Subject Curriculum Overview

Science

Planning and Progression

Nurture curious minds through providing opportunities to excel.
Create resilient and resourceful life – long learners.

Value pupil voice, promote high self-esteem and emotional wellbeing.

Subject Vision and Rationale

"The important thing is to not stop questioning." Albert Einstein



At Ringmer Primary and Nursery School our vision is to ignite pupils' curiosity and encourage them to confidently explore and discover the world around them, so that they develop a deeper understanding of the world we live in. We provide an education that sets the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils are taught essential aspects of the knowledge, methods, processes and uses of science.

We believe that science inspires children, encouraging them to be inquisitive about the world, nurtures their innate curiosity and enables them to develop a range of skills that are useful across their learning.

Young children are naturally curious and passionate about learning. We provide a stimulating science curriculum that nurtures children's natural curiosity and their on-going intellectual development. Through a hands-on, inquiry-based curriculum, children will experience the joy of having wonderful ideas, exploration and investigation – that is, the joy of finding out.

We recognise that the school grounds offer a rich resource which we can utilise to inspire and effectively meet the requirements of the EYFS Framework and National Curriculum Programmes of Study. Understanding of key ideas in science is built on across the key stages and a progression of skills allows pupils to move from early observations and exploration, to considered questioning and drawing out of ideas.

By the end of their primary education our pupils should be equipped to make informed decisions about new technologies, their health and the scientific opportunities around them. They will also have developed scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics. Our science curriculum offers a broad range of experiences designed to provide pupils with a progression of scientific understanding, skills and knowledge through developing understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.

Children at Ringmer will also leave primary education equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

At Ringmer Primary and Nursery School, we teach our science lessons from the Developing Experts scheme. The Developing Experts units are taught in a bespoke order to meet the needs of the children and to match the whole-school enquiry question each term. In addition to the Developing Experts scheme, our science lessons are supplemented with linked texts and key scientists within the field.

Science Long Term Plan

Year A	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Y1*	Animals including humans - All about me	Animals including Humans - All about animals	Seasonal changes	Plants	Exploring everyday materials 1	Exploring everyday materials 2
Y2	Animals including humans - Growth	Animals including humans - Life cycles	Living things and their habitats	Living things and their habitats - habitats around the world.	Plants	Uses of everyday materials
Y3	Animals including humans	Materials: Rocks	Plants	Working Scientifically	Forces and magnetism	Light
Y4	Animals including humans	Changes and properties of materials - states of matter	Living things and their habitats	Living things and their habitats - Conservation	Sound	Electricity
Y5	Animals including humans	Materials - Properties and changes	Living things and their Habitats	Forces	Earth and Space	Properties of materials
Y6	Animals including humans	Electricity	Living things and their Habitats	Light and sound	Looking after the environment	Evolution and Inheritance

Year B	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Y1	Animals including Humans - All about me	Animals including humans - All about animals	Exploring everyday materials 1	Exploring everyday materials 2	Plants	Seasonal changes
Y2	Animals including humans - Growth	Animals including humans 2 - Life cycles	Living things and their habitats	Living things and their habitats - Habitats around the world	Plants	Uses of everyday materials
Y3	Animals including humans	Materials: Rocks	Light	Scientific Enquiry	Plants	Sound
Y4	Animals including humans	Materials: States of Matter	Electricity	Living things and their habitats.	Living things and their habitats - Conservation	Forces and Magnetism
Y5	Animals including humans	Materials - Properties and Changes	Living things and their Habitats (2022)	Forces	Earth and space	Properties of materials
Y6	Animals including humans	Electricity	Living things and their habitats	Light	Looking after the environment	Evolution and Inheritance

Ongoing Scientific Disciplines

'Working scientifically' specifies the understanding of the nature, processes and methods of science for each year group. It should not be taught as a separate strand. The notes and guidance give examples of how 'working scientifically' might be embedded within the content of biology, chemistry and physics, focusing on the key features of scientific enquiry, so that pupils learn to use a variety of approaches to answer relevant scientific questions. These types of scientific enquiry should include: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources. Pupils should seek answers to questions through collecting, analysing and presenting data. 'Working scientifically' will be developed further at key stages 3 and 4, once pupils have built up sufficient understanding of science to engage meaningfully in more sophisticated discussion of experimental design and control.

	EYFS	KS1	LKS2	UKS2
1. Questioning	Asking simple questions and recognising that they can be answered in different ways	Ask a range of simple questions about what they notice	Asking relevant questions and using different types of scientific enquiries to answer them	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
2. Observing over time	Observing closely, using simple equipment	Observing closely, using simple equipment	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
3. Testing – fair and unfair	Perform simple test	Performing a range of simple tests	Setting up simple practical enquiries, comparative and fair tests	Using test results to make predictions to set up further comparative and fair tests

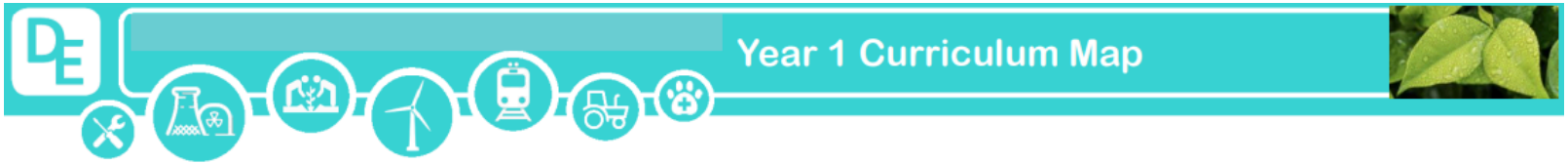
4. Classification	Identifying and classifying	Identifying and classifying things in the natural and humanly constructed world	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
5. Drawing conclusions and evaluation	Using their observations and ideas to suggest answers to questions	Using their observations and ideas to suggest answers to questions	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
6. Evidence based learning	Gathering and recording data to help in answering questions	Gathering and recording data to help in answering questions	Using straightforward scientific evidence to answer questions or to support their findings.	Identifying scientific evidence that has been used to support or refute ideas or arguments

EYFS

Nursery 2-3	**<u>Understanding the world</u>** • Repeat actions that have an effect. • Explore materials with different properties. • Explore natural materials, indoors and outside. • Explore and respond to different natural phenomena in their setting and on trips. • Make connections between the features of their family and other families. • Notice differences between people. **<u>Mathematics</u>** Compare sizes, weights etc. using gesture and language - 'bigger/little/smaller', 'high/low', 'tall', 'heavy'. Notice patterns and arrange things in patterns.
3-4	**<u>Understanding the world</u>** Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties. • Talk about what they see, using a wide vocabulary. • Explore how things work. • Plant seeds and care for growing plants. • Understand the key features of the life cycle of a plant and an animal. • Begin to understand the need to respect and care for the natural environment and all living things. • Explore and talk about different forces they can feel. • Talk about the differences between materials and changes they notice. • Continue developing positive attitudes about the differences between people. **<u>Mathematics</u>** Make comparisons between objects relating to size, length, weight and capacity. Talk about and identifies the patterns around them. For example: stripes on clothes, designs on rugs and wallpaper. Use informal language like 'pointy', 'spotty', 'blobs', etc. • Extend and create ABAB patterns – stick, leaf, stick, leaf.

	• Notice and correct an error in a repeating pattern.
Reception	**Understanding the world** • Explore the natural world around them. • Describe what they see, hear and feel whilst outside. • Recognise some environments that are different to the one in which they live. • Understand the effect of changing seasons on the natural world around them. **Mathematics** Continue, copy and create repeating patterns. • Compare length, weight and capacity.
ELG	**Understanding the world** Explore the natural world around them,making observations and drawing pictures of animals and plants. • 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. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

Progression of Knowledge, Skills and Vocabulary
KS1 – Year 1



Year 1 – Plants				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Understand that seeds grow into plants	Become familiar with common names of flowers and plant structures including seeds	Ask simple questions Observe closely and use simple equipment Use their observations and ideas to suggest answers to questions	seed plant tree soil predict	Variety of seeds, planting equipment: cups, soil, labels, water. Story of Jack and the Beanstalk.
Identify the basic parts of a plant and tree	Identify and describe the basic structure of a variety of common flowering plants, including trees Become familiar with common names of flowers and plant structures	Identify and classify	stem petal leaf root flower	2 or 3 fully grown garden plants in pots. Paper and pens for drawing or coloured card, scissors and glue.
Understand that different plants can grow in the same environment	Identify and name a variety of common wild and garden plants	Identify and classify Gather and record data	environment weed daisy dandelion wild	Clipboards and pens if going on a walk. Scissors and glue if sorting the pictures.
Know the difference between deciduous and evergreen trees	Identify and name a variety of deciduous and evergreen trees	Observe closely, using simple equipment	deciduous evergreen seasons branch bush	Crayons and paper for leaf rubbing; a selection of leaves for children to examine; microscopes or magnifying glasses.
Know that fruit trees and vegetables are varieties of plants	Understand how plants change over time	Observe closely Identify and classify Use their observations and ideas to suggest answers to questions Gather and record data to help in answering questions	supermarket fruit vegetable farm tractor	A selection of fruits and vegetables and their seeds or stones. Tools for cutting.
Record the growth of a plant	Observe the growth of planted flowers Become familiar with plant structures Keep records of how plants change over time	Observe closely Gather and record data	growth seedling young plant adult plant observe	The plants from Lesson 1. Ruler.

