
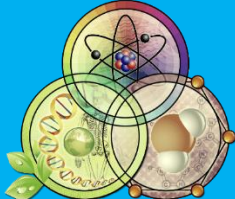



Our Science Curriculum will nurture enquiring scientists who possess a natural curiosity about the world; question, explore and make discoveries first hand; connect scientific ideas, events and discoveries in the wider world; develop a range of scientific vocabulary, which is used with confidence; develop flexible and varied methods of capturing and demonstrating their understanding.

SCIENCE: Concepts Overview

The concepts are the golden threads that run throughout the curriculum for each subject; they transcend context specific knowledge and skills. The concepts link directly to the N.C. subject aims.

Concept 1	Concept 2	Concept 3
<p>Working Scientifically</p> 	<p>Scientific Knowledge and Understanding</p> 	<p>Uses and Implications of Science</p> 
<p>1. Develop an understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.</p>	<p>2. Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics</p> <p>3. Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future</p>	<p>4. Be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.</p>

Science - Contents

Concept Milestones

Nursery

Reception

Year 1 Working Scientifically	Year 1 Autumn	Year 1 Spring	Year 1 Summer
Year 2 Working Scientifically	Year 2 Autumn	Year 2 Spring	Year 2 Summer
Year 3 Working Scientifically	Year 3 Autumn	Year 3 Spring	Year 3 Summer
Year 4 Working Scientifically	Year 4 Autumn	Year 4 Spring	Year 4 Summer
Year 5 Working Scientifically	Year 5 Autumn	Year 5 Spring	Year 5 Summer
Year 6 Working Scientifically	Year 6 Autumn	Year 6 Spring	Year 6 Summer

SCIENCE: Concept Milestones

The Concept Milestones break down the overarching concepts and indicate what pupils should achieve in each concept by the end of each Key Stage. The Milestones link directly to the N.C. SCIENCE content.

	Concept 1: Working Scientifically	Concept 2: Scientific Knowledge and Understanding	Concept 3: Uses and Implications of Science
Milestone 1 (EYFS)	<ul style="list-style-type: none"> Explore the natural world around them, making observations and drawing pictures of animals and plants <i>Observe and interact with natural processes</i> 	<ul style="list-style-type: none"> Know some similarities and differences between the natural world around them and contrasting environments Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter 	<ul style="list-style-type: none"> <i>Understand that we can use our knowledge and understanding of science to support plants, animals, help our environment and improve our projects.</i>
Milestone 2 (Yr 1/2)	<ul style="list-style-type: none"> Asks simple questions and recognises that they can be asked in different ways Observes closely, using simple equipment Performs simple tests Identifies and classifies Uses observations and ideas to suggest answers to questions Gathers and records data to help in answering questions 	<p>Plants</p> <ul style="list-style-type: none"> Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees observe and describe how seeds and bulbs grow into mature plants find out and describe how plants need water, light and a suitable temperature to grow and stay healthy <p>Animals, including humans</p> <ul style="list-style-type: none"> Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Identify and name a variety of common animals that are carnivores, herbivores and omnivores Describe and compare the structure of a variety of common animals Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene <p>Everyday materials</p> <ul style="list-style-type: none"> distinguish between an object and the material from which it is made 	<ul style="list-style-type: none"> Begin to understand some of the ways science is used in our everyday lives Begin to understand that science has improved our quality of life

	Concept 1: Working Scientifically	Concept 2: Scientific Knowledge and Understanding	Concept 3: Uses and Implications of Science
		<ul style="list-style-type: none"> • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties. • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching <p>Seasonal changes</p> <ul style="list-style-type: none"> • observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies <p>Living things and their habitats</p> <ul style="list-style-type: none"> • explore and compare the differences between things that are living, dead, and things that have never been alive • identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including micro-habitats • describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food 	
Milestone 3 (Yr 3/4)	<ul style="list-style-type: none"> • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate 	<p>Light</p> <ul style="list-style-type: none"> • recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by a solid object • find patterns in the way that the size of shadows change 	<ul style="list-style-type: none"> • <i>Understand some of the ways science is used in our everyday lives</i> • <i>Understand that science has improved our quality of life</i> • Begin to understand how Science links to other disciplines e.g. computing, design and technology and maths

	Concept 1: Working Scientifically	Concept 2: Scientific Knowledge and Understanding	Concept 3: Uses and Implications of Science
	<p>measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <ul style="list-style-type: none"> gathering, recording, classifying and presenting data in a variety of ways to help in answering questions recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions identifying differences, similarities or changes related to simple scientific ideas and processes using straightforward scientific evidence to answer questions or to support their findings 	<p>Forces and magnets</p> <ul style="list-style-type: none"> compare how things move on different surfaces notice that some forces need contact between two objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing <p>Living things and habitats</p> <ul style="list-style-type: none"> recognise that living things can be grouped in a variety of ways explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment recognise that environments can change and that this can sometimes pose dangers to living things <p>States of matter</p> <ul style="list-style-type: none"> compare and group materials together, according to whether they are solids, liquids or gases observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature <p>Properties and changes of materials</p> <ul style="list-style-type: none"> compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating 	

	Concept 1: Working Scientifically	Concept 2: Scientific Knowledge and Understanding	Concept 3: Uses and Implications of Science
		<p>Sound</p> <ul style="list-style-type: none"> • identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases <p>Electricity</p> <ul style="list-style-type: none"> • identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • recognise some common conductors and insulators, and associate metals with being good conductors <p>Earth and Space</p> <ul style="list-style-type: none"> • describe the movement of the Earth, and other planets, relative to the Sun in the solar system • describe the movement of the Moon relative to the Earth • describe the Sun, Earth and Moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky 	
<p>Milestone 4 (Yr 5/6)</p>	<ul style="list-style-type: none"> • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate 	<p>Living things and their habitats</p> <ul style="list-style-type: none"> • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals. • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics <p>Animals, including humans</p> <ul style="list-style-type: none"> • identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat 	<ul style="list-style-type: none"> • <i>Understand that Science can be further divided into three main branches: Physics, Chemistry and Biology and begin to understand what these mean</i> • <i>Understand the essential role science plays in our lives</i> • <i>Understand how Science links to other disciplines e.g. computing, design and technology and maths</i>

