



*Fairway Primary
School*

Science Long Term Planning

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≈ *Responsible* ≈ *Ambitious* ≈ *Individual* ≈ *Explorers* ≈

EXPLORE ---KNOW---COMMUNICATE

CONCEPTS

OBSERVING OVER TIME

This concept enables children to identify and measure events and changes in living things, materials and physical process or events. These observations may take place over time spans of minutes or hours (e.g. puddles evaporating) up to several weeks or months (e.g. rearing young chicks).

PATTERN SEEKING

This concept helps us to observe, measure and record events and systems when carrying out pattern seeking enquires. Children are encouraged to collect and interpret data. They make observations and conduct surveys where the variables cannot easily be controlled for practical or ethical reasons.

IDENTIFYING, CLASSIFYING & GROUPING

This concept enables children to make sense of how the world is organised. Identification is the process of using differences to name something and classification is organising things into groups. Opportunities to identify arise when children recognise not all birds are the same for example and can identify and name them. They can then use observable and behavioural similarities to group them and add new things.

COMPARATIVE & FAIR TESTING

This concept helps children explore relationship between variables. In comparative tests children compare one event with another e.g. does the red car go faster than the green car? A fair test identifies the causal relationship between two variables. E.g. does the height of the ramp affect how quickly the toy car rolls down the ramp and everything else remains the same.

RESEARCH USING SECONDARY SOURCES

This concept allows children to build their scientific knowledge and understanding by using secondary sources. This is usually where it is impossible or unsafe for children to answer with first hand enquiries. This enquiry helps them evaluate sources, distinguish between fact and opinion and recognise conflicting evidence and bias.

EXPLAINING

This concept enables children to communicate their ideas: predictions; scientific enquiry processes and findings; and conclusions. It empowers children to answer 'how' and 'why'.

SUBJECT CONTENT EYFS

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.

SUBJECT CONTENT KS1

The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos.

'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

SUBJECT CONTENT LOWER KS2

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out.

'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

SUBJECT CONTENT UPPER KS2

The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.

'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content.

Pupils should read, spell and pronounce scientific vocabulary correctly.

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SCIENTIFIC SKILLS (Taught throughout the year)

- 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.

NURSERY	
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AUTUMN		SPRING		SUMMER	
Topic	Unit of Study	Topic	Unit of Study	Topic	Unit of Study
BELONGING	- I will experience: dough, water/foam and sand, boxes of 'junk', jelly/foods. - I can explore and talk about natural objects. - I can talk about the weather and Autumn.	HOW WILL WE GET THERE?	- I can find out how things work and talk about it. - I can talk about water in the environment-puddles, dew, frost, snow and ice. - I can talk about seasonal weather- Winter into Spring - I can begin to talk about a life cycle e.g. bulbs.	INTO THE GARDEN WE GO!	- I can talk about different types of animals. - I can plant seeds and care for growing plants and talk about how plants grow from seeds. - I can talk about minibeasts noticing where they live. - I can notice how Spring changes into Summer and name a variety of different weather and the seasons. - I understand the need to respect and care for the natural environment and all living things.
VOCABULARY	Weather Seasons Natural Materials Properties Squishy Hard Soft Smooth Rough Transparent Bendy	VOCABULARY	Dew Frost/ snow/ ice Winter Spring Cold Frozen Melted Water Liquid Bulb Grow Shoot stem	VOCABULARY	Seed Soil Water Food Minibeast Summer Living thing Blossom Leaves