Linked texts: *Tree: Seasons Come, Seasons Go (Patricia Hegarty and Britta Teckentrup), A Little Guide to Wild Flowers (Charlotte Voake), The Things That I LOVE about TREES (Chris Butterworth), Harry's Hazelnut (Ruth Parsons).*

Key Scientists: Beatrix Potter (Author and Botanist)

Year 1 Curriculum Map



Year 1- Animals, including humans 1 - All about me				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Discover the basic parts of the human body	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Identify and classify	head body skeleton limb joint	Class presentation, pen, pencil, wallpaper, marker pens.
Learn about eyes and sight	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Perform simple tests Gather and record data to help in answering questions	brain eyelash eye sight pupil	Class presentation, drawing materials.
Learn about ears and hearing	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Perform simple tests Gather and record data to help in answering questions	sound ear sign language vibration deafness	Class presentation, pen, pencil, a range of instruments or different objects to create sounds
Explore the tongue and taste	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Use observations and ideas to suggest answers to questions	tongue mouth taste flavour sweet	Class presentation, bread dipped or spread with a variety of different flavours for children to taste. You could use marmite, honey, jam, lemon juice, cream cheese, olive oil. You could also include a variety of fruits and vegetables.
Explore the sense of touch	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Gather and record data to help in answering questions	touch fingertips skin organ brain	Class presentation, range of classroom objects.
Discover how your nose smells	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Identify and classify	smell odour nose nostril nose hair	Class presentation, a selection of containers suitable for putting food in. A range of food to smell; for instance, vinegar, garlic, cinnamon sticks, fruits, washing up liquid, liquid hand soap, cheese, crisps, chocolate and onion.

Year 1 Curriculum Map



Year 1 - Animals, including humans 2 - All about animals				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Discover animal families	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	Group and sort	fish amphibian reptile mammal bird	Class presentation, scissors, glue, pen and pencil.
Learn about the differences between mammals and birds	Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	Use observations and ideas to suggest answers to questions Group and sort	feather warm-blooded characteristic backbone hatchling	Class presentation, scissors, glue, pen and pencil.
Learn about the differences between amphibians, reptiles and fish	Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	Use observations and ideas to suggest answers to questions Group and sort	amphibian reptile gills scale cold-blooded	Class presentation and handout to play the game.
Discover the types of food living things eat	Identify and name a variety of common animals that are carnivores, herbivores and omnivores	Use observations and ideas to suggest answers to questions Group and sort	herbivore carnivore omnivore predator canines	Class presentation.
Explore the difference between wild animals and pets	Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	Use observations and ideas to suggest answers to questions Group and sort	pet wild shelter veterinary natural	Class presentation, pen and pencil.
Explain the characteristics of an animal	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	Use observations and ideas to suggest answers to questions Group and sort	similarities differences compare unsuitable climate	Class presentation.

Linked texts: *One Year with Kipper (Mick Inkpen), Snail Trail (Ruth Brown), Superworm (Julia Donaldson & Axel Scheffler)*
Key Scientists: *Chris Packham, (Animal Conservationist)*

Year 1 Curriculum Map



Year 1 - Seasonal changes				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Understand there are four seasons	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	Using their observations and ideas to suggest answers to question Asking simple questions and recognising that they can be answered in different ways	season spring summer autumn winter	Large measuring bowls for collecting rainwater. Colouring and drawing resources.
Understand the changes that take place in autumn	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	Using their observations and ideas to suggest answers to question Asking simple questions and recognising that they can be answered in different ways	autumn hibernate weather protect harvest	Drawing and colouring resources if designing the den, or junk modelling resources if creating a model.
Understand the changes that take place in winter	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	Using their observations and ideas to suggest answers to questions	winter weather frost icicle temperature	winter items such as a woolly hat, gloves, a twig, a zip-lock bag with ice or fake snow.
Understand the changes that take place in spring	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length	Identifying and classifying Asking simple questions and recognising that they can be answered in different ways	spring daylight changes grow chick	Scissors and glue.
Understand the changes that take place in summer	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	Using their observations and ideas to suggest answers to questions Asking simple questions and recognising that they can be answered in different ways	summer nectar sun protection bloom heatwave	Winter and summer clothes to sort, colouring pencils, winter and summer clothes to sort (optional).
Explain how the weather and seasons change	Observe and describe weather associated with the seasons and how day length varies	Identifying and classifying Gathering and recording data to help in answering questions	rainfall hibernation rain gauge temperature protect	Containers that have been used to measure the rainfall, writing and colouring resources.

Linked texts: Tree: Seasons Come, Seasons Go (Patricia Hegarty and Britta Teckentrup), One Year with Kipper (Mick Inkpen), After the Storm (Nick Butterworth), Dr Steve Lyons (Extreme Weather)

Key Scientist: Holly Green (Meteorologist)

Year 1 Curriculum Map



Year 1 - Everyday materials - Exploring everyday materials				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Identify and name a variety of everyday materials	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock	Identifying and classifying	material fabric wood plastic metal	wooden item, metal item, plastic item and a piece of fabric, blanket or feely bag
Distinguish between an object and the material it is made from	Distinguish between an object and the material it is made from	Use observations and ideas to suggest answers to questions	object glass rock brick material	Everyday objects from the classroom.
Describe the properties of everyday materials	Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties.	Perform simple tests Using their observations and ideas to suggest answers to questions Gather and record data to help in answering questions	property opaque transparent dull stiff	Handouts, wooden chair, sponge, colouring pencils, a window, plastic bottle, rubber bands, tin can, a book and scissors.
Identify objects that are natural and those that are man-made	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock Compare and group together a variety of everyday materials on the basis of their simple physical properties	Identify and classify Using their observations and ideas to suggest answers to questions	natural man-made factory rubber polyester	Man-made and natural resources
Predict and identify if an object will float or sink	Compare and group together a variety of everyday materials on the basis of their simple physical properties	Perform simple tests Identifying and classifying Using their observations and ideas to suggest answers to questions	predict float sink submerged heavy	Bowls of water. A selection of objects to investigate.
Explore which materials are best for different objects	Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties	Perform simple tests Identify and classify Use observations and ideas to suggest answers to questions Gather and record data to help in answering questions	absorbent properties waterproof bendy materials	Sponges, paper towels, paper, cloth, tin foil, cut up plastic bag, tray and water.

Linked texts: *The Great Paper Caper (Oliver Jeffers), Who Sank the Boat (Pamela Allen), The Story of Cinderella (Walt Disney)*

Key Scientist: *William Addis (Toothbrush Inventor), Charles Mackintosh (Waterproof coat), John MacAdam (roads)*

Year 1 Curriculum Map

Year 1 - Everyday materials - Building (based on the Three Little Pigs)				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Build a structure strong enough to withstand wind	Describe the simple physical properties of everyday materials	Perform simple tests	solid strong brick clay wind	Hairdryer/fan, a selection of materials for children to explore and select to build their house and adhesives.
Build a waterproof structure	Compare and group together a variety of everyday materials on the basis of their simple physical properties	Perform simple tests	waterproof absorbent non-absorbent roof slate	A selection of materials for children to test if they are waterproof (as a class), a selection of materials for children to build their roofs, adhesives, a sponge and a small bowl of water.
Understand the properties of glass and its uses	Describe the simple physical properties of everyday materials	Use observations and ideas to suggest answers to questions	transparent opaque suitable window pane window frame	Clear plastic or acetate, card and sticky tape.
Understand that materials are used to create a variety of furniture	Describe the simple physical properties of everyday materials	Use observations and ideas to suggest answers to questions	fabric furniture cotton mattress soft	Class presentation, pen and pencils, craft materials and fabrics.
Explore a variety of fabrics and understand their different properties	Compare and group together a variety of everyday materials on the basis of their simple physical properties	Identify and classify	wool weather jumper suitable waterproof	Class presentation and clothing.
Explain the uses of materials and why they are suitable	Describe the simple physical properties of everyday material	Use observations and ideas to suggest answers to questions	evaluate material properties tile garden	Class presentation, pen and pencil.