	Concept 1: Working Scientifically	Concept 2: Scientific Knowledge and Understanding	Concept 3: Uses and Implications of Science
	<ul style="list-style-type: none"> recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs using test results to make predictions to set up further comparative and fair tests reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations identifying scientific evidence that has been used to support or refute ideas or arguments. 	<ul style="list-style-type: none"> identify that humans and some other animals have skeletons and muscles for support, protection and movement describe the simple functions of the basic parts of the digestive system in humans identify the different types of teeth in humans and their simple functions construct and interpret a variety of food chains, identifying producers, predators and prey. describe the changes as humans develop to old age identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function describe the ways in which nutrients and water are transported within animals, including humans <p>Plants</p> <ul style="list-style-type: none"> identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant investigate the way in which water is transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal <p>Rocks</p> <ul style="list-style-type: none"> compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter <p>Evolution and inheritance</p> <ul style="list-style-type: none"> recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution 	

	Concept 1: Working Scientifically	Concept 2: Scientific Knowledge and Understanding	Concept 3: Uses and Implications of Science
		<p>Properties and changes of materials</p> <ul style="list-style-type: none"> • compare and group together everyday materials on the basis of their properties, including their solubility and conductivity (electrical and thermal). • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda <p>Forces</p> <ul style="list-style-type: none"> • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect <p>Light</p> <ul style="list-style-type: none"> • recognise that light appears to travel in straight lines • use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye • explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them <p>Electricity</p> <ul style="list-style-type: none"> • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram 	

SCIENCE Learning
Nursery

Concept	Milestone	Learning
Concept 1: Scientific Enquiry	1. Explore the natural world around them, making observations and drawing pictures of animals and plants 2. <i>Observe and interact with natural processes</i>	a) Use all their senses in hands-on exploration of natural materials. b) Use all of their senses in hands-on exploration of the natural world. c) Comment and ask questions about aspects of their familiar world d) Find out and talk about why things happen and how things work
Concept 2: Scientific Knowledge and Understanding	1. Know some similarities and differences between the natural world around them and contrasting environments 2. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	a) Talk about what they see, using a wide vocabulary. b) Explore how things work. c) Plant seeds and care for growing plants. d) Understand the key features of the life cycle of a plant and an animal. e) Begin to understand the need to respect and care for the natural environment and all living things. f) Explore and talk about different forces they can feel. g) Explore collections of materials with similar and/or different properties. h) Talk about the differences between materials and changes they notice. i) Develop an understanding of growth, decay and changes over time
Concept 3: Uses and Implications of Science	1. <i>Understand that we can use our knowledge and understanding of science to support plants, animals, help our environment and improve our projects.</i>	a) <i>Show care and concern for living things and the environment</i> b) <i>Begin to give reasons for choices</i>

SCIENCE Learning
Reception

Concept	Milestone	Learning
Concept 1: Scientific Enquiry	1. Explore the natural world around them, making observations and drawing pictures of animals and plants 2. <i>Observe and interact with natural processes</i>	a) Describe what they see, hear and feel whilst outside. b) Use all their senses in hands-on exploration of natural materials. c) Develop simple ways to record their experiences d) Notice and talk about what they experience when investigating natural processes
Concept 2: Scientific Knowledge and Understanding	1. Know some similarities and differences between the natural world around them and contrasting environments 2. Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	a) Look closely at similarities, differences, patterns and change in nature b) Know about similarities and differences in relation to places, objects, materials and living things c) Make observations of animals and plants and explains why some things occur, and talks about changes d) Understand the effect of changing seasons on the natural world around them.
Concept 3: Uses and Implications of Science	1. Understand that we can use our knowledge and understanding of science to support plants, animals, help our environment and improve our projects.	a) To know that we can support plants and animals using our knowledge and understanding of science b) To know that we can improve our projects by using our knowledge and understanding of materials and their properties

SCIENCE Learning - Year 1 Working Scientifically Progression

<p>Concept 1: Working Scientifically</p>	<ul style="list-style-type: none"> All of the Working Scientifically milestones/Learning must be taught by the end of the phase through the Milestones/Learning in Concepts 2 and 3 Children should experience all types of scientific enquiry at least once across the phase. <p><i>Children in KS1 are not expected to...</i></p> <ul style="list-style-type: none"> <i>draw conclusions - They do not have the subject knowledge to give reasons for what they observe. They are expected to make observations which will help them to answer questions.</i> <i>make scientific predictions - they do not have the subject knowledge to do this. That does not mean that you should not ask children what they think may happen, but this will be based on experience or may simply be a guess</i> <i>evaluate - however, children should be encouraged to consider their method and adapt this where necessary.</i> <p>Key Working Scientifically Vocabulary children are expected to know and understand by the end of the phase is at least:</p> <p><i>method, observe, pattern, results, measure, compare, record, group, equipment, fair, sort</i></p> <p>Children should read and spell the scientific vocabulary that they use at a level consistent with their increasing word reading and spelling skills at Key Stage 1.</p>
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<p align="center">Concept 1: Working Scientifically skills progression</p> <p align="center"><i>(link to Concept 2 Subject Knowledge Autumn, Spring, Summer)</i></p>		Milestones					
		Asks simple questions and recognises that they can be answered in different ways	Observes closely, using simple equipment	Performs simple tests	Uses observations and ideas to suggest answers to questions	Identifies and classifies	Gathers and records data to help in answering questions
<p align="center">Types of Enquiry</p>	<p>Identifying and classifying</p> <p><i>Materials</i></p> <p><i>Human body (senses)</i></p> <p><i>Materials (medieval/modern, armour)</i></p>	Learning					
	Be able to ask a Yes/No questions to aid sorting	Be able to compare objects based on obvious, observable features e.g. size, shape, colour, texture etc.	Use simple features to compare objects, materials and living things and, with help decide how to sort and group them	Talk about what they have found out e.g. number of objects in each group With support, begin to notice patterns and relationships	Identify the headings for groups	Sort objects and living things into two group using a basic Venn diagram or simple table	

