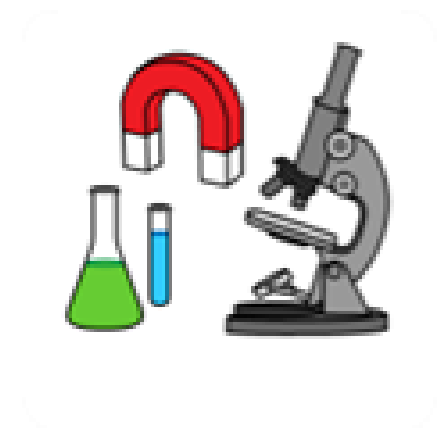






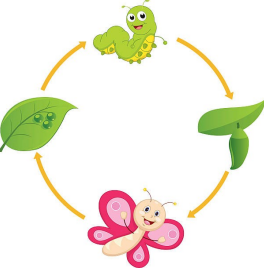
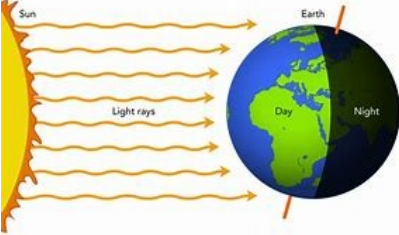





**Stoneferry Science**  
Planning Document  
Year 5



## Year 5 Science—Yearly Overview

Autumn	Spring	Summer
<p data-bbox="286 379 591 416">Our changing world</p> 	<p data-bbox="965 379 1270 416">Our Changing World</p> 	<p data-bbox="1503 379 2101 472">Marvellous mixtures and Materials: All change</p> 
<p data-bbox="165 762 712 799">Reproduction in plants and animals</p> 	<p data-bbox="965 762 1270 799">The Power of Forces</p> 	<p data-bbox="1525 762 2076 799">Get sorted and Everyday materials</p> 
<p data-bbox="344 1145 533 1182">Circle of life</p> 	<p data-bbox="949 1145 1290 1182">The Earth and beyond</p> 	<p data-bbox="1648 1145 1953 1182">Our changing world</p> 

# Autumn Modules

Circle of Life	Our Changing World	Reproduction in Plants and Animals
<p>Key Concepts Delivered -</p> <p><b>Biology:</b> Organisms require a supply of energy and materials.</p>	<p>Key Concepts Delivered -</p> <ul style="list-style-type: none"> <li>Biology</li> </ul>	<p>Key Concepts Delivered -</p> <p><b>Biology:</b> Organisms require a supply of energy and materials.</p> <p><b>Biology:</b> Genetic information.</p>
<p><b>National Curriculum Objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>Explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird</li> <li></li> </ul>	<p><b>National Curriculum Objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>Describe the life process of reproduction in some plants and animals.</li> </ul>	<p><b>National Curriculum Objectives</b></p> <p><b>Pupils should be taught to:</b></p> <p>Describe the life process of reproduction in some plants and animals.</p>
<p><b>Relevant Prior Learning</b></p> <p><b>In Year 3 and Key Stage 1, children have learnt about the life cycle of plants.</b></p> <p><b>They will know the key components of a plant and how it works and will have used the term mammal before.</b></p>	<p><b>Relevant Prior Learning</b></p> <p><b>In Year 4, (OCW) the children explored how plants grow and learnt that some trees are deciduous and some ever-green, by observing them over time.</b></p>	<p><b>Relevant Prior Learning</b></p> <p>Children this term will already have learnt about the life cycles of a number of animals and will have observed these in the OCW lesson. In Year 3 the children learnt about plant life cycles.</p>
<p><b>Expected Outcomes</b></p> <p>Children will know in depth what a life cycle of an animal is. They will be able to explain the various stages in these for a different animals and will have looked at animals which are less familiar too. They will know that some animals make extraordinary efforts to complete their life cycle.</p> <p>They will create a life cycle for a new animal.</p>	<p><b>Expected outcome</b></p> <p>Children will know and be able to describe from their observations the stages of a plant's life cycle in their local area.</p> <p>They will know the term reproduction, and know the appearance of different plants during Autumn.</p>	<p><b>Expected outcome</b></p> <p>Children will know the term reproduction and will relate this to animals and humans. They will know about how plants reproduce (asexual reproduction). Children will know how birds, insects and amphibians reproduce.</p>

