

MIDSOMER NORTON PRIMARY - LONG-TERM PLAN FOR SCIENCE

Breadth of Study	Key Stage One	Key Stage Two	
	Year 1/2	Year 3/4	Year 5/6
Year A	Basic Materials and their Properties <i>Everyday Materials – Snap Science Year 1</i> Learning about Fish, Amphibians, Birds, Reptiles and Mammals <i>Looking at Animals – Snap Science Year 1</i> Simple Physical Properties of Materials <i>Materials – Good Choices – Snap Science YR 2</i> Develop Knowledge and Understanding of the Human Body <i>Using our senses/Growing Up and Taking Care – Snap Science Year 1 and 2</i> How our Bodies Are Suited to their Habitat? <i>What is in your habitat? Snap Science 2</i> Observation of Animal Life in the School Grounds and Investigating, Learning and Caring for Animals <i>Our Changing World – Snap Science Year 1</i>	Rocks and Fossils <i>Rock Detectives – Snap Science Year 3</i> Sound, Hearing and Vibrations <i>Good Vibrations – Snap Science Year 3</i> Food, Nutrition, Skeleton and Protection <i>Amazing bodies – Snap Science Year 3</i> Electricity <i>Switched on – Snap Science Year 4</i> States of Matter <i>In a State – Snap Science Year 4</i> Observing Plants in the Local Environment <i>Changing World – Snap Science Year 3</i>	Human Circulatory System <i>Body Pump – Snap Science Year 6</i> Earth and Space <i>The Earth and Beyond - Snap Science Y5</i> The Impact of Diet, Drugs, lifestyle and Nutrition within Humans and Animals <i>Body Health - Snap Science Y6</i> Reproduction of Plants and Animals, Life Cycles and Changes <i>Circle of Life - Snap Science Year 5</i> Materials and their Properties <i>Get Sorted SS Y5 Everyday Materials SS Y6</i> Classification of Plants and Animals and Microorganisms <i>The Natures Library - snap Science Y6</i>
Year B	Identify, Name, Describe and Compare Plants and Investigate in Immediate Environment <i>Our Changing World and Plants and Plant Detectives – Snap Science – Years 1 and 2</i> Basic Needs of Human Survival <i>Growing up – Snap Science Year 2</i> Effects of Changing Seasons and Weather <i>Our Changing World – Snap Science Year 1</i> Identifying Plants and their Parts <i>Apprentice Gardener – Snap Science Year 2</i>	Light and Shadow <i>Can you see me? – Snap Science Year 3</i> Human Impact on the Environment <i>Human Impact – Snap Science Year 4</i> Digestion and Teeth <i>Where does all that food go? Snap Science Year 4</i> Forces <i>Power of Forces – Snap Science Year 3</i>	What is Light? Behaviour of Light <i>Light Up The World - Snap Science Year 6</i> Electricity <i>Danger Low Voltage - Snap Science Year 6</i> Gravity, Friction, Water and Air Resistance <i>Feel The Force - Snap Science Year 5</i> Solids, Liquids and Gases <i>All Change - SS Y5, Marvellous Mixtures SS Y5</i> Adaptation and Plant Reproduction <i>Our Changing Word - SS Y5, Reproduction in Plants and Animals - SS Y6</i>

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	Changing Shapes of Objects made from Different Materials <i>Materials – Snap Science Year 2</i> Animals and their Habitats <i>Our Changing World – Snap Science Year 2</i>	Lifecycle of a Plant and Reproduction <i>How does your garden grow?</i> Classification <i>Who am I? Snap Science Year 4</i>	
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Key Stage 1 – Milestone 1: These areas of Science are taught in Key Stage 1:

Biology	Chemistry	Physics
Plants Identify, classify and describe their basic structure. Observe and describe growth and conditions for growth. Habitats Look at the suitability of environments and at food chains. Animals and Humans Identify, classify and observe. Look at growth, basic needs, exercise, food and hygiene.	Materials Identify, name, describe, classify and compare properties and changes.	Forces Describe basic movements. Earth and Space Observe seasonal change

Key Stage 2 – Milestones 2 & 3: These areas of Science are taught in Key Stage 2:

Biology	Chemistry	Physics
Plants Habitats Animals and Humans	Materials States of Matter Rocks and Soils	Forces Light Sounds