	<i>Living things (woodland animals, carnivores, herbivores, omnivores)</i>					
	Research using Secondary sources <i>Human body (body parts and senses)</i> <i>Animals (Australian animals)</i> <i>Living things (woodland animals, carnivores, herbivores, omnivores)</i>	Ask one or two simple questions linked to a topic Use simple secondary sources			Be able to answer their questions using simple sentences	Present what they learnt verbally, by drawing pictures, writing labels or simple statements
	Comparative and fair testing <i>Materials (scuba diver's map)</i>	Begin to identify the question to investigate from a scenario or choose a question from a range provided	Makes observations linked to answering the question Use simple equipment e.g. hand lenses, egg timers, egg microscopes and simple stop watches.	Begin to choose equipment to use and decide what to do and what to observe or measure in order to answer the question Where appropriate, e measure using standard units where all the numbers are marked on the scale e.g. on rulers, meter, sticks of tape measures	Answer their question in simple sentences using their observations or measurements With support, begin to notice patterns and relationships Use their observations and ideas to suggest answers to questions, talk about what they have found out and how they found it out	Where appropriate record data in simple prepared tables, pictorially or by taking photographs Present what they learnt verbally, using pictures or block diagrams
	Observing over time <i>Seasonal change (across year)</i> <i>Plants</i>	Ask a question about what might happen in the future based on an observation				Record data in simple prepared tables, pictorially or by taking photographs Present what they learnt verbally or by drawing pictures
	Pattern seeking	Ask a question that is looking for a pattern based on observations				Record data in simple, prepared tables and tally charts Present what they learnt verbally

Investigating models <i>Human body (body parts)</i> <i>Weather instruments</i> <i>Plants (flowering plant)</i>							
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SCIENCE Learning
Year 1 Autumn: 'Toys R Us!'

Topic: Toys

Anchoring Question: How and why do people play?

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Animals, including humans 1. identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
	Everyday materials 2. distinguish between an object and the material from which it is made 3. identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
	Seasonal changes 4. observe changes across the four seasons 5. observe and describe weather associated with the seasons and how day length varies.
	Plants 6. identify and name a variety of common wild and garden plants, including deciduous and evergreen trees observe and describe how seeds and bulbs grow into mature plants
Concept 3: Uses and Implications of Science	1. Begin to understand some of the ways science is used in our everyday lives 2. Begin to understand that science has improved our quality of life

SCIENCE Learning
Year 1 Spring: 'Sunshine Islands'

Topic: Castles/Islands

Anchoring Question: Why did medieval people need castles? (castles) Where would you prefer to live and why? (islands)

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Animals, including humans 1. identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals 2. describe and compare the structure of a variety of common animals
	Everyday materials 3. distinguish between an object and the material from which it is made 4. identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock 5. describe the simple physical properties of a variety of everyday materials 6. compare and group together a variety of everyday materials on the basis of their simple physical properties. 7. Identify and compare the suitability of a variety of everyday materials, including metal, plastic, wood, paper, glass, rock, fabric, sand
	Seasonal changes 8. observe changes across the four seasons 9. observe and describe weather associated with the seasons and how day length varies.
Concept 3: Uses and Implications of Science	1. <i>Begin to understand some of the ways science is used in our everyday lives</i> 2. <i>Begin to understand that science has improved our quality of life</i>

SCIENCE Learning
Year 1 Summer: 'If You Go Down To The Woods Today'

Topic: Woodlands

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Plants 1. identify and name a variety of common wild and garden plants, including deciduous and evergreen trees 2. identify and describe the basic structure of a variety of common flowering plants, including trees 3. observe and describe how seeds and bulbs grow into mature plants 4. find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
	Animals, including humans 5. identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals 6. describe and compare the structure of a variety of common animals 7. identify and name a variety of common animals that are carnivores, herbivores and omnivores
	Seasonal changes 8. observe changes across the four seasons 9. observe and describe weather associated with the seasons and how day length varies.
Concept 3: Uses and Implications of Science	1. <i>Begin to understand some of the ways science is used in our everyday lives</i> 2. <i>Begin to understand that science has improved our quality of life</i>

SCIENCE Learning - Year 2 Working Scientifically Progression

<p>Concept 1: Working Scientifically</p>	<ul style="list-style-type: none"> All of the Working Scientifically milestones/Learning must be taught by the end of the phase through the Milestones/Learning in Concepts 2 and 3 Children should experience all types of scientific enquiry at least once across the phase. <p><i>Children in KS1 are not expected to...</i></p> <ul style="list-style-type: none"> <i>draw conclusions - They do not have the subject knowledge to give reasons for what they observe. They are expected to make observations which will help them to answer questions.</i> <i>make scientific predictions - they do not have the subject knowledge to do this. That does not mean that you should not ask children what they think may happen, but this will be based on experience or may simply be a guess</i> <i>evaluate - however, children should be encouraged to consider their method and adapt this where necessary.</i> <p>Key Working Scientifically Vocabulary children are expected to know and understand by the end of the phase is at least:</p> <p><i>method, observe, pattern, results, measure, compare, record, group, equipment, fair, sort</i></p> <p>Children should read and spell the scientific vocabulary that they use at a level consistent with their increasing word reading and spelling skills at Key Stage 1.</p>
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<p>Concept 1: Working Scientifically skills progression</p> <p><i>(link to Concept 2 Subject Knowledge Autumn, Spring, Summer)</i></p>		Milestones					
		Asks simple questions and recognises that they can be answered in different ways	Observes closely, using simple equipment	Performs simple tests	Uses observations and ideas to suggest answers to questions	Identifies and classifies	Gathers and records data to help in answering questions
		Learning					
Types of Enquiry	<p>Identifying and classifying <i>Materials (3 Little Pigs)</i></p> <p><i>Materials (ice cube/ penguin egg)</i></p> <p><i>Animals (polar/desert)</i></p> <p><i>Habitats (polar/desert)</i></p> <p><i>Animals (birds)</i></p> <p><i>Habitats (birds)</i></p>	Be able to ask a Yes/No questions to aid sorting	Be able to compare objects based on obvious, observable features e.g. size, shape, colour, texture etc.	Use simple features to compare objects, materials and living things and, with help decide how to sort and group them	Talk about what they have found out e.g. number of objects in each group	Identify the headings for groups	Sort objects and living things into two group using a basic Venn diagram or simple table
		With support, begin to notice patterns and relationships					