## Autumn term - Circle of Life

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Circle of Life	Lesson 1&2 Examining lifecycles	<p><b>Enquiry Type</b> - Using a wide range of secondary sources of information</p> <p><b>LO:</b> Explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p><b>Working Scientifically:</b> 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>Children will know that not all animal life cycles are the same and will be able to explain the difference between them.</p> <p>Children will know and define what a mammal is and describe its life cycle</p>	<p>life cycle, birth, growth, reproduction, metamorphosis, aging, death, animal, mammal, amphibian, insect, bird, elephant, toad, bumblebee, blue tit</p>	<p>For Lesson 2 elements</p> <p>Mini whiteboards, secondary sources for research, including quality non-fiction books, web-based resources, educational CDs, smartphone and tablet Apps, identification guides and leaflets</p>
Circle of Life	Lesson 3 Amphibian life cycles	<p><b>Enquiry Type</b> - Using a wide range of secondary sources of information</p> <p><b>LO:</b> Explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p><b>Working Scientifically:</b> 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>Children will know and be able to explain the life cycle of an amphibian and define what an amphibian is.</p>	<p>life cycle, amphibian, toad, newt, salamander, tree frog, metamorphosis, gills, cold blooded</p>	<p>Mini whiteboards, secondary sources for research, such as quality non-fiction books, web-based resources, educational CDs, smartphone and table Apps, identification guides and leaflets</p>
Circle of Life	Lesson 4 Insect life cycles	<p><b>Enquiry Type</b> - Using a wide range of secondary sources of information</p> <p><b>LO:</b> Explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird.</p> <p><b>Working Scientifically:</b> 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>Children will know and be able to explain the life cycle of an insect and define what an insect is.</p> <p>Children will know what metamorphosis is and be able to explain it.</p>	<p>life cycle, insect, species, ladybird, butterfly, beetle, dragonfly, head, thorax, abdomen, antennae, metamorphosis, egg, larva, pupa, cocoon, adult</p>	<p>Secondary sources for research, including quality non-fiction books, web-based resources, CDs, smartphone and tablet Apps, identification guides and leaflets</p>

## Autumn term - Circle of Life

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Circle of Life	Lesson 5 Bird life cycles	<p><b>Enquiry Type</b> - Using a wide range of secondary sources of information</p> <p><b>LO:</b> Explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p><b>Working Scientifically:</b> 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>	Children will know what a bird is and be able to explain the life cycle	life cycle, bird, thrush, peregrine falcon, ostrich, emperor penguin, chicken, breeding cycle, brood, hatch, fledge	Secondary sources for research, including quality non-fiction books, web-based resources, CDs, smartphone and tablet Apps, identification guides and leaflets
Circle of Life	Lesson 6&7 (combined) Creating a creature with a specific life cycle	<p><b>Enquiry Type</b> - Finding things out using secondary sources of information</p> <p><b>LO:</b> Explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p><b>Working Scientifically:</b> Identifying scientific evidence that has been used to support or refute ideas or arguments</p>	<p>Children will know what can be done to support life cycles by humans and what makes a robust life cycle.</p> <p>They will know what animal would be like for it to successfully complete its lifecycle and create a creature to satisfy these re-</p>	life cycle, mammal, amphibian, insect, bird, prey, predator, reproduce, habitat, environment, metamorphosis, caterpillar, pupa, tadpole, butterfly, elephant, frog, mature, immature	Secondary sources for research, including quality non-fiction books, web-based resources, CDs, smartphone and tablet Apps, identification guides and leaflets

## Autumn Term

Module	Lesson Structure	National Curriculum Objectives	Expected Outcome	Vocabulary	Resources
<p><b>Our changing world</b></p> <p><b>(This lesson will be revisited as part of an ongoing observational element of learning)</b></p>	1	<p>Enquiry Type—</p> <p>LO: (Biology—<b>Living things in their environment</b>) I can describe the life process of reproduction in some plants and animals.</p> <p>LO: I can observe , record and collect evidence over time of life cycle changes to plants within the local environment.</p> <p>WS: I can report and present findings from enquiries including conclusions, explanations, data and diagrams</p>	Children will know the signs of plant reproduction in the local area.	reproduction, reproduce, flower, carpel, stamen, pollen, seed, seed head, berry, hip, fruit, pollinator, pollination, fertilisation, seed dispersal	<p>Digital camera or ipad.</p> <p>Magnifiers</p> <p>Plan for a walk around school ground or nearby green space.</p>

## Autumn term - Reproduction in Animals and Plants

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Reproduction in Animals and Plants	Lesson 1  Flowering plant reproduction	<p><b>Enquiry Type</b> - Grouping and classifying</p> <p><b>LO:</b> To describe the process of sexual reproduction in many flowering plants, naming parts of the flower and explaining their importance within the process</p> <p><b>Working Scientifically:</b> 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>Children will know the process of sexual reproduction in plants</p> <p>Children will know the names and roles of parts of the flower in reproduction</p>	reproduction, reproduce, flower, organ, carpel, stamen, anther, filament, pollen, seeds, seed head, berry, fruit, pollinator, pollination, fertilisation, sexual, asexual	Enough flowers for at least one between two children. Ensure that the flowers are large enough to have identifiable male and female organs, such as alstroemeria or daffodils
Reproduction in Animals and Plants	Lesson 2  How are flowers different	<p><b>Enquiry Type</b> - Grouping and classifying</p> <p><b>LO:</b> Describe the life process of reproduction in some plants</p> <p><b>Working Scientifically:</b> Identifying scientific evidence that has been used to support or refute ideas or arguments</p>	Children will know that not all flowers are the same and know how two plants differ	reproduction, reproduce, flower, organ, carpel, stamen, pollen, pollinator, pollination, fertilisation	A variety of flowers (different from those observed in Lesson 1, including some single sex flowers), such as courgette, marrow, holly. If none are available, use images of single sex flowers,
Reproduction in Animals and Plants	Lesson 3  Do all plants produce seeds?	<p><b>Enquiry Type</b> - Finding things out using a wide range of secondary sources of information</p> <p><b>LO:</b> Describe the life process of reproduction in some plants</p> <p><b>Working Scientifically:</b> 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>describe how plants can reproduce asexually, by creating new plants from different parts of the parent plant rather than by producing seeds</p> <p>Children will know and define the term asexual reproduction</p> <p>Children will know how plants can reproduce without producing a seed.</p>	reproduce, propagate, stem, leaf and root cuttings, runners, tubers, bulbs and rhizomes, asexual, vegetative	Examples of bulbs such as garlic, onions or shallots (some of which can be cut up), tubers, rhizomes, seed potatoes, plants in pots such as fuchsia, begonia, geranium, rosemary, mint, strawberry