AUTUMN		SPRING		SUMMER	
SEARCH FOR A HERO	- I can collect, find natural materials, including twigs, sticks, pebbles, rocks, mud, dirt and contrasting leaf/plants shapes and textures. - I can begin to talk about the changes I can see. - I can talk about the harvest foods I explore – pumpkins, marrows apples, pears etc	TRADITIONAL TALES	- I can name materials with similar and/or different properties - I can use simple descriptive vocabulary (soft, hard, transparent, bendy, rough, smooth, wet, dry)	WHERE IN THE WORLD?	- I can explore and explain different forces. - I can notice change, including melting, drying and growing up.
VOCABULARY	Twigs Sticks Pebbles Rocks Mud soil leaf/plants shapes textures harvest	VOCABULARY	Materials Properties Squishy Hard Soft Smooth Rough Transparent Bendy	VOCABULARY	Push Pull Melting Drying

RECEPTION

SCIENTIFIC SKILLS (Taught throughout the year)

- Explore the natural world around them
- Describe what they see, hear and feel whilst outside.
- Recognise some environments that are different from the one in which they live.
- Understand the effect of changing seasons on the natural world around them.

RECEPTION

RECEPTION					
AUTUMN		SPRING		SUMMER	
Topic	Unit of Study	Topic	Unit of Study	Topic	Unit of Study
MARVELLOUS ME	- Talk about what I see outside using a wide vocabulary (including how Summer changes to Autumn) - Talk about differences between materials and changes they notice in simple terms.	ANTARCTICA	- I can describe and make observations of plants and animals (both from photos and real life experiences) - I can describe my own environment - I can describe another environment- link to Antarctica - I can change materials e.g. water to ice and ice to water - I can explore concepts such as floating and sinking - I can talk about how animals in Antarctica have a thick layer of blubber to help them to stay warm	WINGS & LIVING THINGS	- I can talk about what I see outside using a wide vocabulary (including how Spring changes to Summer) - Describe and make observations of plants and animals (both from photos and real-life experiences – link to duck and bee experiences) - I can talk about changes over time (link to hatching of ducks)
VOCABULARY	Seasons Change Hard/soft Smooth/rough Bendy/rigid Transparent/Opaque	VOCABULARY	Solid Liquid Water Ice Freezing point Melting Insulation blubber	VOCABULARY	Pollinate colony foraging nectar honey stomach pollen baskets head thorax abdomen queen drone worker egg tooth membrane candle waterproof webbed feet duckling embryo blood vein

AUTUMN		SPRING		SUMMER	
DARK DAYS AND COSY NIGHTS	- I can describe what I can hear and feel outside - I can describe and make observations of plants and animals (both from photos and real life) – link to nocturnal animals	TWISTED TALES	Talk about what I see outside using a wide vocabulary describe the changes that are happening	AMAZING ADVENTURES & GOLDEN SANDS	- 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 their 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.
VOCABULARY	Nocturnal/Diurnal Observation	VOCABULARY	Plant Forest Bulbs Shrubs Flowers Blossom Fruit	VOCABULARY	Similarity Difference

YEAR 1

SCIENTIFIC SKILLS (Taught throughout the year)

WORKING SCIENTIFICALLY

- Ask simple scientific questions.
- Use simple equipment to make observations.
- Carry out simple tests.
- Identify and classify things.
- Suggest what I have found out.
- Use simple data to answer questions.

CONCEPTS	SCIENCE BLOCK 1 (6 WEEKS ACROSS THE YEAR) SEASONAL CHANGES	SCIENCE BLOCK 2 (6 WEEKS) EVERYDAY MATERIALS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – EGG DROP
	Observing over time Pattern seeking Research Explaining	Identifying, classifying and grouping Comparative & fair testing Explaining	Pattern seeking Comparative & fair testing Explaining
	SCIENCE BLOCK 4 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 5 (6 WEEKS) PLANTS	SCIENCE BLOCK 6 (6 WEEKS) ANIMALS INCLUDING HUMANS
	Identifying, classifying and grouping Research Explaining	Identifying, classifying and grouping Observing over time Research Explaining	Comparative & fair testing Identifying, classifying and grouping Explaining