Linked texts: The Three Little Pigs

KS1 – Year 2

Year 2 Curriculum Map

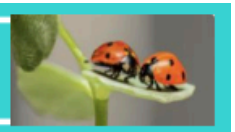


Year 2 – Plants				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Design an experiment to find out what plants need to grow	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	Asking simple questions and recognising that they can be answered in different ways Performing simple tests	predict investigate compare experiment method	Planting equipment, such as pots, soil, water and gardening tools, seeds and variables, such as a freezer or a dark place.
Know the difference between seeds and bulbs	Observe and describe how seeds and bulbs grow into mature plants	Identifying and classifying Observing closely, using simple equipment	seed bulb grow seedling compare	A variety of seeds and bulbs, cutting equipment, tools for drawing or printing.
Describe the life cycle of a plant	Observe and describe how seeds and bulbs grow into mature plants	Using their observations and ideas to suggest answers to questions	pollen life cycle germination reproduce seedling	Coloured chalk.
Describe what plants need to grow and stay healthy	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	Performing simple tests Using their observations and ideas to suggest answers to questions	conditions healthily temperature nutrients energy	A healthy plant and some tape.
Understand that different plants survive in different environments	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	Identifying and classifying	forest desert thrive conditions survive	Plant experiments from previous lessons, scissors, glue, colouring pencils and pencils.
Observe and record the growth of plants over time	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	Performing simple tests Using their observations and ideas to suggest answers to questions Gathering and recording data to help in answering questions	healthy thrive energy results greenhouse	Plant experiments from previous lesson, ruler and colouring pencils.

Linked texts: *The Tin Forest (Helen Ward), Jack and the Beanstalk (Richard Walker), Ten Seeds (Ruth Brown), A Seed Is Sleepy (Dianna Aston)*

Key Scientist: *Agnes Arber (Botanist), Alan Titchmarsh (Botanist & Gardener)*

Year 2 Curriculum Map



Year 2 - Animals, including humans 1 - Growth				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Describe the needs of animals for survival	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	Using their observations and ideas to suggest answers to questions	survival shelter nutrition oxygen essential	Class presentation, pen, pencil.
Describe the needs of humans, for survival	Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	Using their observations and ideas to suggest answers to questions	vital non-essential survive grow healthy	Class presentation, pen, pencil, scissors, glue.
Explore the importance of eating the right food	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Identifying and classifying	protein carbohydrate dairy vitamins calcium fat	Class presentation, pen, pencil, glue.
Describe what a healthy, balanced diet looks like	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Using their observations and ideas to suggest answers to questions	balanced diet nutrients fresh food pre-cooked processed food	Class presentation, pen, pencil, glue, paper plates craft materials for making food, e.g. tissue paper, card, coloured paper, pipe cleaners, playdoh.
Investigate the impact of exercise on our bodies	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Performing simple tests Using their observations and ideas to suggest answers to questions	exercise strength flexibility balance coordination	Class presentation, pen, pencil, stopwatch, bean bags, small sized balls, medium sized balls, large balls.
Investigate the importance of hygiene	Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	Performing simple tests	hygiene prevent germs bacteria virus	Class presentation, pen, pencil, shallow bowl or plate, water, pepper, dish soap.

Year 2 Curriculum Map



Year 2 - Animals, including humans 2 - Life cycles				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Order the stages of the human life cycle	Notice that animals, including humans, have offspring which grow into adults	Identifying and classifying	life cycle grow survive independent adult	Class presentation, pen, pencil, scissors, glue.
Describe the stages of a human life cycle	Notice that animals, including humans, have offspring which grow into adults	Identifying and classifying	foetus womb helpless toddler develop	Class presentation, handout.
Identify the offspring and parent of an animal	Notice that animals, including humans, have offspring which grow into adults	Using their observations and ideas to suggest answers to questions	offspring inherit gene resemble differences	Class presentation, scissors, glue, pen, pencil.
Explore the life cycle of a chicken	Notice that animals, including humans, have offspring which grow into adults	Gathering and recording data to help in answering questions	reproduction hatchling chick bar chart predict	Chicks & data, if available. If you have not hatch chicks, use the handout for chick data, squared paper.
Describe the life cycle of a butterfly	Notice that animals, including humans, have offspring which grow into adults	Asking simple questions and recognise that they can be answered in different ways	caterpillar transformation larva chrysalis metamorphosis	Class presentation, resources to enable the children to create a model of a butterflies life cycle; this may include plasticine, a selection of card or card board, tissue paper, paints/colouring pens, scissors, glue, pipe cleaners.
Explore the life cycle of a frog	Notice that animals, including humans, have offspring which grow into adults	Using their observations and ideas to suggest answers to questions	frog amphibian frogspawn tadpole froglet	Class presentation, pencils, colouring pencils.

Linked texts: *The Gruffalo (Julia Donaldson), Meerkat Mail (Emily Gravett), Tadpole's Promise (Jeanne Willis and Tony Ross)*

Key Scientists: *Terry Nutkins (TV Presenter), Liz Bonnin (Conservationist)*

Year 2 Curriculum Map

Year 2 - Uses of everyday materials				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Identify different materials and their uses	Identify and compare the suitability of a variety of everyday materials	Using their observations and ideas to suggest answers to questions	material property suitable object brick	Objects from around the classroom.
Understand how to select the right materials to build a bridge	Identify and compare the suitability of a variety of everyday materials	Performing simple tests	bridge triangle obstacle structure construction	Two books, a range of weights, variety of materials to create a bridge - aluminium foil, card, paper, wood, string, masking tape etc.
Explore and test the stretchiness of materials	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Gathering and recording data to help in answering questions	stretchy elastic floppy hinder limit	A variety of materials of different stretchiness (e.g. cotton, wool, nylon…), tape measure or ruler; scissors, marbles, yoghurt carton, string, paper clips.
Understand that materials can change their shape by twisting, bending, squashing or stretching	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Using their observations and ideas to suggest answers to questions	bend twist squash stretch force	A variety of materials which can be twisted, bent, squashed or stretched (e.g. plasticine, wool, foil…).
Find out about Charles Macintosh and explore how materials are suitable for different purposes	Identify and compare the suitability of a variety of everyday materials	Performing simple tests	mackintosh protective fluorescent safety waterproof	Four different sheets of fabric (tissue, tinfoil, clingfilm, plastic, wool fabric, nylon), beaker, elastic band, one tray per table, syringe per group, water.
Discover which materials change shape when making a road with John McAdam	Identify and compare the suitability of a variety of everyday materials	Performing simple tests	John McAdam merchant bound highway road	Chocolate, microwave, clingfilm, raisins, digestive biscuits crushed to various sizes, heatproof tray.

Linked texts: *The Tin Forest (Helen Ward), Traction Man (Mini Grey), Three Little Pigs (Lesley Sims)*
Key Scientists: *William Addis (Toothbrush Inventor), Charles Mackintosh (Waterproof coat), John MacAdam (roads)*

Year 2 Curriculum Map



Year 2 - Living things and their habitats				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Explore and compare the differences between things that are living, dead, and things that have never been alive	Explore and compare the differences between things that are living, dead, and things that have never been alive	Identifying and classifying	senses nutrition reproduce excrete respire	Equipment for a classification walk: clipboards, pencils.
Identify and name a variety of plants and animals in a microhabitat	Identify and name a variety of plants and animals in their habitats, including microhabitats	Observing closely, using simple equipment	habitat microhabitat fungi survive shelter	Equipment for a nature hunt: clip boards, pencils. Photographs from the handout if not using the outdoors.
Design a suitable microhabitat where living things could survive	Identify and name a variety of plants and animals in their habitats, including microhabitats	Using their observations and ideas to suggest answers to questions	antennae suitable condition colony insect	If creating a real microhabitat outdoors, a selection of natural materials for children to create a 'bug hotel', or modelling resources if creating a model microhabitat.
Find out what animals eat to survive in their habitats	Describe how animals obtain their food from plants and other animals	Asking simple questions and recognising that they can be answered in different ways Gathering and recording data to help in answering questions	producer consumer herbivore carnivore omnivore	Research tools, e.g. internet and books.
Understand a food chain	Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain	Using their observations and ideas to suggest answers to questions	food chain life cycle nutrients rot caterpillar	Card/paper, scissors, sticky tape, coloured pens/pencils, glue stick. You may prefer to provide the learners with animal pictures to cut out instead.
Understand the journey food makes from the farm to the supermarket	Identify and name different sources of food	Using their observations and ideas to suggest answers to questions	automated frozen food forklift truck refrigerated lorry canned	Scissors, glue, colouring pens/pencils.