## Autumn term - Reproduction in Animals and Plants

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Reproduction in Animals and Plants	Lesson 4&5  Reproduction in mammals, birds, insects and amphibians	<p><b>Enquiry Type</b> - Finding things out using a wide range of secondary sources of information</p> <p><b>LO:</b> Describe the life process of reproduction in some plants and animals</p> <p><b>Working Scientifically:</b> 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>Children will know the similarities and differences in reproduction for each of the 4 creatures</p> <p>Children will know that insects, amphibians, mammals and birds all reproduce sexually</p>	<p>reproduce, reproduction, gender, male, female, sex, sexual, asexual, metamorphosis</p> <p>reproduce, reproduction, gender, sex, mate, female, male, sexual, sperm, pregnant, give birth, young, pup, calf, foal, chick, hatch, fledge, fledgling</p>	
Reproduction in Animals and Plants	Lesson 6  Human Life Cycle  V Other Mammals	<p><b>Enquiry Type</b> - Noticing patterns</p> <p><b>LO:</b> Describe the changes as humans develop to old age</p> <p><b>Working Scientifically:</b> Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar and line graphs</p>	<p>Children will know how humans age and know how to compare data.</p>	<p>life cycle, birth, growth, reproduction, ageing, death, baby, toddler, teenager, adult, adulthood, childhood, pregnancy, gestation, puberty, sexual, mammal</p>	
Reproduction in Animals and Plants	Lesson 7&8  Boys becoming men and Girls becoming girls	<p><b>Enquiry Type</b> - Grouping and classifying</p> <p><b>LO:</b> Describe the changes as humans develop to old age</p> <p><b>Working Scientifically:</b> 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>Children will know and be able to explain the changes caused by puberty in girls and boys.</p>	<p>puberty, reproduction, genitals, vagina, pubic hair, underarm hair, menstruation, period, eggs, breasts, hips, grow, shape, sweat, hygiene, spots, mood</p>	<p>Large sheets of paper and coloured pens or pencils for poster making; video camera, tablet computer with camera, or sound recording equipment, if available</p>



# Spring Modules

Earth and Beyond	Our Changing World	Feel The Force
<p>Key Concepts Delivered -</p> <p><b>Earth Science:</b> The earth in relation to the universe</p> <p><b>Earth Science:</b> The earth spins on its axis.</p>	<p>Key Concepts Delivered -</p> <ul style="list-style-type: none"> <li>Biology</li> </ul>	<p>Key Concepts Delivered -</p> <p><b>Physics:</b> The universe follows unbreakable rules that are all about forces, matter and energy</p> <p><b>Physics: Forces</b> are different kinds of pushes and pulls that act on all the matter in the universe.</p> <p><b>Physics: Energy:</b> There are many different forms of energy eg: light, sound, electricity, heat and wind</p>
<p><b>National Curriculum Objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>describe the movement of the Earth and other planets relative to the sun in the solar system</li> <li>describe the movement of the moon relative to the Earth</li> <li>describe the sun, Earth and moon as approximately spherical bodies</li> <li>use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</li> <li></li> </ul>	<p><b>National Curriculum Objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>Describe the life process of reproduction in some plants and animals.</li> </ul>	<p><b>National Curriculum Objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</li> <li>identify the effects of air resistance, water resistance and friction, that act between moving surfaces</li> </ul> <p>recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p>
<p><b>Relevant Prior Learning</b></p> <p>Children will have used calendars within the maths curriculum. In Year 3 the children learnt about shadows and how these are formed. They also observed how the position of the sun in the sky alters during the day.</p> <p>Children will know what seasons are and how the weather changes during these.</p>	<p><b>Relevant Prior Learning</b></p> <p>Children will have examined plant life in their local area in the Autumn term and will be aware of what they observed to draw on for this session.</p>	<p><b>Relevant Prior Learning</b></p> <p>Children will have learnt in Year 3 about contact and non-contact forces and how these start and stop things moving.</p> <p>Children will know that sound energy involves energy being converted from one form to another.</p>
<p><b>Expected Outcomes</b></p> <p>Children will know what the solar system is and where Earth is situated within this. They will learn about orbits and explain concepts such as shadows using their understanding of how the Earth rotates on its own axis and also tilts to create seasons. Children will know that the sun does not move, but that the Earth orbits the sun and the moon also orbits the Earth. They will know how long a year lasts and why we have leap years.</p>	<p><b>Expected outcome</b></p> <p>Children will know and be able to describe from their observations the stages of a plant's life cycle in their local area. They will know the term reproduction, and know the appearance of different plants during Autumn.</p>	<p><b>Expected outcome</b></p> <p>Children will know how movement is affected by: friction, weight (gravity), air resistance, water resistance, upthrust.</p> <p>Children will know how a lever, pulley and gear works to allow smaller forces to have a greater effect.</p>

