

# Brompton and Sawdon: Long term Science curriculum plan



Class 1(R/Y1) Year A	A1	A2	SP1	SP2	SU1	SU2
<b>Area</b>	Animals including humans	Everyday Materials	Seasonal Changes (inc Solar System)	Plants	Animals including humans	Animals including humans
<b>Substantive Knowledge to be taught</b>	<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>distinguish between an object and the material from which it is made</p> <p>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock</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 simple physical properties</p>	<p>observe changes across the 4 seasons</p> <p>observe and describe weather associated with the seasons and how day length varies</p>	<p>identify and name a variety of common wild and garden plants, including deciduous and evergreen trees</p> <p>identify and describe the basic structure of a variety of common flowering plants, including trees</p> <p>How are the plants around school or that we have grown similar or different?</p> <p>What do plants need to grow?</p>	<p>describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)</p> <p><b>What is a habitat?</b> What do all creatures need in their habitat?</p> <p>Where might different creatures live and why?</p> <p>•Understand the key features of a life cycle of an animal</p> <p>•Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</p>	<p>identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals</p> <p>What is a carnivore, omnivore or herbivore?</p> <p>identify and name a variety of common animals that are carnivores, herbivores and omnivores</p>
<b>Working scientifically</b>	<p>Ask simple questions.</p> <ul style="list-style-type: none"> <li>• Observe closely, using simple equipment.</li> <li>• Perform simple tests.</li> <li>• Identify and classify.</li> <li>• Use observations and ideas to suggest answers to questions.</li> <li>• Gather and record data to help in answering questions.</li> </ul>					
<b>Vocabulary</b>	Head, leg, eyes, neck, knee, hair, arms, face, mouth, elbows, ears, teeth	Materials:	Summer Winter Autumn Spring Day, daytime, night,	Wild, garden, fruit, vegetables, bulb, seed	Life cycles: Egg – pupa – chrysalis – butterfly Frogspawn – tadpole – froglet – frog	Animal, fish, amphibians, reptiles, birds, mammals, pets





	<p>Senses: Tongue – taste Nose – smell Eyes – sight Skin – touch Ears - hearing Baby - toddler - teenager – adult Young, old Born, grow, die Teeth, chew, bite, eat, swallow, enamel, brush, tear canine, molar, incisor, chop</p>	<p>Wood, metal, plastic, foil, glass, water, brick, rock, paper, fabric, elastic</p> <p>Properties: Hard / soft stretchy /stiff rough / smooth Bendy / not Waterproof / not Absorbent / not</p> <p>Solid, hard, melt, soft, liquid, ice, water, gas, evaporate, heat, cool</p>	<p>Weather: Wind, rain, snow, hail, sleet, fog, sun, thunder, storm, Hot, warm, cold, shadows Earth, sun, moon, space, planet, star, Saturn, Jupiter, Mercury, Mars, Venus, Uranus, Neptune, land, sea</p>	<p>Plant: leaf, root, leaves, bud, flowers, blossom, petals, root, stem</p> <p>Tree: deciduous, evergreen, trunk, branches, leaf, root, blossom</p> <p>Sunlight, water, growing</p>	<p>Egg – chick – chicken Bugs/insects: Bee, butterfly, ladybird, spider, caterpillar, worm, cricket, beetle, centipede, wasp. Farm animals: Lamb, sheep, cow, calve, bull, goat, kid, horse, duck, goose, chicken, pig, Habitat, safe, shelter, wet, dry, damp, dark, light</p>	<p>Omnivores: meat, plants, badger, human, bear, chicken</p> <p>Carnivores: meat, cat, dog, lion, tiger, fox, shark, killer whale, eagle, hawk, snake</p> <p>Herbivores: plants, mice, elephant, deer</p>
--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Question, answer, observe, equipment, identify, sort, diagram, chart, map, data, compare, describe, group, record**