Year 2 Curriculum Map



Year 2 – Living Things and their habitats – Habitats from around the world				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Learn about habitats	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	Identifying and classifying Using their observations and ideas to suggest answers to questions	habitat microhabitat organism environment mate	Glue, scissors.
Appreciate that environments are constantly changing	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	Gathering and recording data to help in answering questions	rainforest moisture extinct climate endangered	Clipboard, pen/pencil, *May require permissions if choosing to walk outside school premises
Explore the rainforest and its problems	Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including microhabitats	Using their observations and ideas to suggest answers to questions	biodiversity deforestation poaching pollution rainforest	Books/access to the internet for research, colouring pens/pencils, coloured paper, iPads to film videos (optional)
Describe life in the ocean	Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including microhabitats	Asking simple questions and recognising that they can be answered in different ways	plankton ocean ecosystem coral reef trench	Materials to create a collage, paper, paints, corrugated card, coloured card, glue, scissors, sticky tack, pens, pencils
Discover the Arctic and Antarctic habitat	Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including microhabitats	Identifying and classifying	Antarctic Arctic caribou narwhal tundra	Books/access to the internet for research
Create a model of a habitat	Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including microhabitats	Using their observations and ideas to suggest answers to questions	earthworm desert lizard cactus pond	Shoebox/ or cardboard box, craft materials, toy animals,

Linked texts: *Habitats (Emily Green), A place for me (Lizzy Rockwell), One Tiny Tadpole (Sheridan Cain)*
Key Scientist: *David Attenborough (Natural historian), Jane Goodall (Conservationist)*

LKS2 – Year 3

Year 3 Curriculum Map



Year 3 – Plants				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Compare the effect of different factors on plant growth	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	Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests	thrive investigation prediction fertiliser nutrients	Several small flowering plants, such as bedding plants (pansies, nasturtiums, marigolds). Planting equipment, such as pots, a glass or plastic jar, water, soil and fertiliser.
Describe the functions of different parts of a flowering plant	Identify and describe the functions of different parts of a flowering plant	Making systematic and careful observations Reporting on findings from enquiries, including oral and written explanations	energy oxygen function photosynthesis carbon dioxide	Colouring pencils, onions and a glass of water.
Investigate the way in which water is transported within plants	Investigate the way in which water is transported within plants	Making systematic and careful observations	anchor tube absorb root hairs transpiration	Onion in a jar of water from the previous lesson. Celery in dyed water (prepared 2 days before), chopping boards and knives, magnifying glasses, pencils and the handout. Cut white flowers, a vase, water and dye.
Explore the part that flowers play in the life cycle of flowering plants	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	anther stigma stamen ovary reproduce	Plasticine and a white board. Optional: flowers for dissection (flowers such as lilies recommended).
Understand the pollination process and the ways in which seeds are dispersed	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	pollination pollen nectar seed dispersal pollinator	Equipment so pupils can create a class display.
Compare the effect of different factors on plant growth	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	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	conclusion observe diagram comparison vary	Plants from the experiment.

Linked texts: *The Hidden Forest (Jeannie Baker), George and Flora's Secret Garden (Jo Elworthy)*
Key Scientists: *Jan Ingenhousz (Photosynthesis), Joseph Banks (Botanist)*

Year 3 Curriculum Map



Year 3 – Animals, including humans				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Explore the 5 key food groups	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	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	nutrition carbohydrate protein vitamin mineral	A selection of food for the class to sort into the 5 key food groups
Learn about the nutrition in the food we eat	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	Using straightforward scientific evidence to answer questions or to support their findings	nutrition label portion energy balanced diet	A range of food products containing nutrition labels
Learn about the different types of skeletons	Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	vertebrate invertebrate endoskeleton exoskeleton hydrostatic skeleton	Scissors and glue (optional), research resources: books or internet
Learn about the human skeleton	Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables	humerus ulna radius tibia fibular	Scissors, glue and split pins
Learn about animals and their skeletons	Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Identifying differences, similarities or changes related to simple scientific ideas and processes	endoskeleton vertebrate skull rib cage spine	Scissors and glue
Explore the role of muscles	Identify that humans and some other animals have skeletons and muscles for support, protection and movement	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	muscle contract hamstrings biceps diaphragm	Split pins

Linked texts: *The Story of Frog Belly Rat Bone (Timothy Basil Ering), Funnybones (Janet and Allan Ahlberg), I Will Never Not Ever Eat a Tomato (Lauren Child), Goldilocks and the Three Bears (Samantha Berger)*

Key Scientists: *Adelle Davis (20th Century Nutritionist), Marie Curie (Radiation / X-Rays)*

Year 3 Curriculum Map

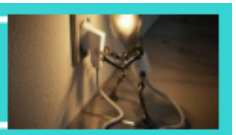


Year 3 – Forces and magnets				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Explore contact and non-contact forces	Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	force contact force non-contact forces air resistance friction	A range of PE and playground equipment
Compare how things move on different surfaces	Compare how things move on different surfaces	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	motion surface resistance texture tilt	A toy boat (or wooden block), thick books, a stopwatch, a cardboard/wooden ramp, a selection of materials e.g. bubble wrap, cling-film, paper, felt and sandpaper (NB: any object can be timed moving down the ramp, but for a measurable effect, pick an object that slides - not rolls. Avoid toys with wheels or balls.)
Explore different types of magnets	Describe magnets as having 2 poles Predict whether 2 magnets will attract or repel each other, depending on which poles are facing	Setting up simple practical enquiries, comparative and fair tests	magnet attract repel bar magnet horseshoe magnet	Bar magnets and horseshoe magnets
Explore the properties of magnets and everyday objects that are magnetic	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	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	magnetism magnetic magnetic field iron steel	A range of magnets and everyday classroom objects
Understand that magnetic forces can act at a distance	Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment	non-contact forces magnetism attract non-magnetic materials recycle	5 different types of magnet, paperclips, something to hold the magnet, a thin thread, tape and a ruler or tape measure
Explore the everyday uses of magnets	Describe magnets as having two poles	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	compass magnetic needle magnetic north direction orienteering	Compasses, clipboards and writing tools

Linked texts: The Iron Man (Ted Hughes), Mrs Armitage: Queen of the Road (Quentin Blake), Mr Archimedes' Bath (Pamela Allen)

Key Scientists: William Gilbert (Theories on Magnetism), Andre Marie Ampere (Founder of Electro-Magnetism)

Year 3 Curriculum Map



Year 3 – Light Unit				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Identify the difference between light sources and non light sources	Recognise that they need light in order to see things and that dark is the absence of light	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	light source natural artificial reflect	Glue and scissors
Explore the light that comes from the sun and how to stay safe	Recognise that light from the sun can be dangerous and that there are ways to protect their eyes	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	vitamin D ultraviolet rays sunburn exposure protection	UV beads, a range of sun creams with at least 3 different SPF values, black paper, sticky tack and a plate
Explore materials which are reflective	Notice that light is reflected from surfaces	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	fluorescent high visibility reflective surface materials	Torches and a range of materials to investigate, such as tin foil, paper, wood, metal and fabric
Discover how shadows are formed	Recognise that shadows are formed when the light from a light source is blocked by an opaque object	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	shadow opaque sundial rays blocks	Torch, opaque objects (enough for each child to have one), pencils and paper
Investigate how shadows change throughout the day	Find patterns in the way that the size of shadows change	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	position cast opposite direction length	Data from the shadow stick investigation, ruler and graph paper
Investigate how you can change the size of a shadow	Find patterns in the way that the size of shadows change	Identifying differences, similarities or changes related to simple scientific ideas and processes	size shape closer further puppet	Shadow puppet stage, lighting and handout with puppet silhouettes

Linked texts: The Owl Who Was Afraid of the Dark (Jill Tomlinson), The Dark (Lemony Snicket), The Firework-Maker's Daughter (Philip Pullman)

Key Scientist: James Clerk Maxwell (Visible and Invisible Waves of Light)

Year 3 Curriculum Map



Year 3 – Rocks				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Explore the formation and properties of igneous rocks	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	igneous rocks intrusive igneous rock extrusive igneous rock crystals magma	Chocolate chips, coconut oil, ice cubes, cooking equipment (including a microwave or hob), caster sugar, golden syrup, bicarbonate of soda, a wooden spoon and a food container
Explore the formation and properties of sedimentary and metamorphic rocks	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	sedimentary rock metamorphic rock limestone marble sandstone	A selection of rocks to test, sandpaper, nails, small wooden spoons, water, pipettes, a bowl of water and a microscope or magnifying glass
Weathering and the suitability of rocks for different purposes	Explore how and why [rocks] might have changed over time (non-statutory)	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	weathering chemical weathering physical weathering biological weathering acid rain	Vinegar, a pipette, a selection of different rocks and colouring pencils
Explore how water contributes to the weathering of rocks	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	appearance texture submerged erosion receding	A variety of different rocks, bowls of water, weighing scales and a timer
Understand how fossils are formed	Describe in simple terms how fossils are formed when things that have lived are trapped within rock	Identifying differences, similarities or changes related to simple scientific ideas and processes	fossil extinct sediment embedded amber	Salt, flour, coffee grounds, cold coffee or water, a mixing bowl, a mixing spoon and objects to create imprints
Explore different types of soil	Recognise that soils are made from rocks and organic matter	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	decompose fragments clay soil chalky soil sandy soil	Samples of different soils (for instance, peat soil, clay soil, sandy soil, silt soil, loam soil or chalky soil), beakers, a measuring cylinder, filter paper, a funnel, a teaspoon, a magnifying glass and pipettes