Research using Secondary sources <i>Animals (rats)</i>	Ask one or two simple questions linked to a topic Use simple secondary sources			Be able to answer their questions using simple sentences		Present what they learnt verbally, by drawing pictures, writing labels or simple statements
Comparative and fair testing <i>Materials (3 Little Pigs)</i> <i>Materials (ice cube/ penguin egg)</i> <i>Animals (birds)</i> <i>Habitats (birds)</i>	Begin to identify the question to investigate from a scenario or choose a question from a range provided	Makes observations linked to answering the question Use simple equipment e.g. hand lenses, egg timers, egg microscopes and simple stop watches.	Begin to choose equipment to use and decide what to do and what to observe or measure in order to answer the question Where appropriate, e measure using standard units where all the numbers are marked on the scale e.g. on rulers, meter, sticks of tape measures	Answer their question in simple sentences using their observations or measurements With support, begin to notice patterns and relationships Use their observations and ideas to suggest answers to questions, talk about what they have found out and how they found it out		Where appropriate record data in simple prepared tables, pictorially or by taking photographs Present what they learnt verbally, using pictures or block diagrams
Observing over time <i>Materials (ice cube/ penguin egg)</i>	Ask a question about what might happen in the future based on an observation					Record data in simple prepared tables, pictorially or by taking photographs Present what they learnt verbally or by drawing pictures
Pattern seeking	Ask a question that is looking for a pattern based on observations					Record data in simple, prepared tables and tally charts Present what they learnt verbally
Investigating models <i>Materials (insulated flasks/water bottles)</i> <i>Animals (birds)</i>						

SCIENCE Learning
Year 2 Autumn: 'Fame, Fortune and Fire'

Topic: 17th Century

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Animals, including humans 1. notice that animals, including humans, have offspring which grow into adults 2. find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
	Everyday materials 3. Compare and group together a variety of everyday materials on the basis of their simple physical properties 4. identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
Concept 3: Uses and Implications of Science	1. <i>Begin to understand some of the ways science is used in our everyday lives</i> 2. <i>Begin to understand that science has improved our quality of life</i>

SCIENCE Learning
Year 2 Spring: 'A World of Contrasts'

Topic: Polar and Desert environments

Anchoring question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	<p>Living things and their habitats</p> <ol style="list-style-type: none"> 1. Identify and name a variety of plants and animals in their habitats, including micro-habitats 2. identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other 3. Explore and compare the differences between things that are living, dead and things that have never been alive. 4. describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food
	<p>Animals, including humans</p> <ol style="list-style-type: none"> 5. notice that animals, including humans, have offspring which grow into adults 6. find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
	<p>Everyday materials</p> <ol style="list-style-type: none"> 7. compare and group together a variety of 8. identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses 9. find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
Concept 3: Uses and Implications of Science	<ol style="list-style-type: none"> 1. <i>Begin to understand some of the ways science is used in our everyday lives</i> 2. <i>Begin to understand that science has improved our quality of life</i>

SCIENCE Learning
Year 2 Summer: 'All Aboard!'

Topic: Birds and Flight

Anchoring question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept 2: Scientific Knowledge and Understanding	<p>Animals, including humans</p> <ol style="list-style-type: none"> 1. find out about and describe the basic needs of animals, including humans, for survival (water, food and air) 2. describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene <hr/> <p>Living things and their habitats</p> <ol style="list-style-type: none"> 3. identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other 4. identify and name a variety of plants and animals in their habitats, including micro-habitats <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p>
Concept 3: Uses and Implications of Science	<ol style="list-style-type: none"> 1. <i>Begin to understand some of the ways science is used in our everyday lives</i> 2. <i>Begin to understand that science has improved our quality of life</i>

SCIENCE Learning - Year 3 Working Scientifically Progression

<p>Concept 1: Working Scientifically</p>	<ul style="list-style-type: none"> All of the Working Scientifically milestones/Learning must be taught by the end of the phase through the Milestones/Learning in Concepts 2 and 3 Children should experience all types of scientific enquiry at least once across the phase. <p>Key Working Scientifically Vocabulary children are expected to know and understand by the end of the Key Stage is at least:</p> <p><i>method, observe, pattern, results, measure, compare, record, group, equipment, fair, sort (Key Stage 1 language)</i> <i>accurate, conclusion, evidence, fair test, prediction, reliable, supports (in relation to evidence), variable, unit. (Key Stage 2 language)</i></p> <p>Children should read, spell and pronounce the scientific vocabulary that they use with confidence, using their growing word reading and spelling knowledge.</p>
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<p>Concept 1: Working Scientifically Skills progression</p> <p><i>(link to Concept 2 Subject Knowledge Autumn, Spring, Summer)</i></p>		Milestones								
		Asking relevant questions and using different types of scientific enquiries to answer them	Setting up simple practical enquiries, comparative and fair tests	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Identifying differences, similarities or changes related to simple scientific ideas and processes	Using straightforward scientific evidence to answer questions or to support their findings.
		Learning								
Types of Enquiry	<p>Identifying and classifying <i>Forces (magnets)</i></p> <p><i>Light (materials/transparency)</i></p>	Be able to ask a range of questions to aid sorting. Begin to decide	Talk about criteria for grouping sorting and classifying; and use simple keys	Be able to compare objects based on more sophisticated, observable features e.g.	Sort objects and living things into groups using intersecting Venn and Carroll diagrams Use a combination of verbal and written explanations for their findings	All with support: Spot patterns in the data particularly two criteria with no examples e.g.	<i>With support make links to other scientific ideas they have learned about or processes they have used,</i>	<i>Begin to refer directly to their evidence when answering their question</i>		

