p> <p>I can compare and group together everyday materials on the basis of their properties. I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.</p>	<p style="text-align: center;">Marvellous Mixtures Chemistry <i>Key Concept: Materials (properties and change)</i></p> <p>I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.</p> <p style="text-align: center;">Materials: All Change! Chemistry <i>Key Concept: Materials (properties and change)</i></p> <p>I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I can identify, with reasons, whether changes in materials are reversible or not I can explain that some changes of state result in the formation of new material and that this kind of change is not usually reversible.</p> <p style="text-align: center;">The Earth and Beyond Earth Science <i>Key Concept: The earth in relation to the universe</i></p> <p>I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. I can describe the movement of the Moon relative to the Earth. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p>	<p style="text-align: center;">Reproduction in Plants and Animals Biology <i>Key Concept: Organisms</i></p> <p>I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals.</p> <p style="text-align: center;">Circle of Life Biology <i>Key Concept: Organisms</i></p> <p>I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals. I can describe the changes as humans develop to old age.</p>
<p>Second order concepts</p>  <p>The diagram illustrates the Science Enquiry process with four main stages: Pattern Seeking, Research, Fair Testing, and Identifying & Classifying. It also includes Observation over Time. The central text reads 'Science Enquiry'.</p>	<p>I can identify scientific evidence that has been used to support or refute ideas or arguments (significance) I can report and present findings from enquiries including conclusions, explanations, data and diagrams (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 (responsibility) I can use test results to make predictions to set up further comparative and fair tests (responsibility) I can take measurements, using a wider range of scientific equipment, with increasing accuracy and precision and taking repeat reading when appropriate (responsibility)</p>	<p>I can identify scientific evidence that has been used to support or refute ideas or arguments (significance) I can report and present findings from enquiries including conclusions, explanations, data and diagrams (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 (responsibility) I can use test results to make predictions to set up further comparative and fair tests (responsibility) I can take measurements, using a wider range of scientific equipment, with increasing accuracy and precision and taking repeat reading when appropriate (responsibility)</p>	<p>I can identify scientific evidence that has been used to support or refute ideas or arguments (significance) I can report and present findings from enquiries including conclusions, explanations, data and diagrams (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 (responsibility) I can use test results to make predictions to set up further comparative and fair tests (responsibility) I can take measurements, using a wider range of scientific equipment, with increasing accuracy and precision and taking repeat reading when appropriate (responsibility)</p>
<p>Scientific Vocabulary</p>	<p>variables measurements accuracy precision diagram classification keys graphs comparative and fair tests conclusion</p> <p>explanation support refute patterns systematic</p>		



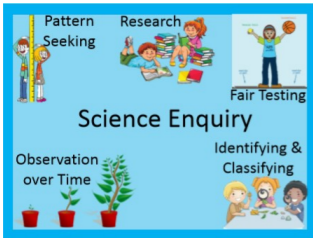
Developing working scientifically skills in Year 5.

Basic Skills	Advanced Skills
<ul style="list-style-type: none">• Recognise that scientific ideas are based on evidence• Make predictions using their scientific knowledge• Suggest ideas for carrying out tests• Suggest how to collect evidence• Select appropriate equipment for scientific testing• Continue developing understanding of fair tests and explain why• Consider why some measurements may need to be repeated• Research and select material from reliable sources• Communicate findings in a variety of ways• Identify patterns and trends• Communicate findings in tables and graphs with appropriate use of ICT• Draw conclusions and use scientific language to explain their understanding	<ul style="list-style-type: none">• Produce written predictions using scientific knowledge to support ideas• Begin to consider averages• Begin to explain anomalies• Draw own bar and line graphs to represent results



As scientists in Year 6, we will learn...

	Autumn	Spring	Summer
Prior Knowledge	<p>Light: I recognise and understand the properties of light. I recognise that shadows are formed when the light from a light source is blocked by a solid object. I can find patterns in the way that the size of shadows changes.</p> <p>Animals including humans: I can describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. I can construct and interpret a variety of food chains, identifying producers, predators and prey. I can describe the changes as humans develop to old age.</p>	<p>Living things in their Environment: I can name different plants and animals and describe how they are suited to different habitats. I recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<p>Living things in their Environment: I can explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. I recognise that environments can change and that this can sometimes pose dangers to living things. I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals.</p> <p>Electricity: I can construct and name the basic parts of a simple series circuit, including cells, wires, bulbs, switches and buzzers. I can recognise and can explain why materials are good conductors and insulators. I can identify common appliances that run on electricity.</p>
Key Vocabulary	<p>Light: reflect direction refraction light spectrum beam lens iris retina</p> <p>Animals including humans: circulatory system aorta ventricles arteries capillaries white/red blood cells bloodstream drug substances glucose starch trans and saturated fats medicine</p>	<p>Living things in their Environment: offspring adaptation characteristics breeds environments genes evolution palaeontologists survival species classification</p>	<p>Living things in their Environment: microorganism microbe decay exoskeleton endoskeleton bacteria</p> <p>Electricity: voltage amp transformer filament energy current resistance resistor symbol</p>