Linked texts: *The Pebble in my Pocket (Meredith Hooper), Fossils Tell of Long Ago (Aliki), Stone Age Boy (Satoshi Kitamura)*

Key Scientists: *Mary Anning (Paleontologist), James Hutton (Geologist)*

Year 3 Curriculum Map



Year 3 – Scientific Enquiry			
Lesson Intention	**National Curriculum Reference: This unit focuses on the Scientific Enquiry objectives in the NC**	**Rocket Words Covered**	**Resources Needed**
How can a solar oven be made more effective: asking questions and writing predictions	Asking relevant questions and using different types of scientific enquiries to answer them	effective prediction scientific investigation results solar	Cardboard box (not too deep) with a lid, black paper or card, foil, a thermometer, sticky tape, straws and a variety of materials to test (such as cling film, fabrics, foil, paper, card and a piece of black bin bag). Optional: chocolate or marshmallows on a plate
How can a solar oven be made more effective: recording and presenting results	- Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers - Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables - Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	record results data table bar chart	Cardboard box (not too deep) with a lid, black paper or card, foil, a thermometer, sticky tape, straws and a variety of materials to test (such as cling film, fabrics, foil, paper, card and a piece of black bin bag). Optional: chocolate or marshmallows on a plate and graph paper
Cleaning coins: writing a method and carrying out a practical test	- Setting up simple practical enquiries, comparative and fair tests - Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	experiment method diagram equipment substance	A PH testing kit (litmus paper and test indicator), small trays, measuring cylinders, dirty coins and a range of substances to test such as vinegar, oil, ketchup, citric fruit juice, fizzy drinks, toothpaste, soap and water
Cleaning coins: writing a conclusion	- Identifying differences, similarities or changes related to simple scientific ideas and processes - Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - Using straightforward scientific evidence to answer questions or to support their findings	acidic compare explanation evidence conclusion	A PH testing kit (litmus paper and test indicator), small trays, measuring cylinders, dirty coins and a range of substances to test such as vinegar, oil, ketchup, citric fruit juice, fizzy drinks, toothpaste, soap and water
Making a cake: fair testing, controls and variables	- Asking relevant questions and using different types of scientific enquiries to answer them - Setting up simple practical enquiries, comparative and fair tests	reaction measurements fair test control experiment variable	Butter, caster sugar, self-raising flour, eggs, vanilla extract, milk, a mixing bowl, a whisk, a wooden spoon, measuring jug, weighing scales, oven, 20cm cake tin (variables could also include baking powder, water and a selection of different flours, e.g. plain or gluten free)
Making a cake: scientific enquiry	- Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions - Using straightforward scientific evidence to answer questions or to support their findings - Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	conclusion variable equipment method prediction	Butter, caster sugar, self-raising flour, eggs, vanilla extract, milk, a mixing bowl, a whisk, a wooden spoon, measuring jug, weighing scales, oven, 20cm cake tin (variables could also include baking powder, water and a selection of different flours, e.g. plain or gluten free)

LKS2 - Year 4

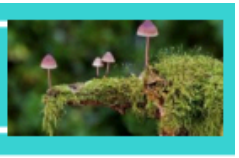
Year 4 Curriculum Map



Year 4 – Animals, including humans				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Identify the organs in the digestive system	Describe the simple functions of the basic parts of the digestive system in humans	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	digestive system oesophagus stomach small intestine large intestine	Glue, scissors, handout, pen and pencils, craft materials and whiteboards
Describe the functions of the main organs in the digestive system	Describe the simple functions of the basic parts of the digestive system in humans	Making systematic and careful observations Reporting on findings from enquiries, including oral and written explanations	saliva peristalsis absorb liver gall bladder	Pen, pencils and a digestive system model
Identify the types of human teeth and their functions	Identify the different types of teeth in humans and their simple functions	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	incisors canines molars jaw gum	A mirror and coloured pencils
Investigate the effects of different liquids on the teeth	Identify the different types of teeth in humans and their simple functions	Setting up simple practical enquiries, comparative and fair tests Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	enamel plaque tooth decay cavity fluoride	Beverages: sugary - soda, energy drink (e.g. Red Bull), sports drink (Gatorade), juice; acidic - vinegar, orange juice, water (control), milk (control), clear cups or glasses (one for each drink) with covers or pieces of foil or plastic wrap and rubber bands to cover, eggs, an extra toothbrush and toothpaste
Understand food chains	Construct and interpret a variety of food chains, identifying producers, predators and prey	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	ecosystem producer consumer prey predator	Coloured card, string and coloured pencils
Explore food webs	Construct and interpret a variety of food chains, identifying producers, predators and prey	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	food web tundra hide interdependence threatened	Pens and pencils, books and access to the internet

Linked texts: *Human Body Odyssey (Werner Holzwarth), Crocodiles Don't Brush Their Teeth (Colin Fancy), Wolves (Emily Gravett)*
Key Scientist: *Ivan Pavlov (Digestive System Mechanisms), Joseph Lister (Discovered Antiseptics)*

Year 4 Curriculum Map



Year 4 - Living things and their habitats				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Explore different habitats	Recognise that living things can be grouped in a variety of ways	Identifying differences, similarities or changes related to simple scientific ideas and processes	habitat microhabitat conditions adapted camouflage	Glue and scissors
Research a habitat	Making a guide to local living things (non-statutory)	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	coastal grassland environment climate exposure	Pencils, colouring pens and research tools, such as books and the internet
Explore how animals can be classified	Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	classify characteristics vertebrate invertebrate species	Pencil, scissors, glue
Create a classification key	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	sub-groups identify criteria classification keys organism	Pencil
Adaptations and classification within species	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	Identifying differences, similarities or changes related to simple scientific ideas and processes	adapted region features colouring blubber	Colouring pencils
Explore and classify pond plants	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	ecosystem oxygenised flowering plant non-flowering plant pond dipping	Colouring pencils For pond dipping (optional): a clear container/viewing trays/bucket, teaspoons, nets, magnifying glasses and clip boards

Year 4 Curriculum Map

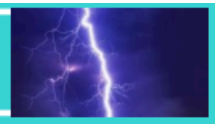


Year 4 - Living things and their habitats – Conservation				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Describe ecosystems and how they are affected by changes in the seasons	Recognise that environments can change and that this can sometimes pose dangers to living things	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	ecosystem Northern Hemisphere Southern Hemisphere migrate monsoon	Research tools, such as books and the internet
Understand human impact on the environment through deforestation	Recognise that environments can change and that this can sometimes pose dangers to living things	Using straightforward scientific evidence to answer questions or to support their findings	rainforest deforestation drought biodiversity recycling	Research tools, such as books or the internet. Resources for air pollution catchers: index cards, petroleum jelly, sticky tape and decibel metres
Explore air pollution	Recognise that environments can change and that this can sometimes pose dangers to living things	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	fossil fuels pollution greenhouse gases emissions climate change	Index cards, petroleum jelly, sticky tape and decibel metres
Understand water pollution	Recognise that environments can change and that this can sometimes pose dangers to living things	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	chemicals sewage contaminate pesticides water treatment plant	Research tools such as books or the internet and a muddy glass of water
Explore methods that can be used to conserve water	Recognise that environments can change and that this can sometimes pose dangers to living things	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	conserve drought freshwater pure water butt	Paper, pencils and pens
Understand that humans can have a positive impact on nature	Recognise that environments can change and that this can sometimes pose dangers to living things	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	endangered marine sanctuaries protect conservation areas recycling	Paper, pencils, pens and research resources such as books and the internet

Linked texts: *The Vanishing Rainforest (Richard Platt), The Morning I Met a Whale (Michael Morpurgo), Journey to the River Sea (Eva Ibbotson)*

Key Scientists: Cindy Looy (Environmental Change and Extinction), Jaques Cousteau (Marine Biologist)

Year 4 Curriculum Map



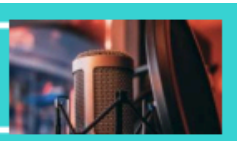
Year 4 – Electricity

Lesson Intention	National Curriculum Reference	Scientific Enquiry Covered	Rocket Words Covered	Resources Needed
Explore electrical appliances and electrical safety	Identify common appliances that run on electricity	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	electricity batteries mains electricity appliance plug socket	Pen, pencils and colouring equipment
Learn about electrical components in a series circuit	Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers	Using straightforward scientific evidence to answer questions or to support their findings	circuit series circuit component cell battery	Batteries, bulb, alligator clips, buzzers or bell, switch and wires, colouring pencils
Investigate electrical circuits	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	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	incomplete circuit complete circuit battery wire bulb	Batteries, bulb, alligator clips, buzzers or bell, switches and wires
Explore conductors and insulators	Recognise some common conductors and insulators, and associate metals with being good conductors	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	electrical conductor electrical insulator metal copper plastic	Batteries, bulb, alligator clips, wires, a variety of materials and objects that can be investigated, such as tin foil, fabric, a coin, a rubber, paper, wood and classroom objects that could have both a part that is a conductor and a part that is an insulator
Learn about electrical switches	Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit	Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	switch complete circuit control electrical conductor incomplete circuit	Batteries, bulb, alligator clips, wires, a variety of materials that can be investigated, such as paper clips, pins, safety pins and coins. Include resources for the children to stick or pin their switches to, such as card or cardboard.
Apply knowledge of conductors and insulators	Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery Recognise some common conductors and insulators, and associate metals with being good conductors	Using straightforward scientific evidence to answer questions or to support their findings	non-renewable energy renewable energy wind turbines solar panels hydropower	Batteries, bulbs, buzzers, alligator clips and wires. 1 thick corrugated cardboard base per pair/group (approximately 25 cm x 25 cm and prepared in advance). A variety of materials which can be used to construct the game, such as paper clips, tin foil, copper wire, rubber bands, tape, paper, and cardboard. Example electric circuit games, if you have them.