VOCABULARY	SCIENCE BLOCK 1 (6 WEEKS ACROSS THE YEAR) SEASONAL CHANGES	SCIENCE BLOCK 2 (6 WEEKS) EVERYDAY MATERIALS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – EGG DROP
	Spring Summer Autumn Winter Weather Daylight Seasons	Materials Waterproof Absorbent Transparent	
	SCIENCE BLOCK 4 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 5 (6 WEEKS) PLANTS	SCIENCE BLOCK 6 (6 WEEKS) ANIMALS INCLUDING HUMANS
	Herbivore Carnivore Omnivore	Petals Stem Leaf Root Trunk Branches Deciduous Evergreen	Taste Smell Touch See/sight Hear Taste buds

NATIONAL CURRICULUM OBJECTIVES	SCIENCE BLOCK 1 (6 WEEKS ACROSS THE YEAR) SEASONAL CHANGES	SCIENCE BLOCK 2 (6 WEEKS) EVERYDAY MATERIALS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – EGG DROP
	- Observe changes across the four seasons - Observe and describe weather associated with the seasons and how day length varies.	- Distinguish between an object and the material from which it is made - Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock - Describe the simple physical properties of a variety of everyday materials - Compare and group together a variety of everyday materials on the basis of their simple physical properties.	- Design purposeful, functional, appealing products for themselves and other users based on design criteria. - Generate, develop, model and communicate their ideas through talking, drawing, templates & mock-ups. - Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). - Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. - Evaluate their ideas and products against design criteria.
	SCIENCE BLOCK 4 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 5 (6 WEEKS) PLANTS	SCIENCE BLOCK 6 (6 WEEKS) ANIMALS INCLUDING HUMANS
	- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals - Identify and name a variety of common animals that are carnivores, herbivores and omnivores - Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. - Identify and describe the basic structure of a variety of common flowering plants, including trees.	Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

SCIENCE KNOWLEDGE	SCIENCE BLOCK 1 (6 WEEKS ACROSS THE YEAR) SEASONAL CHANGES	SCIENCE BLOCK 2 (6 WEEKS) EVERYDAY MATERIALS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – EGG DROP
	To know: - The name of the 4 seasons. - Know the order in which the seasons occur. - Describe some changes that happen in each season. - Name and describe different types of weather. - In summer there are more hours of daylight. - In winter there are more hours of darkness. - It is not safe to look directly at the sun.	To know: - The names of some materials including: wood, plastic, glass, metal, paper, fabric, foil, water, brick & rock. - Describe the properties of everyday materials using basic terms such as hard/soft, bendy/not bandy, waterproof/not waterproof, absorbent, transparent. - Group objects based on the materials they are made from. - About the work of the scientist John Dunlop.	To know: - The names of some everyday materials - That some materials will protect a delicate object
	SCIENCE BLOCK 4 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 5 (6 WEEKS) PLANTS	SCIENCE BLOCK 6 (6 WEEKS) ANIMALS INCLUDING HUMANS
	To know: - Names a variety of animals. - How to care for and handle animals and to return them to their habitat after studying them. - The terms: Herbivore, Carnivore & Omnivore - The names of some animals body parts, such as: legs, feet, paws, tail, whiskers, gills, fins, beak.	To know: - The names of a range of common plants. - Name the petals, stem, leaf & root of a plant. - Name the roots, trunk, branches & leaves on a tree. - The features of deciduous and evergreen trees.	To know: - Name the parts of the human body I can see. - Link the correct part of the human body to each sense.

YEAR 2

SCIENTIFIC SKILLS (Taught throughout the year)

WORKING SCIENTIFICALLY

- Ask simple scientific questions.
- Use simple equipment to make observations.
- Carry out simple tests.
- Identify and classify things.
- Suggest what I have found out.
- Use simple data to answer questions.