<b>Links to EY curriculum</b>	<p><u>Personal, social and emotional development</u></p> <ul style="list-style-type: none"> <li>Make healthy choices about food, drink, activity and toothbrushing.</li> <li>Know and talk about factors that support their overall health and wellbeing.</li> </ul>	<p><u>Understanding the world</u></p> <ul style="list-style-type: none"> <li>Use all their senses in hands-on exploration of natural materials.</li> <li>Explore collection of materials with similar or different properties.</li> </ul>	<p><u>Understanding the world</u></p> <ul style="list-style-type: none"> <li>Understand the effect of changing seasons on the natural world around them.</li> <li>Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter</li> </ul>	<p><u>Understanding the world</u></p> <ul style="list-style-type: none"> <li>Plant seeds and care for growing plants.</li> <li>Explore the natural world around them, making observations and drawing pictures of plants.</li> </ul>	<p><u>Understanding the world</u></p> <ul style="list-style-type: none"> <li>Understand the key features of a life cycle of an animal</li> <li>Explore the natural world around them, making observations and drawing pictures of animals</li> <li>Describe what they see, ear and feel when they are outside.</li> </ul>	<p><u>Understanding the world</u></p> <ul style="list-style-type: none"> <li>Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.</li> </ul>
	<p><b>All work in EYFS is underpinned by Communication and Language development</b></p> <ul style="list-style-type: none"> <li>Learn new vocabulary</li> <li>Make comments about what they have heard and ask questions to clarify their understanding.</li> <li>Articulate their ideas and thoughts in well-formed sentences.</li> <li>Describe events in some detail.</li> <li>Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.</li> </ul> <p>Use new vocabulary in different contexts.</p>					

<b>Enrichment</b>	STEM – Working body parts	STEM - Catapult	Shadowinvestigation STEM - Build a solar system	Seed science Colour changing flowers Farm Visit - lambing	STEM - Fossil Jelly	Sea/woodland visit
-------------------	---------------------------	-----------------	----------------------------------------------------	--------------------------------------------------------------	---------------------	--------------------

**All classes enjoy: National Science Week – additional science activities, experiments and assemblies / Regular science-based assemblies / Science Bus visit from Malton Secondary School / Projects with local colleges and universities (eg. Formula 1 racers) / Science club**

<b>Diversity</b>		<b>Know that science includes lots of different ideas</b>
<b>Global awareness</b>		<b>Identify key ecosystems and habitats around the world</b>
<b>Rural Aspirations</b>		<b>Know what skills we need to do experiments well</b>
<b>Inspired by Nature</b>		<b>We take every opportunity to be inspired by nature, whatever the subject.</b>