## Spring Term—Earth and Beyond

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Earth and Beyond	Lesson 1&2 (Combined)  What's in Space?  What is a year	<b>Enquiry Type</b> - Finding things out using a wide range of secondary sources of information  <b>LO:</b> Describe the movement of the Earth, and other planets, relative to the Sun in the Solar System.  <b>Working Scientifically:</b> Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs	Children will know that it takes 365.25 days for Earth to orbit the sun and that this is a year.  Children will know and name the other planets in the solar system and their positions and sizes	asteroid, crescent, Earth, galaxy, Jupiter, Mars, Mercury, Milky Way, Moon, orbit, planet, Saturn, solar system, star, Sun, sunrise, sunset, Neptune, telescope, Uranus, Venus	A2 paper
Earth and Beyond	Lesson 3  What is a day	<b>Enquiry Type</b> - Noticing patterns  <b>LO:</b> Use the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky  <b>Working Scientifically:</b> Reporting and presenting findings from enquiries, including conclusions, causal relationships of and degree of trust in results, in oral and written forms such as displays and other presentations	Children will know that the Earth spins on its own axis once fully every 24 hours.  Children will know that this rotation causes day and night.  Children will know that the sun does not move.  Children will know that it is Earth's rotation which makes the sun appear to rise and fall.	axis, dawn, dusk, Earth, horizon, rotate, spin, Sun, sunrise, sunset	Globe, poster putty, bright torch, cocktail stick, compass
Earth and Beyond	Lesson 6  Seasons	<b>Enquiry Type</b> - Observing change over time (modelled)  <b>LO:</b> Describe the movement of the Earth, and other planets, relative to the Sun in the solar system  <b>Working Scientifically:</b> Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs	Children will know that the seasons are caused by the tilt of the Earth  Children will know what the 4 seasons are and link their understanding of conditions to the reduction in sunlight/ increase in sunlight caused by the Earth tilting.	autumn, axis, equinox, hemisphere, northern, North Pole, orbit, rotation, solstice, southern, South Pole, spring, summer, sunrise, sunset, temperature, tilt, winter	Battery powered lanterns that shine in all directions (or torches), a globe, poster putty, materials for making a poster, piece of dowelling, small ball of modelling clay, secondary sources for research

## Spring Term—Earth and Beyond

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Earth and Beyond	Lesson 4 Using the position of the Sun to tell the time	<p>Enquiry Type - Observing changes over different periods of time</p> <p>LO: e the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky</p> <p>Working Scientifically: Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, and taking repeat readings when appropriate</p>	<p>Children will know how shadow length and direction can be contributed to the position of the sun and the time of day.</p> <p>Children will know that we first see the sun in the East, and last in the West. This will be linked to Sun rise and</p>	compass, British Summer Time, dawn, dusk, sunrise, sunset	Large paper or polystyrene plates, permanent marker pens (different colours), fairly small but sharpened pencils, modelling clay, cereal boxes, scissors, direction compasses, watches, torches, small model figures (about 8–15 cm high
Earth and Beyond	Lesson 8 Why does the moon change shape	<p>Enquiry Type - Observing changes over different periods of time</p> <p>LO: Describe the movement of the Moon relative to the Earth</p> <p>Working Scientifically: Using test results to make predictions to set up further comparative and fair tests</p>	<p>Children will know and describe the phases of the moon.</p> <p>They will know the moon orbits the earth every 28 days.</p>	crescent, gibbous, orbit, the Earth, Full Moon, illuminate, lunar month, Moon, New Moon, reflect, waning, waxing	A border strip of dark paper for a 'Moon phase' frieze, at least 30 circles for cutting out Moon shapes, chalks, a big ball half covered with black plastic and half covered with a white plastic bag, a piece of black sugar paper per child with a circle drawn in the middle of each sheet in white chalk (number these sheets individually from 1 up to the number of children in the class), access to the internet to check online calendars, a calendar for the month ahead

## Spring term—Our Changing World

Module	Lesson Structure	National Curriculum Objectives	Expected Outcome	Vocabulary	Resources
<p style="text-align: center;"><b>Our changing world</b></p> <p style="text-align: center;"><b>(This lesson will be revisited as part of an ongoing observational element of learning)</b></p>	2	<p>Enquiry Type—</p> <p>LO: (Biology—<b>Living things in their environment</b>) I can describe the life process of reproduction in some plants and animals.</p> <p>LO: I can observe , record and collect evidence over time of life cycle changes to plants within the local environment.</p> <p>WS: I can report and present findings from enquiries including conclusions, explanations, data and diagrams</p>	Children will know the signs of plant reproduction in the local area.	reproduction, reproduce, flower, carpel, stamen, pollen, seed, seed head, berry, hip, fruit, pollinator, pollination, fertilisation, seed dispersal	<p>Digital camera or ipad.</p> <p>Magnifiers</p> <p>Plan for a walk around school ground or nearby green space.</p>