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Living Things Evolution and Inheritance		Electricity Magnets Earth and Space	
Progression of Threshold Concepts (BIG IDEAS) in Science			
	Year 1/2	Year 3/4	Year 5/6
Plants	<p>Biology - Identify and name a variety of common plants, including garden plants, wild plants, and trees and those classified as deciduous and evergreen.</p> <p>Identify and describe the basic structure of a variety of common flowering plants, including roots, stems/trunk, leaves and flowers.</p> <p>Observe and describe how seeds and bulbs grow into mature plants.</p> <p>Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.</p>	<p>Biology - Identify and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers.</p> <p>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.</p> <p>Investigate the way in which water is transported within plants.</p> <p>Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>	
Habitats	<p>Biology - Identify that most living things live in habitats to which they are suited and describe how different habitats provide the basic needs of different kinds of animals and plants and how they depend on each other.</p> <p>Identify and name a variety of plants and animals in their habitats, including micro habitats.</p>	<p>Biology - Recognise that environments can change and that this can sometimes pose dangers to specific habitats.</p>	

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<p>Animals and Humans</p>	<p>Biology - Identify and name a variety of common animals that are birds, fish, amphibians, reptiles, mammals, and invertebrates, including pets.</p> <p>Identify and name a variety of common animals that are carnivores, herbivores, and omnivores.</p> <p>Describe and compare the structure of common animals (birds, fish, amphibians, reptiles, mammals, and invertebrates, including pets).</p> <p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.</p> <p>Notice that animals, including humans have offspring that grow into adults. Name the offspring of animals and humans e.g. babies for humans, puppies for dogs.</p>	<p>Biology - Identify that humans and some animals have skeletons and muscles for support, protection and movement.</p> <p>Describe the simple functions of the basic digestive system in humans.</p> <p>Identify the different types of teeth in humans and their simple functions.</p>	<p>Biology - Describe the changes as humans develop to old age.</p> <p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.</p> <p>Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions.</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>
<p>Living Things</p>	<p>Biology - Explore and compare the differences between things that are living, that are dead and things that have never been alive.</p> <p>Investigate and describe the basic needs of animals, including humans, for survival (water, food, and air).</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.</p> <p>Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.</p>	<p>Biology - Identify that animals, including humans, need the right types and amounts of nutrition, that they cannot make their own food and they get nutrition from what they eat.</p> <p>Construct and interpret a variety of food chains, identifying producers.</p> <p>Recognise that living things can be grouped in a variety of ways.</p> <p>Explore and use classification keys.</p>	<p>Biology - Describe the differences in the life cycles of a mammal, an amphibian, an insect, and a bird.</p> <p>Describe the process of reproduction in some plants and animals.</p> <p>Give reasons for classifying plants and animals based on specific characteristics.</p> <p>Describe how living things are classified into broad groups according to common observable characteristics.</p> <p>Describe the differences in the life cycles of a mammal, an amphibian, an insect, and a bird.</p>

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Evolution and Inheritance			<p>Biology - Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and how that adaptation may lead to evolution.</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.</p>
Materials	<p>Chemistry - Distinguish between an object and the material from which it is made.</p> <p>Describe the simple physical properties of a variety of everyday materials.</p> <p>Compare and group together a variety of everyday materials on the basis of their very simple physical properties.</p> <p>Identify and name a variety of everyday materials, including wood, plastic glass, metal, water and rock.</p> <p>Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses.</p>		<p>Chemistry - Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood, and plastic.</p> <p>Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets.</p>
States of Matter	<p>Chemistry - Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting, and stretching.</p>	<p>Chemistry - Observe that some materials change state when they are heated or cooled and measure the temperature at which this happens in degrees Celsius °C, building on the teaching in mathematics.</p>	<p>Chemistry - Use knowledge of solids, liquids, and gases to decide how mixtures might be separated, including through filtering, sieving, and evaporating.</p> <p>Demonstrate that dissolving, mixing, and changes of state are reversible changes.</p>