Class 2 (Y2/3)	A1	A2	Sp1	Sp2	Su1	Su2
Year A	Anglo Saxons		Search for the Ring of Fire		Ancient Egypt	
Area	Animals including humans – nutrition and the human body.		Rocks and fossils	Use of everyday materials	Plants	
<b>Substantive Knowledge to be taught</b> <b>YEAR 2 OBJECTIVES</b> <b>YEAR 3 OBJECTIVES</b>	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 foods, and hygiene 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 identify that humans and some other animals have skeletons and muscles for support, protection and movement What type of diet should we eat? -what does this mean? Name 4 main food types -what is carbohydrate used for? What is fat used for? -Why is protein important? Why is fibre important? What 3 things do humans need to survive? We need to eat. What can make their own food?		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 Name 3 types of rock -how are they made? How can we group rocks? How are fossils made? What are soils made of?	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 What does waterproof mean? -which materials are waterproof? Where is plastic used? Why is it used for these purposes?-Why is it sometimes hard to find sustainable replacements for plastic? -How can recycling overcome this? What is Single use plastic? What are the properties of wood? Why isn't it used for some things made of plastic? What are the properties of metal? Why isn't metal used for some things made of wood? Where does rubber come from? Why did Cayley build his glider out of wood?-what are the positives and negatives of doing this?	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 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 What is the job of different parts of flowering plants? -what's the difference between deciduous and evergreen? -name 2 deciduous and evergreen trees What do plants need to live and grow? How can this differ from plant to plant? If plants have big leaves where might they grow? Why do some plants have leaves shaped like a funnel? How is water transported within plants? Why do plants have flowers, or trees have blossom? What do these flowers turn in to if they are pollinated? Why is it important that seeds are dispersed? -name 3 ways	
<b>Working scientifically</b>	<ul style="list-style-type: none"> <li>Ask relevant questions.</li> <li>Set up simple, practical enquiries and comparative and fair tests.</li> <li>Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.</li> <li>Gather, record, classify and present data in a variety of ways to help in answering questions.</li> <li>Record findings using simple scientific language, drawings, labelled diagrams, bar charts /tables</li> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</li> <li>Identify differences, similarities or changes related to simple, scientific ideas and processes.</li> <li>Use straightforward, scientific evidence to answer questions or to support their findings.</li> </ul>					
<b>Vocabulary</b>	Nutrition nutrients carbohydrates protein fats fibre vitamins minerals skeleton bones endoskeleton exoskeleton hydrostatic vertebrate invertebrate contract relax muscles ball / socket/ hinge / gliding joints		Appearance properties absorbent fossil crystals sedimentary metamorphic igneous organic grains	squashing bending twisting stretching Wood Metal Plastic waterproof John Dunlop – rubber Cayley – wood glider Macintosh – waterproof fabric	Reproduction germination suitable temperature leaves bud flowers blossom petals stem deciduous evergreen trunk branches Fruit vegetables bulb seed dispersal	
<b>Enrichment</b>	Research relevant questions scientific enquiry comparative and fair test systematic careful observation accurate measurements equipment thermometer data logger data gather record classify present record drawings labelled diagrams keys bar charts tables explanations conclusion predictions differences similarities changes evidence improve secondary sources guides keys interpret					
<b>Diversity</b>	<b>Recognise the different backgrounds of some well known scientists</b>					
<b>Global awareness</b>	<b>Compare key ecosystems and habitats around the world</b>					
<b>Rural Aspirations</b>	<b>Consider the skills needed to do scientific experiments and suggest where else these would be useful</b>					
<b>Inspired by Nature</b>	<b>We take every opportunity to be inspired by nature, whatever the subject.</b>					