## Spring Term—Feel The Force

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Feel The Force	Lesson 1 (Combined)  Measuring forces	<p><b>Enquiry Type</b> - Noticing patterns</p> <p><b>LO:</b> Identify the effects of air resistance, water resistance and friction, which act between moving surfaces.</p> <p><b>Working Scientifically:</b> Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, including taking repeat readings when appropriate</p>	Children will know that forces are measured in Newtons and will know how to use a Newton meter to measure them	mass, gravity, Newton meter, friction, smooth, rough, movement	Newton meters (2.5 N, 5 N, 10 N, and 20 N), modelling clay, toy vehicles, three sizes of matchbox, some of which have different materials glued to the base (for example, rough sandpaper, aluminium foil, rectangular sections cut from rubber gloves or thin foam rubber, cotton cloth)
Feel The Force	Lesson 2  Gravitational pull (weight)  Why do objects fall?	<p><b>Enquiry Type</b> - Carrying out comparative and fair tests</p> <p><b>LO:</b> 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, which act between moving surfaces.</p> <p><b>Working Scientifically:</b></p>	<p>Children will know that gravity (combined with mass) creates weight. They will know that gravity acts towards the centre of the Earth</p> <p>Children will know that surface area of objects not the mass affects the time it takes to fall.</p>	gravity, falling, surface area, weight, mass, air resistance	Objects to drop to demonstrate something falling, empty camera film canisters, modelling clay, good quality cupcake cases, timers
Feel The Force	Lesson 3  Do not use Snap Science  Friction	<p><b>Enquiry Type</b> -</p> <p><b>LO:</b> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p> <p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>Children will know that forces make things speed up, slow down, stop and start moving</p> <p>Children will know that friction is a force which slows objects down</p> <p>Children will know which surfaces have high and low levels of friction</p>	Friction, moving surface	Children to investigate vehicles travelling down a ramp onto different surfaces> Children will record as a fair test and draw conclusions regarding which surfaces create the greatest amount of friction

## Spring Term—Feel The Force

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Feel The Force	Lesson 4 Air Resistance  Do not use Snap Science	<p><b>Enquiry Type</b> - Noticing patterns</p> <p><b>LO:</b> Identify the effects of air resistance, water resistance and friction, which act between moving surfaces.</p> <p><b>Working Scientifically:</b> Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, including taking repeat readings when appropriate</p>	<p>Children will know that air resistance is affected by the surface area of an object</p> <p>Children will know that air resistance opposes motion</p> <p>Children will know that weight (linked to gravity) and air resistance act in opposite directions on a parachute.</p> <p>Children will know how to draw force diagrams for a parachutist .</p>	<p>Air resistance Surface area Drag Thrust Weight</p>	<p>Children to investigate the shape of parachutes on the time it takes an object to drop. They will complete a fair test to investigate this.</p> <p>Explain also that in a car, air resistance (drag) slows down a vehicle and means the engine must produce additional power (thrust) to overcome this</p>
Feel The Force	Lesson 5 Upthrust	<p><b>Enquiry Type</b> - Noticing patterns</p> <p><b>LO:</b> Identify the effects of air resistance, water resistance and friction, which act between moving surfaces.</p> <p><b>Working Scientifically:</b> Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, including taking repeat readings when appropriate</p>	<p>Children will know that the force which acts on an object in water is called upthrust.</p> <p>Children will know that if the mass of water displaced by an object is less than the object, the object will sink. Children will know that if the mass of the water displaced is greater than the mass of the object it will float.</p>	<p>Displaced Upthrust Mass Volume Float Sink</p>	<p>Through investigation—explore sinking and floating. Introduce the concept of upthrust linked to shape of object and air contained within an object.</p> <p>Test various fruits and vegetables to determine whether they float or sink, linking findings to air contained within the food.</p>
Feel The Force	Lesson 7,8,9 Combined into 2 sessions  Levers, pulleys and gears	<p><b>Enquiry Type</b> - Carrying out simple comparative and fair tests</p> <p><b>LO:</b> recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p> <p><b>Working Scientifically:</b> Taking measurements, using a range of scientific equipment with increasing accuracy and precision, including taking repeat readings when appropriate</p>	<p>Children will know how a lever works to reduce force required to move an object</p> <p>Children will know how a pulley works</p> <p>Children will know how gears work</p>	<p>lever, pivot, push, pull, mechanism, machine, force, fulcrum</p> <p>pull, lift, force, effort, mechanism, machine, pulley</p> <p>gears, forces, cogs, wheels, teeth</p>	<p>Everyday objects that use class one levers (for example, claw hammer, scissors, pliers, metal spoon), empty tins with inset metal lids, long-handled wooden spoons, 1 litre plastic bottles filled with water to weigh 1 kg, stiff cardboard tubes approximately 3 cm diameter, modeling clay, push/pull meters up to 10 N, books (at least thick paperback size),</p> <p>Wooden dowel (at least 2 cm diameter) or brush handles, pulley sets or metal coat hangers and curtain rings to slide on dowel, cotton reels, string or thin rope, small bucket, sand, Newton meters, sets of slotted weights in 10 g denominations, hanging masses of 50 g, 200 g, 500 g and 1000 g</p> <p>Balloon whisk, rotary whisk, 2 bowls and 2 egg whites, cheap clock with removable back, commercially produced plastic gear wheels, plastic bricks, axles, plastic brick bases</p>