<p><i>Living things (invertebrates)</i></p>	<p>which ways of sorting will give useful information</p>	<p>Be able to put appropriate headings onto intersecting Venn and Carroll diagrams</p>					<p>there are no living things with wings and no legs</p> <p>Suggest improvements</p> <p>Suggest new questions arising from the investigation.</p>	<p><i>identifying differences, similarities or changes.</i></p>	
<p>Research using Secondary sources <i>Living things (invertebrates)</i></p>	<p>Ask a range of relevant questions linked to a topic or enquiry</p>	<p>Begin to recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations</p> <p>Begin to choose a source from a range provided</p>		<p>Be able to answer their questions, using increasingly specific scientific vocabulary</p> <p>Present observations in labelled diagrams, annotating photographs or writing statements, using increasingly specific scientific vocabulary</p>			<p>With support use what they have found out to suggest further questions to research</p>		
<p>Comparative and fair testing <i>Forces (friction)</i></p> <p><i>Electricity (conductors/insulators)</i></p>		<p>Begin to recognise when a simple fair test is necessary and help to decide how to set it up</p>	<p>Make a range of relevant observations linked to answering the question</p> <p>Use a range of equipment</p>	<p>Use a combination of verbal and written explanations for their findings</p>	<p>Present data in bar charts</p>	<p>Use a combination of verbal and written explanations for their findings</p>	<p>All with support:</p> <p>Use results from an investigation to make a prediction</p>		

			Begin to decide what to change and what to measure or observe	including thermometers, rulers, meter sticks, tape measures, stop watches, egg microscopes	Begin to prepare own tables to record data		Help to make decision about how to analyse data	about a further result		
	Observing over time		Begin to decide about what to measure or observe and how often to take a measurement.	and data loggers (to measure over time) Begin to measure using standard units		Use software package to present data using an appropriate chart/graph		Suggest improvements e.g. to method of taking measurements, Suggest new questions arising from the investigation.		
	Pattern seeking <i>Forces (magnets)</i> <i>Light (shadows)</i>		Help to make decisions what to measure or observe With support, look for naturally occurring patterns and relationships and decide what data to collect to identify them.	where not all the numbers are marked on the scale, and take repeat readings where necessary						
	Investigating models <i>Electricity (circuits)</i> <i>Light (mirrors/kaleidoscopes)</i>									

SCIENCE Learning
Year 3 Autumn: 'Life Forces'

Topic: Forces

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Forces and magnets 1. compare how things move on different surfaces 2. notice that some forces (friction) need contact between two objects, but magnetic forces can act at a distance 3. observe how magnets attract or repel each other and attract some materials and not others 4. describe magnets as having two poles 5. predict whether two magnets will attract or repel each other, depending on which poles are facing.
	Properties and changes of materials 6. compare and group together everyday materials on the basis of their properties, response to magnets
Concept 3: Uses and Implications of Science	1. <i>Understand some of the ways science is used in our everyday lives</i> 2. <i>Understand that science has improved our quality of life</i> 3. Begin to understand how Science links to other disciplines e.g. computing, design and technology and maths

SCIENCE Learning
Year 3 Spring: 'Let There Be Light'

Topic: Light

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Light 1. recognise that they need light in order to see things and that dark is the absence of light 2. notice that light is reflected from surfaces 3. recognise that light from the sun can be dangerous and that there are ways to protect their eyes 4. recognise that shadows are formed when the light from a light source is blocked by a solid object 5. find patterns in the way that the size of shadows change
	Properties and changes of materials 6. compare and group together everyday materials on the basis of their properties, transparency
	Electricity 7. identify common appliances that run on electricity 8. construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers 9. identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery 10. recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit 11. recognise some common conductors and insulators, and associate metals with being good conductors.
	Properties and changes of materials 12. compare and group together everyday materials on the basis of their properties,
Concept 3: Uses and Implications of Science	1. <i>Understand some of the ways science is used in our everyday lives</i> 2. <i>Understand that science has improved our quality of life</i> 3. Begin to understand how Science links to other disciplines e.g. computing, design and technology and maths

SCIENCE Learning
Year 3 Summer: 'Our Local World'

Topic: Local area and minibeasts (invertebrates)

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Living things and habitats (focus on invertebrates) 1. recognise that living things can be grouped in a variety of ways 2. explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. 3. recognise that environments can change and that this can sometimes pose a danger to living things
Concept 3: Uses and Implications of Science	1. <i>Understand some of the ways science is used in our everyday lives</i> 2. <i>Understand that science has improved our quality of life</i> 3. Begin to understand how Science links to other disciplines e.g. computing, design and technology and maths

SCIENCE Learning - Year 4 Working Scientifically Progression

Concept 1: Working Scientifically	<ul style="list-style-type: none"> All of the Working Scientifically milestones/Learning must be taught by the end of the phase through the Milestones/Learning in Concepts 2 and 3 Children should experience all types of scientific enquiry at least once across the phase. <p>Key Vocabulary children are expected to know and understand by the end of the Key Stage is at least:</p> <p><i>method, observe, pattern, results, measure, compare, record, group, equipment, fair, sort (Key Stage 1 language)</i> <i>accurate, conclusion, evidence, fair test, prediction, reliable, supports (in relation to evidence), variable, unit. (Key Stage 2 language)</i></p> <p>Children should read, spell and pronounce the scientific vocabulary that they use with confidence, using their growing word reading and spelling knowledge.</p>
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Concept 1: Working Scientifically Skills progression <i>(link to Concept 2 Subject Knowledge Autumn, Spring, Summer)</i>		Milestones							
		Asking relevant questions and using different types of scientific enquiries to answer them	Setting up simple practical enquiries, comparative and fair tests	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Identifying differences, similarities or changes related to simple scientific ideas and processes
Types of Enquiry		Learning							
		Identifying and classifying States of matter (solids, liquids and gases) <i>Materials (shelter building)</i>	Be able to ask a range of questions to aid sorting. Begin to decide	Talk about criteria for grouping sorting and classifying; and use simple keys	Be able to compare objects based on more sophisticated, observable features e.g.	Sort objects and living things into groups using intersecting Venn and Carroll diagrams Use a combination of verbal and written explanations for their findings	All with support: Spot patterns in the data particularly two criteria with no examples e.g. there are no	<i>With support make links to other scientific ideas they have learned about or processes they have used, identifying</i>	<i>Begin to refer directly to their evidence when answering their question</i>