Linked texts: *Until I Met Dudley (Roger McGough), Oscar and the Bird: A Book about Electricity (Geoff Waring), Electrical Wizard: How Nikola Tesla Lit Up the World, (Elizabeth Rusch)*

Key Scientist: Thomas Edison (First Working Lightbulb), Joseph Swan (Incadesecant Light Bulb)

Year 4 Curriculum Map



Year 4 – Sound				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Identify how sounds are made	Identify how sounds are made, associating some of them with something vibrating	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusion	vibration medium waves eardrum signals	Resources for children to create their presentations, either on paper or digitally
Explore how vibrations from sounds travel through a medium to the ear	Recognise that vibrations from sounds travel through a medium to the ear	Identifying differences, similarities or changes related to simple scientific ideas and processes	source energy particles echo vacuum	Sugar grains, cling film, bowl, speaker string, wire coat hanger, tank of water, two rocks, 2l plastic bottle (bottom cut off) and an inflated balloon
Explore sound insulation	Recognise that vibrations from sounds travel through a medium to the ear	Setting up simple practical enquiries, comparative and fair tests	materials reflect absorb insulate defenders	Card, sticky tape and a range of resources to explore, such as foil, cotton wool, bubble wrap, fabric, scrap paper or shredded newspaper and foam
Explore volume	Find patterns between the volume of a sound and the strength of the vibrations that produced it	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	volume decibels decibel metre amplitude power	A range of weights, a ruler, a decibel metre (you can download an app via a phone or tablet), pencils, graph paper and a drum
Explore pitch	Find patterns between the pitch of a sound and features of the object that produced it	Identifying differences, similarities or changes related to simple scientific ideas and processes	pitch high pitch low pitch instruments orchestra	Resources for making musical instruments, such as boxes, kitchen rolls, elastic bands of different thickness, a selection of storage boxes, rice, lentils or beans, card, scissors, glue, tape, string, glass tubes/bottles or drinking glasses of different sizes, spoons and pencils
Explore sounds from near and from far	Recognise that sounds get fainter as the distance from the sound source increases	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	energy particles travel sound source fade	Music through a speaker, tape measure, a decibel metre (you can download an app via a phone or tablet), pencils and graph paper

Linked texts: *Horrid Henry Rocks (Francesca Simon), Moonbird (Joyce Dunbar), The Pied Piper of Hamelin (Natalia Vasquez)*

Key Scientists: *Aristotle (Sound Waves), Gailileo Galilei (Frequency and Pitch of Sound Waves), Alexander Graham Bell (Invented the Telephone)*

Year 4 Curriculum Map



Year 4 - States of matter				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Compare and group the 3 states of matter	Compare and group materials together, according to whether they are solids, liquids or gases	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions	matter solid liquid gas volume	Examples of the 3 states of matter, scissors, glue and pencils
Explore how particles behave in solids, liquids and gases	Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)	Using straightforward scientific evidence to answer questions or to support their findings	particle bond arranged cooled heated	Ruler, pencil, water, an ice tray, a freezer, a kettle/stove and a thermometer/temperature probe
Investigate melting points	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)	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers	particle melting melting point temperature thermometer	Mini whiteboards, variety of foods to melt (such as butter, coconut oil, dark, milk and white chocolate, gummy bear, different cheeses), tealight stand, tealight, metal pie cases, tongs, matches, **or** access to a kitchen stove with a saucepan and bowl over boiling water, thermometer
Explore freezing and boiling points	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)	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	freezing reverse boiling sublimation deposition	Computers/tablets, squared paper, coloured pencils, ruler, pencil
Explore evaporation and condensation	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	evaporation condensation absorb water vapour process	Cups or beakers, water, measuring cylinders, graph paper, ruler, pencil
Understand the water cycle	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables	water cycle precipitation surface runoff transpiration groundwater	Coloured pencils, pencil, glue and scissors

Linked texts: *Once Upon a Raindrop: The Story of Water (James Carter), Sticks (Diane Alber)*

Key Scientists: *Anders Celcius (Celcius Temperature Scale), Daniel Fahrenheit (Fahrenheit Temperature Scale / Invention of the Thermometer)*

UKS2 – Year 5

Year 5 Curriculum Map



Year 5 – Animals, including humans				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Identify the key stages of a mammal's life cycle	Describe the changes as humans develop to old age	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	foetus dependent adolescent puberty reproduce	*Scissors, handout (on thin card), pen and pencils, split pins*
Explore the gestation periods of mammals	Describe the changes as humans develop to old age	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	gestation pregnant duration extreme breeding	*Sticky notes, scissors, pens/pencils, computers/tablets for research*
Learn about foetal development	Describe the changes as humans develop to old age	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	womb umbilical chord embryo trimester midwife	*Pencil, graph paper, ruler, coloured pencils*
Investigate the hand span of different aged children	Describe the changes as humans develop to old age	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	growth spurt childhood motor skills milk teeth constant	*Ruler, tape measure, pens/pencils, paper*
Learn about the changes experienced during puberty	Describe the changes as humans develop to old age	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	adolescence puberty hormones mood swing develop	*Large paper/wallpaper, sticky tape, pens/pencils*
Describe the changes humans may experience during adulthood and old age	Describe the changes as humans develop to old age	Identifying scientific evidence that has been used to support or refute ideas or arguments	lifestyle keratin elasticity cataracts neurodegenerative	*Pens, pencils, computers/tablets*

Linked texts: *The Land of Neverbelieve (Norman Messenger), Mummy Laid an Egg (Babette Cole), Hair in Funny Places (Babette Cole)*
Key Scientists: *David Attenborough (Naturalist and Nature Documentary Broadcaster), James Brodie of Brodie (Reproduction of Plants by Spores)*

Year 5 Curriculum Map



Year 5 – Forces				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Explore gravity and the life and work of Isaac Newton	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	Identifying scientific evidence that has been used to support or refute ideas or arguments	Sir Isaac Newton gravity astronomy weight mass	*1m ruler/tape measure, weighing scales, variety of balls (tennis ball, soft ball, marble, hockey ball etc), pencil, 2 sheets of paper, stopwatch*
Examine the connection between air resistance and parachutes	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	Galileo Galilei air resistance opposing streamlined parachute	*feather, tennis ball, small plastic toys/weights, stopwatches, variety of materials to test (different types of papers, plastic bags, bin bags, variety of materials), rulers, hole punch, string, calculators*
Explore factors which affect an object's ability to resist water	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	water resistance streamlined upthrust buoyant sink	*small object (such as a marble, or penny), large clear container filled with water, mini whiteboard, modelling clay, water, variety of containers (such as large bottles with the tops cut off, or large measuring cylinders), weighing scales*
Investigate the effects of friction on different surfaces	Identify the effects of air resistance, water resistance and friction, that act between moving surfaces	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	friction resistance lubricant Newton meter Newton	*a variety of surfaces (different carpets or carpet tiles, variety of wooden floors, tarmac/playground surface), trainer, Newton meter, ruler, weight* *Alternatively, children could cover a plank of wood with different surfaces (such as sandpaper, a towel, tinfoil, lino, carpet, corrugated cardboard, bubble wrap etc.), squared paper*
Investigate mechanisms - levers and pulleys	Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	lever load pivot fulcrum pulley	*mini whiteboards, ball, a load to lift per child (weights/1 pint milk bottle/bag of sand etc.), materials to create a pulley - string, cotton reels, dowel, wheels, cardboard*
Investigate mechanisms - gears	Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	mechanism gear mesh rack and pinion bevel gear	*strong cardboard, lolly sticks, paper straws, sticky tape, thin dowel/cocktail sticks, plasticine, sticky tape, glue, compass, scissors*

Linked texts: *The Enormous Turnip (Katie Daynes), Leonardo's Dream (Hans de Beer), The Aerodynamics of Biscuits (Clare Helen Welsh)*

Key Scientists: *Galileo Galilei (Gravity and Acceleration), Isaac Newton (Gravitation), Archimedes of Syracuse (Levers), John Walker (The Match)*