<p>Key learning intentions</p>  <p>The diagram illustrates the Science Enquiry process with five stages: Pattern Seeking, Research, Fair Testing, Identifying & Classifying, and Observation over Time. Each stage is accompanied by a small illustration of a child engaged in the activity.</p>	<p>Light up your World Physics <i>Key Concept: Energy</i></p> <p>I can use the idea that light travels in straight lines and enters our eyes to explain how we see things.</p> <p>I can use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p> <p>I can explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.</p> <p>Body Pump Biology <i>Key Concept: Organisms</i></p> <p>I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Our Changing World Biology <i>Key Concept: Organisms</i></p> <p>I can group, classify and identify plants, animals and micro-organisms using keys or other methods based on their observable features.</p> <p>I can describe how living things have changed over time and evolved using the basic ideas of inheritance, variation and adaptation.</p>	<p>Everything Changes Biology <i>Key Concept: Organisms</i></p> <p>I can describe how living things have changed over time and evolved using the basic ideas of inheritance, variation and adaptation.</p> <p>I can give evidence for evolution.</p> <p>I can recognise that living things produce offspring of the same kind but that offspring normally vary and are not identical to their parents.</p>	<p>Nature Library Biology <i>Key Concept: Organisms</i></p> <p>I can group, classify and identify plants, animals and micro-organisms using keys or other methods based on their observable features.</p> <p>I can recognise that living things produce offspring of the same kind but that offspring normally vary and are not identical to their parents.</p> <p>Body Health Biology <i>Key Concept: Organisms</i></p> <p>I can describe the effects of diet, exercise, drugs and lifestyle on how the body functions.</p> <p>Our Changing World Biology <i>Key Concept: Organisms</i></p> <p>I can group, classify and identify plants, animals and micro-organisms using keys or other methods based on their observable features.</p> <p>I can describe how living things have changed over time and evolved using the basic ideas of inheritance, variation and adaptation.</p> <p>Danger: Low Voltage! Physics <i>Key Concept: Energy</i></p> <p>I can use simple apparatus to construct & control a series circuit, and describe how the circuit may be affected when changes are made to it.</p> <p>I can use recognised symbols when representing a simple circuit in a diagram.</p>
<p>Second order concepts</p>	<p>I describe and evaluate my own and others' scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources (significance)</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.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources) (responsibility)</p> <p>I use a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate (responsibility)</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (written and oral expression)</p> <p>I draw conclusions, explain and evaluate my methods and findings, communicating these in a variety of ways (written and oral expression)</p> <p>I raise further questions that could be investigated, based on data and observations (cause and consequence)</p> <p>I can identify scientific evidence that has been used to support or refute ideas or arguments (significance)</p>	<p>I describe and evaluate my own and others' scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources (significance)</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.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources) (responsibility)</p> <p>I use a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate (responsibility)</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (written and oral expression)</p> <p>I draw conclusions, explain and evaluate my methods and findings, communicating these in a variety of ways (written and oral expression)</p> <p>I raise further questions that could be investigated, based on data and observations (cause and consequence)</p> <p>I can identify scientific evidence that has been used to support or refute ideas or arguments (significance)</p>	<p>I describe and evaluate my own and others' scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources (significance)</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.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources) (responsibility)</p> <p>I use a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate (responsibility)</p> <p>I record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs (written and oral expression)</p> <p>I draw conclusions, explain and evaluate my methods and findings, communicating these in a variety of ways (written and oral expression)</p> <p>I raise further questions that could be investigated, based on data and observations (cause and consequence)</p> <p>I can identify scientific evidence that has been used to support or refute ideas or arguments (significance)</p>
<p>Scientific Vocabulary</p>	<p>variables explanation measurements support accuracy refute precision patterns diagram systematic classification keys graphs comparative and fair tests conclusion</p>		



Developing working scientifically skills in Year 6.

Basic Skills	Advanced Skills
<ul style="list-style-type: none">• Consider how scientists have developed evidence over time and begin to suggest new ideas• Make predictions based on scientific knowledge and understanding• Suggest methods of testing and how to collect data• Carrying out fair tests and identify the key factors to be considered• Make relevant observations and measurements with increasing accuracy• Decide when observations or measurements should be repeated• Select information from reliable sources• Communicate findings in a variety of ways• Identify trends and anomalies• Provide explanations for anomalies• Draw conclusions and explain these using correct scientific vocabulary	<ul style="list-style-type: none">• Explain ideas in writing using scientific knowledge and understanding• Understand the importance and difference in gathering quantitative or qualitative data• Give a range of possible reasons for data anomalies• Explain how interpretation of evidence can lead to new scientific ideas