		which ways of sorting will give useful information	Be able to put appropriate headings onto intersecting Venn and Carroll diagrams					living things with wings and no legs	<i>differences, similarities or changes.</i>	
	Research using Secondary sources <i>Habitats (human impact on oceans)</i> <i>Earth and Space</i>	Ask a range of relevant questions linked to a topic or enquiry	Begin to recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations Begin to choose a source from a range provided		Be able to answer their questions, using increasingly specific scientific vocabulary Present observations in labelled diagrams, annotating photographs or writing statements, using increasingly specific scientific vocabulary			Suggest improvements Suggest new questions arising from the investigation.		
	Comparative and fair testing <i>Sound (travelling through mediums)</i> <i>Sound (pitch)</i> <i>Materials (shelter building)</i>		Begin to recognise when a simple fair test is necessary and help to decide how to set it up Begin to decide what to	Make a range of relevant observations linked to answering the question Use a range of equipment including thermometers,	Use a combination of verbal and written explanations for their findings Begin to prepare own	Present data in bar charts	Use a combination of verbal and written explanations for their findings Help to make decision about	All with support : Use results from an investigation to make a prediction about a further result Suggest improvements e.g. to method		

			change and what to measure or observe	rulers, meter sticks, tape measures, stop watches, egg microscopes and data loggers (to measure over time)	tables to record data		how to analyse data	of taking measurements, Suggest new questions arising from the investigation.		
	Observing over time <i>States of Matter (bucket Science)</i> <i>Earth and space (shadows human sundial)</i> <i>Sound (volume/distance)</i>		Begin to decide about what to measure or observe and how often to take a measurement.	Begin to measure using standard units where not all the numbers are marked on the scale, and take repeat readings where necessary		Use software package to present data using an appropriate chart/graph				
	Pattern seeking <i>Sound (volume/distance)</i>		Help to make decisions what to measure or observe With support, look for naturally occurring patterns and relationships and decide what data to collect to identify them.							
	Investigating models <i>States of Matter (bucket Science)</i> <i>Sound (junk instruments)</i> <i>Earth and Space (solar system)</i>									

	<i>States of matter (water cycle)</i>									
	<i>Materials (shelter building)</i>									

SCIENCE Learning
Year 4 Autumn: 'Water, Water Everywhere'

Topic: Water cycle, sea creatures, sea as a habitat

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Living things and habitats 1. recognise that environments can change and that this can sometimes pose dangers to living things.
	States of matter 2. compare and group materials together, according to whether they are solids, liquids or gases 3. observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) 4. identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 5. know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution 6. use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating <i>(5.&6. introduced here through Bucket Science enquiry but covered again in Spring term)</i>
Concept 3: Uses and Implications of Science	1. <i>Understand some of the ways science is used in our everyday lives</i> 2. <i>Understand that science has improved our quality of life</i> 3. Begin to understand how Science links to other disciplines e.g. computing, design and technology and maths

SCIENCE Learning
Year 4 Spring: 'Sunshine Islands'

Topic: Islands

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Sound 1. identify how sounds are made, associating some of them with something vibrating 2. recognise that vibrations from sounds travel through a medium to the ear 3. find patterns between the pitch of a sound and features of the object that produced it 4. find patterns between the volume of a sound and the strength of the vibrations that produced it 5. recognise that sounds get fainter as the distance from the sound source increase.
	Earth and Space 6. describe the movement of the Earth, and other planets, relative to the Sun in the solar system 7. describe the movement of the Moon relative to the Earth 8. describe the Sun, Earth and Moon as approximately spherical bodies 9. use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky
	States of Matter 10. observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) 11. identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.
Concept 3: Uses and Implications of Science	1. <i>Understand some of the ways science is used in our everyday lives</i> 2. <i>Understand that science has improved our quality of life</i> 3. Begin to understand how Science links to other disciplines e.g. computing, design and technology and maths

SCIENCE Learning
Year 4 Summer: 'On The Home Front'

Topic: World War II

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Properties and changes of materials 1. compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
Concept 3: Uses and Implications of Science	1. <i>Understand some of the ways science is used in our everyday lives</i> 2. <i>Understand that science has improved our quality of life</i> 3. Begin to understand how Science links to other disciplines e.g. computing, design and technology and maths

SCIENCE Learning - Year 5 Working Scientifically Progression

<p>Concept 1: Working Scientifically</p>	<ul style="list-style-type: none"> All of the Working Scientifically milestones/Learning must be taught by the end of the phase through the Milestones/Learning in Concepts 2 and 3 Children should experience all types of scientific enquiry at least once across the phase. <p>Key Vocabulary children are expected to know and understand by the end of the Key Stage is at least:</p> <p><i>method, observe, pattern, results, measure, compare, record, group, equipment, fair, sort (Key Stage 1 language)</i> <i>accurate, conclusion, evidence, fair test, prediction, reliable, supports (in relation to evidence), variable, unit. (Key Stage 2 language)</i></p> <p>Read, spell and pronounce scientific vocabulary correctly.</p>
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<p>Concept 1: Working Scientifically Skills progression</p> <p><i>(link to Concept 2 Subject Knowledge Autumn, Spring, Summer)</i></p>		Milestones					
		<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p>	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p>	<p>Using test results to make predictions to set up further comparative and fair tests</p>	<p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p>	<p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p>
<p>Types of Enquiry</p>		Learning					
		<p>Identify specific clear questions that will help to sort without ambiguity</p>		<p>Create branching databases (tree diagrams) and keys to enable others to name living things and objects</p>	<p>Be able to compare not only based on physical properties but also on knowledge gained through previous enquiry</p>	<p>Be able to use data to show that living things and materials that are grouped together have more things in common than with things in other groups</p> <p>Be able to talk about the features that objects and living things share and do not share based on the information in the key etc.</p>	<p>Be able to explain using evidence that the branching database or classification key will only work for the living things or materials it was created for (when identifying and classifying)</p>