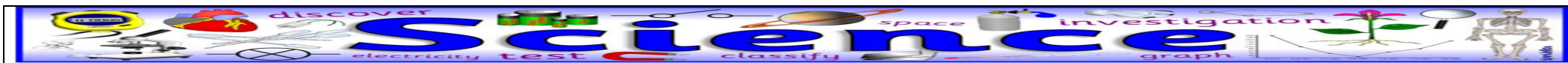


Class 2 (Y2/3)	A1	A2	Sp1	Sp2	Su1	Su2
Year B	Around the World in 80 days		Robots and Inventors		Stone Age	
Area	Light		Forces and magnets		All Living Things and their habitats	
Substantive Knowledge to be taught <b>YEAR 2 OBJECTIVES</b> <b>YEAR 3 OBJECTIVES</b>	<p>recognise that they need light in order to see things and that dark is the absence of light</p> <p>notice that light is reflected from surfaces</p> <p>recognise that light from the sun can be dangerous and that there are ways to protect their eyes</p> <p>recognise that shadows are formed when the light from a light source is blocked by an opaque object</p> <p>find patterns in the way that the size of shadows change</p> <p>We need light in order to ____.</p> <p>What does dark mean?</p> <p>Where does light come from?</p> <p>How does light travel?</p> <p>What do we call it when light bounces off surfaces?</p> <p>Sunlight can be dangerous. How can we protect our eyes?</p> <p>Why are shadows formed?-why might they get bigger?</p> <p>What do we call materials that let all light through?</p> <p>What do we call materials that let no light through?</p>		<p>compare how things move on different surfaces</p> <p>notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>observe how magnets attract or repel each other and attract some materials and not others</p> <p>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</p> <p>describe magnets as having 2 poles</p> <p>predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p> <p>How many poles do magnets have? - What are they called?</p> <p>What type of material are attracted to magnets?</p> <p>What happens if you put the same poles together?</p> <p>What happens if you put different poles together?</p> <p>Do magnets need to touch an object in order to move it?</p>		<p>explore and compare the differences between things that are living, dead, and things that have never been alive</p> <p>identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other</p> <p>identify and name a variety of plants and animals in their habitats, including microhabitats</p> <p>describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, identify and name different sources of food</p> <p>Name 5 things that have never been alive</p> <p>What is it called when animals and plants make more animals and plants?</p> <p>Explain human lifecycle. What about a butterfly?</p> <p>What do all creatures need to survive?</p> <p>What is a habitat? - What is a microhabitat?</p> <p>Why can't animals and plants live in any habitats?</p> <p>What is at the start of every food chain? - What is a predator? What is prey?</p>	
Working scientifically	<ul style="list-style-type: none"> <li>Ask relevant questions.</li> <li>Set up simple, practical enquiries and comparative and fair tests.</li> <li>Make accurate measurements using standard units, using a range of equipment, e.g. thermometers and data loggers.</li> <li>Gather, record, classify and present data in a variety of ways to help in answering questions.</li> <li>Record findings using scientific language/drawings/labelled diagrams/bar charts/ tables</li> <li>Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</li> <li>Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests.</li> <li>Identify differences, similarities or changes related to simple, scientific ideas and processes.</li> <li>Use straightforward, scientific evidence to answer questions or to support their findings.</li> </ul>					
Key Vocabulary	Light dark reflect surface natural shadow blocked artificial dangerous reflect Rays shade source transparent opaque		Force push pull open surface magnet magnetic attract repel magnetic poles North South		Living dead never alive food chain human healthy Habitats: microhabitat leaf litter shelter seashore woodland ocean rainforest Offspring adults survival exercise hygiene nutrition reproduce egg- chick -chicken /Egg - caterpillar- pupa-butterfly/Spawn-tadpole-frog /Lamb - sheepBaby-toddler-child- teenager- adult	
Enrichment	Research relevant questions scientific enquiry comparative and fair test systematic careful observation accurate measurements equipment thermometer data logger data gather record classify present record drawings labelled diagrams keys bar charts tables explanations conclusion predictions differences similarities changes evidence improve secondary sources guides keys interpret					
Diversity		Recognise the different backgrounds of some well known scientists				
Global awareness		Compare key ecosystems and habitats around the world				
Rural Aspirations		Consider the skills needed to do scientific experiments and suggest where else these would be useful				
Inspired by Nature		We take every opportunity to be inspired by nature, whatever the subject.				