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		<p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p> <p>Compare and group materials together, according to whether they are solids, liquids, or gases.</p>	<p>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, oxidation, and the action of acid on bicarbonate of soda.</p> <p>Understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.</p>
Rocks and Soils		<p>Chemistry - Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).</p> <p>Compare and group together different kinds of rocks on the basis of their simple, physical properties.</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.</p> <p>Recognise that soils are made from rocks and organic matter.</p>	
Forces		<p>Physics - Compare how things move on different surfaces.</p> <p>To understand movement, forces, and magnets.</p>	<p>Physics - Understand that some mechanisms, including levers, pulleys, and gears, allow a smaller force to have a greater effect.</p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.</p> <p>Identify the effect of drag forces (air and water resistance) that act between moving surfaces.</p> <p>Identify the effect of drag forces (friction) that act between moving surfaces.</p>

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Light		<p>Physics - Recognise that light is required in order to see things and that dark is the absence of light.</p> <p>Notice that light is reflected from surfaces. Recognise that light from the Sun can be dangerous and that there are ways to protect your eyes.</p> <p>Recognise that shadows are formed when the light from a light source is blocked by a solid object.</p> <p>Find patterns in the way that the size of a shadow changes.</p>	<p>Physics - Explain that we see things because light travels from light sources to our eyes and from light sources to objects and then to our eyes.</p> <p>Understand that light appears to travel in straight lines.</p> <p>Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes.</p>
Sound		<p>Physics - Identify how sounds are made, associating some of them with something vibrating.</p> <p>Recognise that vibrations from sounds travel through a medium to the ear.</p> <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it.</p> <p>Recognise that sounds get fainter as the distance from the sound source increases.</p> <p>Find patterns between the pitch of a sound and features of the object that produced it.</p>	
Electricity		<p>Physics - Identify common appliances that run on electricity.</p> <p>Construct a simple series circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches, and buzzers.</p> <p>Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.</p>	<p>Physics - Compare and give reasons for variation in how components function including the brightness of bulbs, the loudness of buzzers and on/off position of switches.</p> <p>Use recognised symbols when representing a simple circuit in a diagram.</p>

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		<p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.</p> <p>Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
Magnets		<p>Physics - Observe how magnets attract or repel each other and attract some materials and not others.</p> <p>Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	
Earth and Space	<p>Physics - Observe changes across the four seasons.</p> <p>Observe and describe weather associated with the seasons and how day length varies.</p>		<p>Physics - Describe the movement of Earth relative to the Sun in the Solar system.</p> <p>Describe the movement of the Moon relative to the Earth.</p> <p>Describe the Sun, Earth, and Moon as approximately spherical bodies.</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.</p>

Working Scientifically Progression through the 3 Milestones:

Working Scientifically	Milestone 1	Milestone 2	Milestone 3
	<p>Asking simple questions.</p> <p>Observing closely, using simple equipment.</p>	<p>Asking relevant questions.</p> <p>Setting up simple, practical enquiries and comparative and fair tests.</p>	<p>Planning enquiries, including recognising and controlling variables where necessary.</p>

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	<p>Performing simple tests.</p> <p>Identifying and classifying.</p> <p>Using observations and ideas to suggest answers to questions.</p> <p>Gathering and recording data to help in answering questions.</p>	<p>Making accurate measurements using standard units, using a range of equipment e.g. thermometers and data loggers.</p> <p>Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Identifying differences, similarities or changes related to simple, scientific ideas and processes.</p> <p>Using straightforward, scientific evidence to answer questions or support their findings.</p>	<p>Using appropriate techniques, apparatus, and materials during fieldwork and laboratory work.</p> <p>Taking measurements, using a range of scientific equipment, with increasing accuracy and precision.</p> <p>Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models.</p> <p>Reporting findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.</p> <p>Presenting findings in written form, displays and other presentations.</p> <p>Using simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</p>
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Scientific Enquiry Types:

Comparative / fair testing

Changing one variable to see its effect on another, whilst keeping all others the same.



Research

Using secondary sources of information to answer scientific questions.



Observation over time

Observing changes that occur over a period of time ranging from minutes to months.



Pattern-seeking

Identifying patterns and looking for relationships in enquiries where variables are difficult to control.



Identifying, grouping and classifying

Making observations to name, sort and organise items.



Problem-solving

Applying prior scientific knowledge to find answers to problems.



Making a fair test

Changing one thing to see what happens



Research

Finding out about new things



Observation over time

Watching things change over minutes, days or months



Looking for patterns

What things are the same or different?



Grouping and Classifying

Looking to name and sort items



Problem solving

Trying different things