	Rocks						Talk about how scientific ideas have developed over time
	Research using Secondary sources <i>Animals including humans (human body)</i> <i>Living things (life cycles)</i> <i>Evolution and Inheritance (fossils)</i>	<p>Ask a range of questions recognising that some can be answered through research and others may not</p> <p>Be discerning about which source to use, including verifying validity of information by checking across different sources</p>		Use scientific diagrams, annotation and note taking to record information gained through research	Use results of research as inspiration for other types of enquiry	<p>Report on and present what they have learnt in a range of oral or written forms, e.g. annotated diagrams, knowledge organisers, factual reports, including using computer programs/software where appropriate</p> <p>Be able to answer their questions using scientific evidence gained from a range of sources</p> <p>Be able to talk about their degree of trust in the sources they used</p>	<p>Begin to separate opinion from fact (when using secondary sources)</p> <p>Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas</p>
	Comparative and fair testing <i>Forces gravity, water/air resistance</i> Rocks	<p>Ask a range of questions and identify the most appropriate type of enquiry that will help to answer the questions.</p> <p>Recognise when and how to set up comparative and fair tests, control variables where necessary.</p>	<p>Make careful and precise observations linked to answering the question</p> <p>Have a clear and purposeful plan for making observations or taking measurements at suitable intervals</p>	<p>Prepare own tables to record data, including columns for taking repeat readings</p> <p>Choose an appropriate form of presentation for data gathered, including line graphs</p>	<p>Use their scientific experiences to explore ideas and raise different kinds of questions</p> <p>Identify when further observations, comparative and fair tests might be needed.</p>	<p>Provide oral or written explanations for their findings based on their scientific understanding, using specific scientific vocabulary</p> <p>Be able to answer their question, describing causal relationships, describing the change over time or identifying patterns as appropriate</p>	
	Observing over time <i>Forces gravity, water/air resistance</i>	<p>Explain which variables need to be controlled and why</p>	<p>Select and use a range of equipment including thermometers, rulers, meter sticks, tape measures, stop</p>	<p>Prepare own tables to record data, draw diagrams or take photographs</p> <p>Choose an appropriate form of</p>	<p>Evaluate tests carried out and reflect on improvements required for future enquiries</p>	<p>Explain their degree of trust in their results e.g. precision in taking measurements, variables that may not have been controlled, and accuracy of results</p>	

			watches, simple and more complex microscopes and data loggers (to measure over time)	presentation for data gathered, including line graphs			
	Pattern seeking <i>Animals including humans (human body)</i>		Measure using standard units using equipment that has scales involving decimals	Prepare own tables to record data, draw diagrams or take photographs Choose an appropriate form of presentation for data gathered, including scatter graphs			
	Investigating models <i>Forces gravity, water/air resistance</i> <i>Animals including humans (human body skeleton, circulatory system, digestive system)</i> <i>Forces (mechanisms)</i> <i>Living things (life cycles)</i> <i>Evolution and Inheritance (fossils)</i>						

SCIENCE Learning
Year 5 Autumn: 'Humans Vs Nature'

Topic: Rivers/Forces

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	<p>Forces</p> <ol style="list-style-type: none"> 1. explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object 2. identify the effects of air resistance, water resistance and friction, that act between moving surfaces <p>Properties and changes of materials</p> <ol style="list-style-type: none"> 3. give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
Concept 3: Uses and Implication of science	<ol style="list-style-type: none"> 1. <i>Understand that Science can be further divided into three main branches: Physics, Chemistry and Biology and begin to understand what these mean</i> 2. <i>Understand the essential role science plays in our lives</i> 3. <i>Understand how Science links to other disciplines e.g. computing, design and technology and maths</i>

SCIENCE Learning
Year 5 Spring: 'Fit For Life'

Topic: Human Body
Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	<p>Animals, including humans</p> <ol style="list-style-type: none"> 1. 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. 2. recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function 3. identify that humans and some other animals have skeletons and muscles for support, protection and movement 4. identify the different types of teeth in humans and their simple functions 5. describe the simple functions of the basic parts of the digestive system in humans 6. describe the ways in which nutrients and water are transported within animals, including humans 7. identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood 8. describe the changes as humans develop to old age <p>Living things and their habitats</p> <ol style="list-style-type: none"> 9. describe the life process of reproduction in some animals. 10. describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals
Concept 3: Uses and Implication of Science	<ol style="list-style-type: none"> 1. <i>Understand that Science can be further divided into three main branches: Physics, Chemistry and Biology and begin to understand what these mean</i> 2. <i>Understand the essential role science plays in our lives</i> 3. <i>Understand how Science links to other disciplines e.g. computing, design and technology and maths</i>

SCIENCE Learning
Year 5 Summer: 'Innovation & Inspiration'

Topic: Innovation and inspiration

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Living things and their habitats 1. Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms , plants and animals 2. give reasons for classifying plants and animals based on specific characteristics 3. describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
	Rocks 4. compare and group together different kinds of rocks on the basis of their appearance and simple physical properties 5. describe in simple terms how fossils are formed when things that have lived are trapped within rock
	Evolution and inheritance 6. recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago 7. recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
	Forces 1. recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
	Living things and their habitats 1. Recognise the impact of diet, exercise, drugs on the way their bodies function
Concept 3: Uses and Implication of Science	1. <i>Understand that Science can be further divided into three main branches: Physics, Chemistry and Biology and begin to understand what these mean</i> 2. <i>Understand the essential role science plays in our lives</i> 3. <i>Understand how Science links to other disciplines e.g. computing, design and technology and maths</i>

SCIENCE Learning - Year 6 Working Scientifically Progression

<p>Concept 1: Working Scientifically</p>	<ul style="list-style-type: none"> All of the Working Scientifically milestones/Learning must be taught by the end of the phase through the Milestones/Learning in Concepts 2 and 3 Children should experience all types of scientific enquiry at least once across the phase. <p>Key Vocabulary children are expected to know and understand by the end of the Key Stage is at least:</p> <p><i>method, observe, pattern, results, measure, compare, record, group, equipment, fair, sort (Key Stage 1 language)</i> <i>accurate, conclusion, evidence, fair test, prediction, reliable, supports (in relation to evidence), variable, unit. (Key Stage 2 language)</i></p> <p>Read, spell and pronounce scientific vocabulary correctly.</p>
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<p>Concept 1: Working Scientifically Skills progression</p> <p><i>(link to Concept 2 Subject Knowledge Autumn, Spring, Summer)</i></p>		Milestones					
		<p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate</p>	<p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs</p>	<p>Using test results to make predictions to set up further comparative and fair tests</p>	<p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</p>	<p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p>
<p>Identifying and classifying Plants (leaf and tree identification)</p>		Learning					
		<p>Identify specific clear questions that will help to sort without ambiguity</p>		<p>Create branching databases (tree diagrams) and keys to enable others to name living things and objects</p>	<p>Be able to compare not only based on physical properties but also on knowledge gained through previous enquiry</p>	<p>Be able to use data to show that living things and materials that are grouped together have more things in common than with things in other groups</p> <p>Be able to talk about the features that objects and living things share and do not share based on the information in the key etc.</p>	<p>Be able to explain using evidence that the branching database or classification key will only work for the living things or materials it was created for (when identifying and classifying)</p> <p>Talk about how scientific ideas have developed over time</p>
Types of Enquiry							