Class 3	A1	A2	Sp1	Sp2	Su1	Su2
Year A	Vikings & Dragons		Lights, Camera, Action		Keen to be Green	
Area	Electricity	States of matter	Light	Forces	All Living Things	Evolution and inheritance
<b>Substantive Knowledge to be taught</b> <b>YEAR 3 OBJECTIVES</b> <b>YEAR 4 OBJECTIVES</b> <b>YEAR 5 OBJECTIVES</b> <b>YEAR 6 OBJECTIVES</b>	<p><b>-identify common appliances that run on electricity</b></p> <p><b>-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</b></p> <p><b>-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</b></p> <p><b>-associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</b></p> <p><b>-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</b></p> <p><b>-use recognised symbols when representing a simple circuit in diagram</b></p> <p><b>Name 3 appliances that run on electricity</b>  <b>What must a circuit have to work?</b>  <b>What is used to open or close a circuit?</b>  <b>Name 3 insulators</b>  <b>-Where are they used for safety?</b>  <b>Name 3 conductors</b>  <b>-What do you notice about them?</b>  <b>What can make bulbs/buzzers brighter/louder?</b>  <b>What are these symbols:</b></p>	<p><b>-compare and group materials together, according to whether they are solids, liquids or gases</b></p> <p><b>-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)</b></p> <p><b>-identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</b></p>	<p><b>-recognise that light appears to travel in straight lines</b></p> <p><b>-use the idea that light travels in straight lines to explain that objects are seen because they give out/reflect light into the eye</b></p> <p><b>-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</b></p> <p><b>-use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</b></p> <p><b>How does light travel?</b>  <b>Where does light come from? / How do we see an object? /How are shadows made?</b>  <b>How can shadows be made bigger?</b>  <b>-Can a shadow ever be smaller than the object which cast it?</b>  <b>What do we call materials which let some light through?</b>  <b>What do we call materials that let all light through?</b></p>	<p><b>-compare how things move on different surfaces</b></p> <p><b>-notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</b></p> <p><b>-observe how magnets attract or repel each other and attract some materials and not others</b></p> <p><b>-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</b></p> <p><b>-describe magnets as having 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing</b></p> <p><b>-explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</b></p> <p><b>-identify the effects of air resistance, water resistance and friction, that act between moving surfaces</b></p> <p><b>-recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</b></p> <p><b>Which force pulls objects to Earth?</b>  <b>When a force acts in one way, what also happens?</b>  <b>When forces are equal what happens to an object?</b>  <b>What force is caused by 2 objects rubbing together?</b>  <b>How can we reduce friction?</b>  <b>What 2 forces might slow down a car? What about a boat? - How can we reduce air resistance? - Why do bigger Parachutes fall more slowly?</b>  <b>- Why do brakes not work very well when they are wet? - How could we reduce water resistance?</b>  <b>When do magnets attract or repel each other?</b>  <b>- which materials are magnetic?</b>  <b>- do magnets need to touch an object to attract it?</b>  <b>How do pulleys work? (what do they reduce?)</b>  <b>How do levers and gears work? (what do they allow a smaller force to have?)</b></p>	<p><b>-recognise that living things can be grouped in a variety of ways</b></p> <p><b>-explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment</b></p> <p><b>-recognise that environments can change and that this can sometimes pose dangers to living things</b></p> <p><b>-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</b></p> <p><b>-give reasons for classifying plants and animals based on specific characteristic</b>  <b>Name 3 ways that you can group animals or plants</b>  <b>What is adaptation?</b>  <b>Why do many creatures struggle to survive environmental change?</b>  <small>living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.</small>  <b>Why would scientists do this?</b></p>	<p><b>-recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</b></p> <p><b>-recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</b></p> <p><b>-identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</b></p> <p><b>What is evolution?</b>  <b>What is inheritance?</b>  <b>How do we know about living things a long time ago?</b>  <b>What are offspring?</b>  <b>- are these identical to their parents?</b>  <b>- what do these offspring often have?</b>  <b>What is adaptation?</b>  <b>- how can this lead to evolution?</b>  <b>What is natural selection?</b></p>
<b>Working scientifically</b>	<ul style="list-style-type: none"> <li>Plan enquiries, including recognising and controlling variables where necessary.</li> <li>Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision.</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models.</li> <li>Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.</li> <li>Present findings in written form, displays and other presentations.</li> <li>Use test results to make predictions to set up further comparative and fair tests.</li> <li>Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>					
<b>Vocabulary</b>	appliances electricity circuit cell wire bulb buzzer insulators conductors switch	Solid solidify melt freeze liquid gas changing state water-cycle vapour evaporation condensation	reflect reflection source shadow prism spectrum filters opaque transparent translucent	Gravity Air / Water resistance Friction surface accelerate decelerate mechanism pulley gear Galileo Newton poles attract repel	classify compare Carl Linnaeus classification domain kingdom phylum class order family genus species characteristics vertebrates invertebrates microorganisms virus bacteria	evolution adaptation inherited adaptive traits natural selection Charles Darwin Alfred Wallace DNA genes variation offspring environment
	<b>Plan variables measurements accuracy precision repeat readings, record data, scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs, predictions, comparative and fair test, report and present conclusions, causal relationships explanations degree of trust presentation evidence support, arguments identify, classify and describe patterns systematic quantitative</b>					
<b>Enrichment</b>	Programming Microbits to test conductivity	Water Cycle-Wild School	Javanese Shadow Puppets	Parachute building	Forest Schools	

<b>Diversity</b>		•Identify how science has reduced inequality.
<b>Global awareness</b>		•Suggest how science is helping to protect the environment in different areas of the globe. •Comparing and contrast the positive and negative impact of humans in different areas on a local and global scale.
<b>Rural Aspirations</b>		•Identify how we can all potentially make a difference through exploring the latest technologies and a wide range of scientific jobs / vocations.
<b>Inspired by Nature</b>		We take every opportunity to be inspired by nature, whatever the subject.