Year 5 Curriculum Map



Year 5 – Earth and space				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry Covered**	**Rocket Words Covered**	**Resources Needed**
Explore the solar system and its planets	Describe the Sun, Earth and Moon as approximately spherical bodies	Identifying scientific evidence that has been used to support or refute ideas or arguments Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	terrestrial planet gas giant planets Solar System spherical orbit	*Class presentation, 9 balls (one for the Sun) and a measuring trundle*
Understand the heliocentric model of the solar system	Describe the movement of the Earth and other planets relative to the Sun in the solar system	Identifying scientific evidence that has been used to support or refute ideas or arguments	astronomy heliocentric geocentric dwarf planet orbit	*Class presentation, pictures of each planet (from last lesson), newspaper, 9 balloons/balls, oill, PVA glue, a bowl, water, paint, paintbrushes and string*
Explain the Earth's movement in space	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	axis poles season hemisphere orbit	*Class presentation, a torch, a globe, playdoh and kebab skewers or cocktail sticks*
Explain the Earth's rotation and night and day	Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky	Using test results to make predictions to set up further comparative and fair tests	sundial time zone gnomon dial shadow	*Class presentation, card, scissors, a compass, glue, long wooden kebab skewers and time zone data*
Explain the movement of the Moon	Describe the movement of the Moon relative to the Earth	Identifying scientific evidence that has been used to support or refute ideas or arguments	moon phase waxing waning eclipse	*Class presentation, pinwheel outlines, scissors, split pins, a globe, golf balls and a torch*
Design a planet using knowledge gained	Describe the Sun, Earth and Moon as approximately spherical bodies	Reporting and presenting findings from enquiries	rocky planet gas planet moon orbit solar system	*Class presentation, felt tips, coloured pencils, paint or digital media*

Linked texts: *The Skies Above My Eyes (Charlotte Guillain & Yuval Zommer), George's Secret Key to the Universe (Lucy and Stephen Hawking with Christophe Galfard), The Way Back Home (Oliver Jeffers)*

Key Scientists: *Claudius Ptolemy and Nicolaus Copernicus (Heliocentric vs Geocentric Universe), Neil Armstrong (First man on the Moon), Helen Sharman (First British astronaut), Tim Peake (First British ESA astronaut)*

Year 5 Curriculum Map



Year 5 – Properties of materials				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Exploring properties of materials	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	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	conductive magnetic durable transparent versatile	*10 sample pieces of material - wood, paper, card, plastic, string, wool, rubber, different metals, clay, pen and pencils, electrical equipment to make circuits (with a bulb), magnets, torch*
Explore thermal conductors and thermal insulators	Compare and group together everyday materials based on evidence from comparative and fair tests, including their conductivity of heat Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	thermal conduction molecules degrees Celsius (°C) insulator	*paper cups, a variety of materials to wrap up the cup, for instance, cling film, foil, paper, felt, cotton, sticky tape, thermometer, warm water, stopwatch*
Explore the hardness of materials	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	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	hardness force iron steel stone	*granite tile, ceramic tile, hardwood, softwood, slate, different stones, plastic, metal, card, coin and nail*
Discover materials that become soluble in water	Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	dissolve solute insoluble soluble solvent	*a range of substances to test if they dissolve, for instance, sand, sugar, salt, flour, wax candles, coffee, jam, butter, chalk, jelly, pepper, measuring spoon, beakers/cup, water*
Investigate the solubility of materials	Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	Using test results to make predictions to set up further comparative and fair tests	solute solvent solution substance saturation	*a variety of solutes (salt, sugar, jelly, coffee), beakers, water*
Explore how mixtures could be separated by filtering, sieving, evaporating or magnets	Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	pure substance mixture filtering sieving evaporation	*sand, sawdust, gravel, metal nuts, marbles, flour, beakers or containers, filter paper, sieve, colander, magnets*

Year 5 Curriculum Map



Year 5 – Changes of materials				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Use evaporation to recover the solute from a solution	Describe how to recover a substance from a solution	Reporting and presenting findings from enquiries, including conclusions	pure substance solute solvent solution evaporate	*1 large clear bottle filled with pure water labelled "A", 1 large clear bottle filled with salt water labelled "B" (30g of table salt in 150 ml of water), teaspoons, small containers such as foil cake cases to place liquid in, labels, access to an oven (200◦C for 20 minutes will evaporate 3 teaspoons of water and leave salt) or warm place.*
Recognise and describe reversible changes	Demonstrate that dissolving, mixing and changes of state are reversible changes	Reporting and presenting findings from enquiries, including conclusions, in oral and written forms	reversible mixture physical change melting evaporate	*Some chocolate that has been melted into a different shape, small toys frozen in some ice, sugar dissolved in water in a bottle, rice and sugar mixed together in a jar. Optional- to reverse changes: heat source and mould to re- melt chocolate and ice and evaporate water, sieve.*
Observe chemical reactions and describe how we know new materials are made	Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	irreversible chemical change compare effervescence product	*Water, fizzing tablet (such as berroca or alka seltzer), vinegar, bicarbonate of soda, candle, matches, red cabbage indicator*, soapy water, water, milk, small bottles for liquids, small containers (small aluminium pie cases work well)*
Investigate rusting reactions	Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible	Planning different types of scientific enquiry to answer questions, including recognising and controlling variables where necessary	fair test variable control variable corrosion rusting	*Small iron nails, test tubes or other small containers, water, salty water, other liquids (lemon juice, cola etc) oil, paint or petroleum jelly*
Investigate burning reactions	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.	Identifying scientific evidence that has been used to support or refute ideas or arguments	combustion fuel oxygen extinguish smother	*Tea light, matches, beaker, vinegar, bicarbonate of soda*
Investigate chemical reactions - acids and bicarbonate of soda	Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated the action of acid on bicarbonate of soda	Using test results to make predictions to set up further comparative and fair tests	reaction predict acid bicarbonate of soda carbon dioxide	*Bicarbonate of soda, container with lid such as plastic egg or film canister, small containers to test substances in (test tubes or small foil containers), liquids (water, vinegar, cola, lemon juice), plastic spoons, pipettes*

Linked texts: *Itch (Simon Mayo), Kensuke's Kingdom (Michael Morpurgo), The BFG (Roald Dahl)*

Key Scientists: *Spencer Silver, Arthur Fry and Alan Amron (Post-It Notes), Ruth Benerito (Wrinkle-Free Cotton)*

Year 5 Curriculum Map



Year 5 - Living things and their habitats				
Lesson Intention	**National Curriculum Reference**	**Scientific**	**Rocket Words**	**Resources**
Understand the life process of a plant	Describe the life process of reproduction in some plants and animals	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	reproduction asexual fertilisation tuber genes	*Class presentation, rooting powder, pots, a healthy plant (strawberry, tomato, basil or chilli) and soil*
Understand the life cycles of mammals	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	pouch mammary glands placental mammal monotreme mammal marsupial	*Class presentation and mammal types sorting cards*
Compare the life cycles of insects and amphibians	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	metamorphosis caterpillar amphibian larva pupa	*Class presentation and split pins*
Understand the life cycle of birds and reptiles	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	egg fledgling egg tooth hatch embryo	*Class presentation, eggs and toothpicks*
Know about the life and work of Jane Goodall and David Attenborough	Describe the life process of reproduction in some plants and animals	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	documentary naturalist primatologist endangered natural sciences	*Class presentation and research devices (laptops/ipads)*
Research and present the life cycle of a creature	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	Identifying scientific evidence that has been used to support or refute ideas or arguments	living organism reproduction life cycle vertebrate warm-blooded	*Class presentation and research devices (laptops/ipads)*

Linked texts: *Animal Adaptations (Julia Vogel), The Great Kapok Tree (Lynne Cherry)*
Key Scientists: *Charles Darwin (Evolution), Jane Goodall (Conservationist)*

UKS2 – Year 6

Year 6 Curriculum Map



Year 6 – Animals including humans				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Understand the function of the heart and its role in the circulatory system	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	circulatory system atrium ventricle vessel valves	*Pipe cleaners, plasticine, craft materials, colouring pencils, mini whiteboards, pen, pencil*
Identify and compare blood vessels	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	vessel artery vein capillary microscope	*Water (with dye), disposable paper cups, modelling clay, nail/cocktail stick, pen, pencil, stopwatch*
Explore blood	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	blood plasma platelet white blood cell red blood cell	*Protractor, ruler, pen, pencil, compass, computers, mini whiteboards*
Learn how the body transports water and nutrients	Describe the ways in which nutrients and water are transported within animals, including humans	Identifying scientific evidence that has been used to support or refute ideas or arguments	absorb diffusion osmosis concentration nutrients	*Demonstration: 2 eggs, water, sugar, 2 glasses,* *gummy bears, different liquids (milk, cola/soda, distilled water, sugar, salt), beakers/cups/test tubes, pen, pencil, ruler*
Investigate what affects your heart rate	Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	diet exercise heart rate BPM pulse	*Timers/stopwatches, heart rate monitors (if possible), PE equipment and attire, foods chosen by children*
Learn about the impact of drugs and alcohol on the body	Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	drug painkiller stimulant depressant hallucinogens	*Pen, pencil, colouring pencils, coloured paper, computers*