# Summer Modules

Everyday Materials/Get Sorted	Our Changing World	Marvellous Mixtures/ All change
<p>Key Concepts Delivered -</p> <p><b>Chemistry:</b> Materials (properties and changes)</p> <p><b>Chemistry:</b> States of matter</p>	<p>Key Concepts Delivered -</p> <ul style="list-style-type: none"> <li>Biology</li> </ul>	<p>Key Concepts Delivered -</p> <p><b>Chemistry:</b> All matter (stuff) in the universe is made of tiny building blocks.</p> <p><b>Chemistry:</b> Materials (properties and changes)</p> <p><b>Chemistry:</b> States of matter</p>
<p><b>National Curriculum Objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>Compare and group together everyday materials based on evidence from comparative and fair tests, including hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets.</li> </ul>	<p><b>National Curriculum Objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>Describe the life process of reproduction in some plants and animals.</li> </ul>	<p><b>National Curriculum Objectives</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</li> <li>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</li> <li>demonstrate that dissolving, mixing and changes of state are reversible changes</li> <li>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</li> </ul>
<p><b>Relevant Prior Learning</b></p> <p>As part of the Year 4 module children compared and grouped materials according to whether they were solids, liquids or gases and learned about changes of state that take place when materials are heated or cooled</p>	<p><b>Relevant Prior Learning</b></p> <p>Children will have examined plant life in their local area in the Autumn term and will be aware of what they observed to draw on for this session.</p>	<p><b>Relevant Prior Learning</b></p> <p>As part of the Year 4 module children compared and grouped materials according to whether they were solids, liquids or gases and learned about changes of state that take place when materials are heated or cooled. Children will know about the structure of s,l and g and how this affects their properties.</p>
<p><b>Expected Outcomes</b></p> <p>children will know how to identify, compare and classify a variety of materials according to both their properties and their uses . They will know why particular products are made of specific materials based on their properties. They will learn that s,l and g's can take different forms, with some distinct and some similar properties. They will know the vocabulary to allow them to explain these similarities and differences.</p>	<p><b>Expected outcome</b></p> <p>Children will know and be able to describe from their observations the stages of a plant's life cycle in their local area.</p> <p>They will know the term reproduction, and know the appearance of different plants during Autumn.</p>	<p><b>Expected outcome</b></p> <p>Children will know how different mixtures of solids and liquids might be separated. They'll know that certain solids dissolve while others do not, and how these dissolved solids might be retrieved from a mixture. They will know that the rate at which solids dissolve can vary depending on specific variables, such as temperature.</p>

## Summer term - Everyday Materials/Get Sorted

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Get Sorted	Lesson 1 Compare and group	<p><b>Enquiry Type</b> - Grouping and classifying</p> <p><b>NC:</b> Compare and group together everyday materials based on evidence from comparative and fair tests, including hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets</p> <p><b>Working Scientifically:</b> Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, and bar and line graphs</p>	<p>Children will know that materials can be grouped according to properties</p> <p>Children will know specific properties of materials</p>	<p>properties, material, compare, contrast, group, organise, criteria, hardness, soluble, insoluble, transparent, opaque, electrical conductor/insulator, thermal conductor/ insulator, magnetic, non-magnetic, attract, repel</p>	<p>Sticky notes, large sheets of paper, familiar classroom objects, for example, marker pen, pencil, paper clip, plant pot, sweatshirt, sports shoe, stapler, ruler, water bottle, lunch box, eraser; real objects and substances, for example, milk, shaving foam, ketchup, butter, yoghurt, jelly, hair gel, steam, sand, flour, sugar</p>
Get Sorted	Lesson 2&3 Solids and Liquids  2 Lessons to be condensed with clear outcome for each section	<p><b>Enquiry Type</b> - Carrying out comparative and fair tests</p> <p><b>NC:</b> Compare and group together everyday materials based on evidence from comparative and fair tests, including hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets</p> <p><b>Working Scientifically:</b> 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>Children will know how different solids vary based on their properties</p> <p>Children will know that some solids bounce.</p> <p>Children will know how liquids vary and will know the word viscosity</p>	<p>properties, material, compare, contrast, group, organise, sequence, criteria, hard, hardness, transparent, transparency, malleable, malleability, elastic, elasticity, flexible, flexibility, brittle, permeable, impermeable, permeability, conductor, insulator, solid</p> <p>properties, material, compare, contrast, viscosity, viscous, transparent, transparency, liquid, pour, flow</p>	<p>Microscope, marshmallows and jelly sweets, chocolate buttons, cheese strings, cooked pasta, foil, elastic, net (or old tights), sponge, polystyrene, sand, soil, butter, brick, wooden ruler, plastic toy, metal object, piece of fabric, glass bottle, sponge, corn flour, water, tray or large bowl</p> <p>Large sheets of paper, honey, cooking oil, syrup, milk, washing up liquid, bubble bath, lemonade, yoghurt, different brands of tomato ketchup, wipe-clean ramps, whiteboards, teaspoons, tablespoons, stop watches or watches with second hands</p>
Get Sorted	Lesson 4&5 Plastics and Metals	<p><b>Enquiry Type</b> -</p> <p><b>LO:</b> Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets</p> <p><b>Working Scientifically:</b> Identifying scientific evidence that has been used to support or refute ideas</p>	<p>Children will know the different properties of different metals and how they are used.</p> <p>Children will know that some metals are magnetic</p> <p>They will complete the same task for plastics</p>	<p>properties, material, compare, contrast, hardness, strength, rigidity, flexibility, ductile (can be drawn into wires), electrical conductor, thermal conductor, magnetic, non-magnetic, attract, repel, oxidises, rusts</p>	<p>Magnets, examples of objects made of metals, for example, cooking pan, spoon, bell, paper clips, stepladder, power cable, access to books or the internet for research</p>