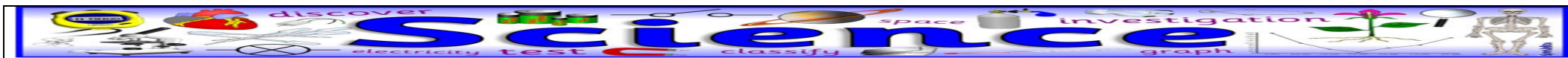


Class 3	A1	A2	Sp1	Sp2	Su1	Su2
Year B	Space & Engineering		The Americas		World Cup/Olympics	
Area	Space	Forces:	Sound	Electricity	Properties and changes of materials	
<b>Substantive Knowledge to be taught</b>  <b>YEAR 3 OBJECTIVES</b> <b>YEAR 4 OBJECTIVES</b> <b>YEAR 5 OBJECTIVES</b> <b>YEAR 6 OBJECTIVES</b>	<p>describe the movement of the Earth and other planets 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 / night and the apparent movement of the sun across the sky</p> <p>How does the Earth move around the sun? (2 ways) How long do these take? How does the moon move around the earth? How do the other planets move around the solar system? What are the planets of the Solar System? - What shape are they? Why do we have day and night? - Why is this longer or shorter on other planets? - Why is Winter colder and Summer warmer? -Why does the sun seem to rise, move across the sky and then set? - why does it never get dark in Summer in the Arctic?</p>	<p>-compare how things move on different surfaces</p> <p>-notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>-observe how magnets attract or repel each other and attract some materials and not others</p> <p>-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</p> <p>-describe magnets as having 2 poles</p> <p>-predict whether magnets will attract/repel each other, depending on facing poles</p> <p>-explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the object</p> <p>-identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>-recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>	<p>-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 pitch of a sound and features of the object that produced it</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>How are sounds made? - what is a vibration? How do these vibrations travel to our ear? - why can we hear better under water? - how does a string telephone work? - how do sound insulators work? What are high and low pitch sounds? - what is the difference between volume and pitch? - what can we change about a drum to change the pitch? - what could we change about an elastic band to change the pitch when we pluck it? - what happens to the vibrations when we change these things? What happens to a sound as you get further from the source? - why does this happen? What happens to the vibrations if we hit something hard and make a loud noise?</p>	<p>-identify common appliances that run on electricity</p> <p>-construct a simple series electrical 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 if the lamp is part of a complete loop with a battery</p> <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> <p>-associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>-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</p> <p>-use recognised symbols when representing a simple circuit in diagram</p> <p>-identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature - revision as part of Amazon work</p>	<p>-compare and group materials together, according to whether they are solids, liquids or gases</p> <p>-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)</p> <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 together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>-know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>-use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>-give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>-demonstrate that dissolving, mixing and changes of state are reversible changes</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 and the action of acid on bicarbonate of soda</p> <p>Describe the difference between a solid, liquid and gas What do we call it when a liquid turns to gas? What do we call it when a gas turns to a liquid? - where does this happen in the water cycle? Name 2 ways in which a liquid could turn into a solid ? What do we call it when water turns into water vapour? (a gas) -where does this happen in the water cycle? What affects how quickly something evaporate? Name 3 things that will dissolve in liquid to form a solution. how do we recover a substance from a solution? When might we use a filter or sieve? Name 3 reversible changes Name 3 changes that aren't reversible</p>	
<b>Working scientifically</b>	<ul style="list-style-type: none"> <li>Plan enquiries, including recognising and controlling variables where necessary.</li> <li>Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy and precision.</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models.</li> <li>Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.</li> <li>Present findings in written form, displays and other presentations.</li> <li>Use test results to make predictions to set up further comparative and fair tests.</li> <li>Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>					
<b>Vocabulary</b>	Solar system Mercury Venus Mars Jupiter Saturn Uranus tilt	Gravity Air / Water resistance Friction surface accelerate	Vibration/ing medium volume pitch percussion woodwind brass insulate source	Voltage switches series circuit symbols	Solid solidify melt freeze liquid gas changing state water-cycle vapour evaporation condensation	