Linked texts: *Pig-Heart Boy (Malorie Blackman), Skellig (David Almond), A Heart Pumping Adventure (Heather Manley)*

Key Scientists: Justus von Liebig (Theories of Nutrition and Metabolism), Sir Richard Doll (Linking Smoking and Health Problems, Leonardo Da Vinci (Anatomy)

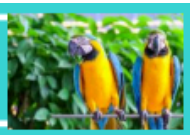
Year 6 Curriculum Map



Year 6 – Evolution and inheritance				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Understand how offspring vary and are not identical to their parents	Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	offspring characteristic inherit variation environmental	*Class presentation, handout, pen*
Learn about animal adaptations	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	Identifying scientific evidence that has been used to support or refute ideas or arguments	adaptation climate nutrition camouflage arid	*Class presentation, handout and research tools such as books or the internet*
Learn about plant adaptations	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	nutrients epiphytes toxic photosynthesis pollinate	*Class presentation, handout and research tools such as books and the internet*
Explore what we can learn from fossils	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago	Identifying scientific evidence that has been used to support or refute ideas or arguments	fossil extinct palaeontologist relative prehistoric	*Class presentation, handout and research tools such as books or the internet (optional)*
Explore the theory of evolution by natural selection	Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution	Identifying scientific evidence that has been used to support or refute ideas or arguments	Charles Darwin evolved ancestor natural selection theory	*Class presentation, coloured pencils, handout and research tools such as books or the internet (optional)*
Explore human evolution	Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago	Identifying scientific evidence that has been used to support or refute ideas or arguments	descended bipedal primate Homo sapiens Neanderthal	*Class presentation, handout and research tools such as books or the internet (optional)*

Linked texts: *One Smart Fish (Christopher Wormell), The Molliebird (Jules Pottle), Our Family Tree (Lisa Westberg Peters)*
Key Scientists: Charles Darwin and Alfred Russel Wallace (Theory of Evolution by Natural Selection), Jane Goodall (Chimpanzees)

Year 6 Curriculum Map



Year 6 – Living things and their habitats				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Classify living organisms	Give reasons for classifying plants and animals based on specific characteristics	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs and bar and line graphs	classify microorganism fern living organism conifer	*Class presentation, liquorice allsorts, A3 paper and pens*
Understand the kingdoms of life	Give reasons for classifying plants and animals based on specific characteristics	Identifying scientific evidence that has been used to support or refute ideas or arguments	kingdom mrs gren cell multicellular unicellular	*Class presentation, a plant and research materials*
Classify living things using the Linnaean system	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals	Identifying scientific evidence that has been used to support or refute ideas or arguments	Carl Linnaeus classification Latin species domain	*Class presentation and research devices*
Identify the characteristics of different types of microorganisms	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	microorganism bacteria fungi virus protozoa	*Class presentation, mould growing investigation, slices of bread, sealable sandwich bags, water, sticky labels and marker pens*
Investigate asexual reproduction through spore dispersal	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	plant microscopic fungi mycelium ecosystem	*Class presentation, large mushrooms, clamp stands, clamps, string, cocktail stick to make a hole, plain paper, hairspray and a ruler*
Classify and describe a living organism	Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals	Reporting and presenting findings from enquiries - including conclusions, causal relationships and explanations of and a degree of trust in results - in oral and written forms such as displays and other presentations	classify microorganism living organism habitat reproduction	*Class presentation, A3 paper, felt tips/colouring pencils and research materials*

Linked texts: *Beetle Boy (M G Leonard), Insect Soup (Barry Louis Polisar), Fur and Feathers (Janet Halfmann)*
Key Scientists: *Carl Linnaeus (Identifying, Naming and Classifying Organisms)*

Year 6 Curriculum Map



Year 6 – Electricity				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Describe the parts of an electrical circuit	Use recognised symbols when representing a simple circuit in a diagram	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	component circuit circuit diagram battery cell	*Series circuit equipment including bulbs, wires, switches, buzzers, cells etc, pen, pencil, ruler*
Explore voltage and its effect on an electrical circuit	Associate the brightness of a bulb or the volume of a buzzer with the number and voltage of cells used in the circuit	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary 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	electricity current voltage Series circuit brightness	*Series circuit equipment - including cells and high voltage bulbs, batteries and wires, pen, pencil, ruler*
Apply knowledge to identify and correct problems in a circuit	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	blown break overload filament coil	*Laptops/iPads with circuit builder, or electrical components - wires, batteries, bulbs, resistors, voltage meter etc), pens, pencil, ruler. A variety of bulbs/ bulb packages for children to check the voltage.*
Investigate what affects the output of a circuit	Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Using test results to make predictions to set up further comparative and fair tests	output variable fair test control systematically	*Series circuit equipment including bulbs, wires, switches, buzzers, cells etc, mini whiteboards and pens*
Build a set of traffic lights	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	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	synchronised insulative conductor contact connection	*For **each** set of traffic lights: card/cardboard, wires and crocodile clips, 1.5V LEDS (green, red and yellow - caution as higher voltages may break the LEDs), OR bulbs with coloured/tissue paper, battery/cell, paperclips, split pins*
Apply knowledge of circuits to a real life problem	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	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate	high voltage prototype volts upscaled fan blade	*Battery holders, cells, motors, paper, cardboard, wires, crocodile clips, switches*

Linked texts: Goodnight Mister Tom (Michelle Magorian), Blackout (John Rocco)
Key Scientists: Alessandro Volta (Electrical Battery), Nicola Tesla (Alternating Currents)

Year 6 Curriculum Map



Year 6 – Light				
Lesson Intention	**National Curriculum Reference**	**Scientific Enquiry**	**Rocket Words**	**Resources**
Explore how light travels	Recognise that light appears to travel in straight lines	Record data and results of increasing complexity using scientific diagrams and labels Identifying scientific evidence that has been used to support or refute ideas or arguments	light eye light source symbol scientific diagram	*Torch, cardboard tube/a section of hosepipe/paper, card, hole punch, pen, pencil*
Explore reflection	Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	reflected prediction fair test variable table	*Torch, white card, mirror, tin foil, jumper/cardigan, carrier bag (try to choose materials which are similar in colour), pen, pencil*
Explore reflection and explain how it can be used to help us see	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	Identifying scientific evidence that has been used to support or refute ideas or arguments	periscope angle mirror line of sight utilise	*Torch, cereal box, mirrors, scissors, sticky tape, ruler, pencil*
Investigate how shadows can change	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	shadow block opaque transparent translucent	*Multilink, board marker, whiteboard, torch, ruler , pen, pencil*
Investigate how we can show why shadows have the same shape as the object that casts them	Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	plan sun shade real life problem rotate direction	*Modelling clay, torch, cocktail sticks, materials for making a screen, pen, pencil, ruler*
Investigate how we see objects	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	Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary	optical phenomena disperse spectrum refraction	*Water, washing up liquid, straw, glass container, salt, bowl, paper, red, green and blue pens, coloured filters, pencil*

Linked texts: *Letters from the Lighthouse (Emma Carroll), The Gruffalo's Child (Julia Donaldson), The King Who Banned the Dark (Emily Haworth-Booth)*

Key Scientists: *Thomas Young (Wave Theory of Light), Percy Shaw (The Cats Eye)*

Year 6 Curriculum Map



Year 6 – Looking after the environment			
Lesson Intention	**National Curriculum Reference - Scientific Enquiry**	**Rocket Words**	**Resources**
Learn about climate change	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	weather climate greenhouse gases global warming climate change	*2L plastic bottle, permanent marker, sticky tape, skewers/plastic straws, rulers, scissors, thermometer, coloured paper, colouring pens/pencils*
Explore ways to reduce how much rubbish is sent to landfill	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	recycle landfill waste biodegrade council	*Classroom bin (full!), rubber gloves, computer/tablets for research, pen, pencil*
Explore ways to reduce energy consumption	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs	net zero renewable non-renewable greenhouse gases emissions	*Clipboards, pencils, calculators, computers/tablets for research*
Explore how climate change affects our planet	Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations	drought heatwave glacier ice caps flooding	*Handouts, pen, pencil*
Explore what is being done to reduce climate change	Identifying scientific evidence that has been used to support or refute ideas or arguments	COP activist tackle reduce combat	*Handouts, scissors, pen, pencil*
Explore how data can demonstrate climate change	Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Using test results to make predictions to set up further comparative and fair tests Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Identifying scientific evidence that has been used to support or refute ideas or arguments	data natural disaster trend historical data vulnerable	*Handouts, temperature and rainfall data collected and historical comparison data*

Linked texts: *The Promise (Nicola Davies)*

Key Scientists: *David Attenborough (environmentalist), Greta Thunberg (environmental activist)*