## Summer term - Everyday Materials/Get Sorted

Module	Snap Science recommended	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Get Sorted	Lesson 6 Bouncing	<p><b>Enquiry Type</b> - Carrying out comparative and fair tests</p> <p><b>NC:</b> Compare and group together everyday materials based on evidence from comparative and fair tests, including hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets.</p> <p><b>Working Scientifically:</b> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>Children will know how to plan and carry out a fair test relating to bouncing.</p> <p>Children will know what materials bounce best</p>	<p>properties, characteristics, material, compare, contrast, group, organise, criteria, hardness, flexibility, stretchable, bouncy, elastic, elasticity, fair test, variables, independent, dependent, control</p>	<p>Collection of balls, for example, cricket, tennis, hockey, snooker, football, rugby, basketball, volleyball, sponge, ping pong, golf, bowling, large hoops</p>
Everyday Materials	<p>Lesson 1&amp;2 Choice of materials</p> <p>Lesson 1— Explore— materials in use and reasons within school</p> <p>Lesson 2 Carrier bag investigation</p>	<p><b>Enquiry Type</b> - Grouping and classifying</p> <p><b>NC:</b> Give reasons, based on evidence from comparative and fair tests, for specific uses of everyday materials, including metals, wood and plastic.</p> <p><b>Working Scientifically:</b> 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>Children will know how different materials are used for different roles based on their properties. Children will identify materials around the school and explain choices.</p> <p>NOTE - any form of experiment to test the strength of different plastic bags will work.</p> <p>Children will know which bag to recommend for a purpose based on results of investigation</p>	<p>properties, material, building, construction, structure, organic, natural, manufactured, man-made, weathering, decay, decompose, break down, brittle, fragile, metal, durable, durability, plastic, wood, ceramic, concrete, insulate, insulation</p> <p>properties, material, compare, contrast, strength, weakness, durability, wear, tear, stretch, flexibility, weight, mass, plastic</p>	<p>Lengths of thick dowel, broom handles, etc., modelling clay, large masses, for example, bricks, heavy books or cans of food to test bags, stop watches, different types of carrier bags, thick and thin plastic</p>
Everyday Materials	Lesson 4 Insulators	<p><b>Enquiry Type</b> -</p> <p><b>NC</b> Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p><b>Working Scientifically:</b> Carrying out comparative and fair tests</p>	<p>Children will know what an insulator is and give the name of a good thermal insulator</p> <p>NB - Any investigation into thermal insulation will suffice</p>	<p>properties, material, compare, contrast, criteria, heat, temperature, room temperature, thermal conductor, insulator, insulate, insulation, materials such as polystyrene, cork, shredded fabric, wood chippings</p>	<p>Thermometers, data loggers with temperature probes, hot water or soup in plastic containers with lids that have holes to allow access of thermometer or probe, ice cubes or ice cream in similar sized boxes or containers, cooked hot jacket potatoes, cool bags to use for testing, plus a couple of cool bags for disassembling</p>

## Summer term - Everyday Materials/Get Sorted

Module	Snap Science recommended	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Everyday materials	Lesson 6 Absorbency	<p><b>Enquiry Type</b> - Carrying out comparative and fair tests</p> <p><b>NC:</b> Compare and group together everyday materials based on evidence from comparative and fair tests, including hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets.</p> <p><b>Working Scientifically:</b> Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>Children will know how a material absorbs a liquid.</p> <p>Children will know which materials are good at absorbing a liquid.</p> <p>NB—Any investigation relating to absorbency will be fine</p>	<p>properties, material, compare, contrast, absorb, absorbency, saturated, powder, gel, polymer, volume, quantity, product, manufacturer</p>	<p>Mini whiteboards, water jugs, measuring cylinders, pipettes or water droppers, syringes, a collection of nappies with a variety of brands</p>