	Neptune Pluto rotate Galileo orbit axis spherical hemisphere	decelerate brake mechanism pulley gear spring Galileo Newton. theory			
	Plan variables measurements accuracy precision repeat readings, record data, scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs, predictions, comparative and fair test, report and present conclusions, causal relationships explanations degree of trust presentation evidence support, arguments identify, classify and describe patterns systematic quantitative				
<b>Enrichment</b>	Astro-Dome	Building / launching bottle rockets	Eureka Museum (	Electrical Games (e.g. Operation)	

<b>Diversity</b>		•Identify how science has reduced inequality.
<b>Global awareness</b>		•Suggest how science is helping to protect the environment in different areas of the globe. •Comparing and contrast the positive and negative impact of humans in different areas on a local and global scale.
<b>Rural Aspirations</b>		•Identify how we can all potentially make a difference through exploring the latest technologies and a wide range of scientific jobs / vocations.
<b>Inspired by Nature</b>		We take every opportunity to be inspired by nature, whatever the subject.





Class 3	A1	A2	Sp1	Sp2	Su1	Su2
Year C	Edge of an Empire (Romans)		War: What is it Good For?		Brompton & Beyond	
Area	Materials: Irreversible and reversible changes.	Animals incl. humans- Circulatory system / keeping healthy	Animals incl. humans -Life Cycles	Plants – revision unit	Animals incl. humans – digestion / keeping healthy	Forces: Cayley Link
<b>Substantive Knowledge to be taught</b>  <b>YEAR 3 OBJECTIVES</b> <b>YEAR 4 OBJECTIVES</b> <b>YEAR 5 OBJECTIVES</b> <b>YEAR 6 OBJECTIVES</b>	<p>-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</p> <p>-know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>-use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>-give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials: metals, wood and plastic</p> <p>-demonstrate that dissolving, mixing and changes of state are reversible changes</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 and the action of acid on bicarbonate of soda</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 impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including human</p> <p>Where does the heart pump blood to? (2 places) Which blood vessels carry blood from the heart? Which blood vessels carry blood to the heart? What do our muscles need from the blood? What are the small blood vessels in our skin? What is our pulse? Where is our blood oxygenated? Name a waste gas that we breathe out What can affect our lungs and make them less effective at oxygenating our blood? How can exercise help the circulatory system? How can diet affect the circulatory system?</p>	<p>-describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>-describe the life process of reproduction in some animals</p> <p>-describe the changes as humans develop to old age</p> <p>recognise that environments can change and that this can sometimes pose dangers to living things</p> <p>-identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p> <p>What is the difference in the lifecycles of mammals, amphibians, insects and birds? What happens during the gestation period? What are the stages of human life? How do humans change as they get older? Why can't animals always survive changes in the environment? Animals are adapted to their environment. How might adaptation lead to evolution?</p>	<p>-identify and describe the functions of different parts of flowering plants: roots, stem/trunk, 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 part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal</p> <p>-describe the life process of reproduction in plants</p> <p>What is the job of different parts of flowering plants? -what's the difference between deciduous and evergreen? -name 2 deciduous and evergreen trees What do plants need to live and grow? How can this differ from plant to plant? If plants have big leaves where might they grow? Why do some plants have leaves shaped like a funnel? How is water transported within plants? Why do plants have flowers, or trees have blossom?-What do these flowers turn in to if they are pollinated? Why is it important that seeds are dispersed? -name 3 ways</p>	<p>-describe the simple functions of the basic parts of the digestive system in humans</p> <p>-identify the different types of teeth in humans and their simple functions</p> <p>-construct and interpret a variety of food chains, predators and prey</p> <p>-recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including human</p> <p>What is the job of the different parts of the digestive system? Name the different types of teeth and their jobs What is the difference between a food chain and a food web? -What are producers? -What are predators? -What are prey? -What might happen if there are less producers? -What would happen if there were lots of predators? - Are predators always carnivores? How can an unhealthy diet or not enough exercise affect the body? How do nutrients and water get to the muscles?