							Begin to separate opinion from fact (when using secondary sources)
Research using Secondary sources <i>Plants (Mrs NERG, life cycles, adaptation)</i> <i>Animals (food chains, adaptation)</i>	<p>Ask a range of questions recognising that some can be answered through research and others may not</p> <p>Be discerning about which source to use, including verifying validity of information by checking across different sources</p>		Use scientific diagrams, annotation and note taking to record information gained through research	Use results of research as inspiration for other types of enquiry	<p>Report on and present what they have learnt in a range of oral or written forms, e.g. annotated diagrams, knowledge organisers, factual reports, including using computer programs/software where appropriate</p> <p>Be able to answer their questions using scientific evidence gained from a range of sources</p> <p>Be able to talk about their degree of trust in the sources they used</p>		Use relevant scientific language and illustrations to discuss, communicate and justify scientific ideas
Comparative and fair testing <i>Plants (soil/bean seed enquiry)</i> <i>Materials (shelter building)</i>	<p>Ask a range of questions and identify the most appropriate type of enquiry that will help to answer the questions.</p> <p>Recognise when and how to set up comparative and fair tests, control variables where necessary.</p> <p>Explain which variables need to be controlled and why</p>	<p>Make careful and precise observations linked to answering the question</p> <p>Have a clear and purposeful plan for making observations or taking measurements at suitable intervals</p> <p>Select and use a range of equipment including thermometers, rulers, meter sticks, tape measures, stop watches, simple and more complex microscopes and data</p>	<p>Prepare own tables to record data, including columns for taking repeat readings</p> <p>Choose an appropriate form of presentation for data gathered, including line graphs</p>	<p>Use their scientific experiences to explore ideas and raise different kinds of questions</p> <p>Identify when further observations, comparative and fair tests might be needed.</p> <p>Evaluate tests carried out and reflect on improvements required for future enquiries</p>	<p>Provide oral or written explanations for their findings based on their scientific understanding, using specific scientific vocabulary</p> <p>Be able to answer their question, describing causal relationships, describing the change over time or identifying patterns as appropriate</p> <p>Explain their degree of trust in their results e.g. precision in taking measurements, variables that may not have been controlled, and accuracy of results</p>		
Observing over time <i>Plants (soil/bean seed enquiry)</i>			<p>Prepare own tables to record data, draw diagrams or take photographs</p> <p>Choose an appropriate form of presentation for data gathered, including line graphs</p>				

			loggers (to measure over time)				
Pattern seeking <i>Electricity (brightness of lights, loudness of buzzer)</i>			Measure using standard units using equipment that has scales involving decimals	Prepare own tables to record data, draw diagrams or take photographs Choose an appropriate form of presentation for data gathered, including scatter graphs			
Investigating models <i>Plants (dissecting flowers)</i> <i>Materials (shelter building)</i> <i>Electricity</i> <i>Light</i>							

SCIENCE Learning
Year 6 Autumn: 'Think Green'

Topic: Environment (plants)

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	<p>Plants</p> <ol style="list-style-type: none"> 1. identify and describe the functions of different parts of flowering plants: <i>roots</i>, stem/trunk, leaves and flowers 2. 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 3. investigate the way in which water is transported within plants 4. explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
	<p>Living things and their habitats</p> <ol style="list-style-type: none"> 1. describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including plants 2. give reasons for classifying plants based on specific characteristics 3. describe the life process of reproduction in some plants
	<p>Evolution and Inheritance</p> <ol style="list-style-type: none"> 1. identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
	<p>Rocks</p> <ol style="list-style-type: none"> 1. recognise that soils are made from rocks and organic matter.
Concept 3: Uses and Implications of Science	<ol style="list-style-type: none"> 1. <i>Understand that Science can be further divided into three main branches: Physics, Chemistry and Biology and begin to understand what these mean</i> 2. <i>Understand the essential role science plays in our lives</i> 3. <i>Understand how Science links to other disciplines e.g. computing, design and technology and maths</i>

SCIENCE Learning
Year 6 Spring: 'Save The Planet'

Topic: Environment (animals)

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	Evolution & Inheritance 1. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
	Animals inc humans 2. Construct and interpret a variety of food chains, identifying producers, predators and prey.
	Properties and changes of materials 3. give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
Concept 3: Uses and Implications of Science	1. <i>Understand that Science can be further divided into three main branches: Physics, Chemistry and Biology and begin to understand what these mean</i> 2. <i>Understand the essential role science plays in our lives</i> 3. <i>Understand how Science links to other disciplines e.g. computing, design and technology and mats</i>

SCIENCE Learning
Year 6 Summer: 'Eureka!'

Topic: Ancient Greece

Anchoring Question:

USE ALONGSIDE WORKING SCIENTIFICALLY PROGRESSION TO ENSURE COVERAGE OF CONCEPT 1 LEARNING

Concept	Milestone/Learning
Concept 2: Scientific Knowledge and Understanding	<p>Properties and changes of materials</p> <ol style="list-style-type: none"> 1. demonstrate that dissolving, mixing and changes of state are reversible changes 2. explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda 3. compare and group together everyday materials on the basis of their properties, conductivity (electrical and thermal)
	<p>Light</p> <ol style="list-style-type: none"> 1. recognise that light appears to travel in straight lines 2. use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye 3. 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 4. use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
	<p>Electricity</p> <ol style="list-style-type: none"> 1. associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit 2. compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches 3. use recognised symbols when representing a simple circuit in a diagram
	<p>Animals Including Humans</p> <ol style="list-style-type: none"> 11. Recognise the impact of diet, exercise, drugs on the way their bodies function
Concept 3: Uses and Implications of Science	<ol style="list-style-type: none"> 1. <i>Understand that Science can be further divided into three main branches: Physics, Chemistry and Biology and begin to understand what these mean</i> 2. <i>Understand the essential role science plays in our lives</i> <p style="text-align: center;"><i>Understand how Science links to other disciplines e.g. computing, design and technology and mats</i></p>