## Summer term—Our Changing World

Module	Lesson Structure	National Curriculum Objectives	Expected Outcome	Vocabulary	Resources
<p style="text-align: center;"><b>Our changing world</b></p> <p style="text-align: center;"><b>(This lesson will be revisited as part of an ongoing observational element of learning)</b></p>	3	<p>Enquiry Type—</p> <p>LO: (Biology—<b>Living things in their environment</b>) I can describe the life process of reproduction in some plants and animals.</p> <p>LO: I can observe , record and collect evidence over time of life cycle changes to plants within the local environment.</p> <p>WS: I can report and present findings from enquiries including conclusions, explanations, data and diagrams</p>	<p>Children will know how trees and plants change within the seasons.</p> <p>Children will present their findings to the class and know which these changes take place.</p>	<p>reproduction, reproduce, flower, carpel, stamen, pollen, seed, seed head, berry, hip, fruit, pollinator, pollination, fertilisation, seed dispersal</p>	<p>Digital camera or ipad.</p> <p>Magnifiers</p> <p>Plan for a walk around school ground or nearby green space.</p>

## Summer term - Marvellous Mixtures and Materials

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Marvellous Mixtures and Materials	Lesson 1 Separating mixtures through sieving	<p><b>Enquiry Type</b> - Grouping and classifying</p> <p><b>LO:</b> Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary</p>	<p>Children will know what a mixture is</p> <p>Children will know that to separate larger solid materials from a liquid a sieve would be used.</p>	material, compare, contrast, separate, mixture, sieve, filter, evaporate, solid, liquid, powder, particle	Disposable plates of different kinds – these can be pierced with nails, hole punches or bodkins to form make-shift sieves; selection of fabrics, nets and gauzes; Cupboard Catastrophe mixture – rice, raisins, large pasta, flour, dried lentils, dried peas, fine sand, white sugar, paperclips, wood shavings, plus three or four plastic spiders; large foil trays, plastic beakers, magnets, spoons.
Marvellous Mixtures and Materials	Lesson 3 Filtration  NB this lesson is not linked to SNAP SCIENCE RESOURCES	<p><b>Enquiry Type</b> -</p> <p><b>LO:</b> Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p><b>Working Scientifically:</b> Observation over time</p>	Children will know that to separate insoluble substance from water, filtration can be used	Filtration, insoluble, process, pores, tiny, filter paper, funnel	Flour/ sand, beakers, funnels, filter papers, stopwatch
Marvellous Mixtures and Materials	Lesson 2 Dissolving	<p><b>Enquiry Type</b> - Grouping and classifying</p> <p><b>LO:</b> Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p><b>Working Scientifically:</b> Using test results to make predictions to set up further comparative and fair tests</p>	<p>Children will know what the word dissolve means</p> <p>They will know a range of solids which are soluble and insoluble</p>	material, mixture, compare, contrast, separate, sieve, filter, evaporate, solid, liquid, gas, powder, particle, dissolve, soluble, solution, solute, suspension, saturated, reversible, non-reversible	Sand, salt, fruit syrup, brown sugar, large transparent beakers, collection of solids – powder paint, flour, sugar, sand, coffee granules, bath salts, tea leaves, baby powder, sugar substitute, bicarbonate of soda; collection of solvents – oil, vinegar, water; beakers, spoons, weighing equipment, measuring jugs

## Summer term - Marvellous Mixtures and Materials

Module	Snap Science recommended	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Marvellous Mixtures and Materials	Lesson Evaporation  NB this lesson is not linked to SNAP SCIENCE RESOURCES	<p><b>Enquiry Type</b> - Observation over time</p> <p><b>LO:</b> se knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables</p>	Children will know that when a solution is heated, the liquid will evaporate, leaving the solute behind	Evaporation, heat source, vapour, temperature, substance, solute, solution	Hob, pan, salt and sugar solutions
Marvellous Mixtures and Materials	Lesson Condensation  NB this lesson is not linked to SNAP SCIENCE RESOURCES	<p><b>Enquiry Type</b> - Observation over time</p> <p><b>LO:</b> se knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables</p>	<p>Children will know that when vapour is cooled it changes state to form a liquid (water)</p> <p>Children will know this is called condensation</p> <p>Children will know the reversible cycle of water in its different states.</p> <p>Children will know that water is a reversible substance that can change through all 3 states of matter</p>	Condensation, cool, droplets, water vapour, temperature	Hot water, beakers, cold plates (freezer)
Marvellous Mixtures	Lesson Irreversible changes	<p><b>Enquiry Type</b> - Observation over time</p> <p><b>LO:</b> se knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p><b>Working Scientifically:</b> Planning different types of scientific enquiries to answer questions, including recognising and controlling variables</p>	Children will know that some changes of state are irreversible	Irreversible, reversible	Clear cup, gravy granules, angel delight, sugar, salt, flour, vitamin tablets, plastic spoons

## Summer term - Marvellous Mixtures and Materials

Module	Snap Science recommended lessons	National Curriculum Objectives	Expected outcome	Vocabulary	Suggested Resources
Marvellous Mixtures and Materials	Lesson 3&4	Enquiry Type -  LO:  Working Scientifically:			