</p>	<p>-compare how things move on different surfaces</p> <p>-notice that some forces need contact between 2 objects, but magnetic forces can act at a distance</p> <p>-observe how magnets attract or repel each other and attract some materials and not others</p> <p>-compare and group together a variety of materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials</p> <p>-describe magnets as having 2 poles</p> <p>predict whether 2 magnets will attract or repel each other, depending on which poles are facing</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 effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>-recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>
<b>Working scientifically</b>	<ul style="list-style-type: none"> <li>Plan enquiries, including recognising and controlling variables where necessary.</li> <li>Use appropriate techniques, apparatus, and materials during fieldwork and laboratory work.</li> <li>Take measurements, using a range of scientific equipment, with increasing accuracy / precision.</li> <li>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models.</li> <li>Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions.</li> <li>Present findings in written form, displays and other presentations.</li> <li>Use test results to make predictions to set up further comparative and fair tests.</li> <li>Use simple models to describe scientific ideas, identifying scientific evidence that has been used to support or refute ideas or arguments.</li> </ul>					
<b>Vocabulary</b>	Properties hardness solubility transparency conductor thermal dissolve solution separating evaporating reversible change filtering sieving irreversible burning rusting magnetism	blood heart lungs inhalation exhale pulse heart valve nutrients capacity oxygen Carbon Dioxide Nitrogen artery vein capillary Brain Kidney drugs lifestyle alcohol substances	adaptation ecosystem environment bacteria fungi invertebrate vertebrate puberty life cycle gestation reproduce foetus cyclical fertilisation life expectancy adolescence childhood	Reproduction germination leaf root leaves bud flowers blossom petals root stem deciduous evergreen Flowering non-flowering (including grasses)	digestion tongue saliva oesophagus stomach acid enzymes small intestine vitamins large intestine colon incisors canines molars producers prey predators carnivore herbivore omnivore	Gravity Air / Water resistance Friction surface accelerate decelerate brake mechanism pulley gear spring Galileo Newton. theory
<b>Enrichment</b>	Making Plastic / Ocean Rescue	Animal heart dissection	Sweet Classification		Junk model digestive system	Cayley Gliders
Plan variables measurements accuracy precision repeat readings, record data, scientific diagrams, labels, classification keys, tables, scatter graphs, bar graph and line graphs, predictions, comparative and fair test, report and present conclusions, causal relationships explanations degree of trust presentation evidence support, arguments identify, classify and describe patterns systematic quantitative						

Diversity		•Identify how science has reduced inequality.
Global awareness		•Suggest how science is helping to protect the environment in different areas of the globe. •Comparing and contrast the positive and negative impact of humans in different areas on a local and global scale.
Rural Aspirations		•Identify how we can all potentially make a difference through exploring the latest technologies and a wide range of scientific jobs / vocations.
Inspired by Nature		We take every opportunity to be inspired by nature, whatever the subject.

## Enrichment within Science at Brompton and Sawdon Community Primary School

The children also enjoy:

- Regular Rural Aspirations Assemblies – exploring the latest technologies and the positive and negative impact of humans at a local and global scale. We also consider how science and technologies impact on different communities and individuals
- National Science Week – additional science activities, experiments and assemblies
- Regular science-based assemblies – celebration of female scientists / scientific breakthroughs around the world
- Science Bus visit from Malton Secondary School
- Projects with local colleges and universities (eg. Formula 1 racers)
- Science club

**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.