CONCEPTS	SCIENCE BLOCK 1 (6 WEEKS) LIVING THINGS & THEIR HABITATS	SCIENCE BLOCK 2 (6 WEEKS) LIVING THINGS & THEIR HABITATS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – CATAPULTS
	Pattern seeking Observing over time Research Explaining	Research Pattern seeking Explaining	Pattern seeking Comparative & fair testing Explaining
	SCIENCE BLOCK 4 (6 WEEKS) PLANTS	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) EVERYDAY MATERIALS
	Comparative & fair testing Observing over time Explaining	Identifying, classifying and grouping Comparative & fair testing Research Explaining	Identifying, classifying and grouping Comparative & fair testing Explaining

VOCABULARY	SCIENCE BLOCK 1 (6 WEEKS) LIVING THINGS & THEIR HABITATS	SCIENCE BLOCK 2 (6 WEEKS) LIVING THINGS & THEIR HABITATS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – CATAPULTS
	Habitat Organism Protect Grow Breathe Reproduce Environment	Food chain Herbivore Carnivore Omnivore	
	SCIENCE BLOCK 4 (6 WEEKS) PLANTS	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) EVERYDAY MATERIALS
	Reproduce Seeds Bulbs Germinate/ germination conditions	Life cycle Pupa Hygiene Dairy	Properties Suitable/ suitability Transparent Born Hatched

NATIONAL CURRICULUM OBJECTIVES	SCIENCE BLOCK 1 (6 WEEKS) LIVING THINGS & THEIR HABITATS	SCIENCE BLOCK 2 (6 WEEKS) LIVING THINGS & THEIR HABITATS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – CATAPULTS
	- Explore and compare the differences between things that are living, dead, and things that have never been alive. - Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other. - Identify and name a variety of plants and animals in their habitats, including microhabitats	Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.	- Design purposeful, functional, appealing products for themselves and other users based on design criteria. - Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. - Select from and use a range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing). - Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics. - Explore and evaluate a range of existing products. - Evaluate their ideas and products against design criteria.
	SCIENCE BLOCK 4 (6 WEEKS) PLANTS	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) EVERYDAY MATERIALS
	- 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.	- Notice that animals, including humans, have offspring which grow into adults - Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) - Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. - Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

SCIENCE KNOWLEDGE	SCIENCE BLOCK 1 (6 WEEKS) LIVING THINGS & THEIR HABITATS	SCIENCE BLOCK 2 (6 WEEKS) LIVING THINGS & THEIR HABITATS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – CATAPULTS
	To know: - The characteristics of living things (grow, move, eat, breathe, and reproduce). - What a habitat is and what it provides a living organism. - What a microhabitat is and where they might be found in the school environment. - How living things depend on each other. For example how a plant might be a source of food and protection for an animal. - How animals are suited to their habitat. The terms: food, diet, energy, shelter, protection, grow, move, breathe, eat, reproduce (the children do not need to understand this concept beyond 'have babies or 'make new plants'), habitat, living, organism, environment.	To know: - The names of a variety of plans and animals. - That animals get their food from plants and other animals. - Some simple food chains for example, grass, rabbit, fox. - To know the terms: carnivore, herbivore and omnivore.	To know: - That varying force can affect the distance or height of a catapulted missile. - That the size and length of the catapult can affect the distance and height of the catapulted missile
	SCIENCE BLOCK 4 (6 WEEKS) PLANTS	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) EVERYDAY MATERIALS
	To know: - That seeds are produced by a plant to reproduce. - That seeds and bulbs need water to grow but most do not need light; seeds and bulbs have their own source of food inside them. - That plants need water, sunlight and - The terms: seed, plant, flower, grow, stem, leaves, germinate/germination, light, heat, energy store, conditions.	To know: - That animals are born or hatched. - That animals live through a life cycle: Egg, caterpillar, pupa, butterfly; baby, toddler, child, teenager, adult. - That animals need basic requirements to live. - The importance of hygiene for health. - That exercise is important as part of a healthy lifestyle. - The names of some broad food grouping terms: dairy, meat, vegetables, fruit.	To know: - Names of a range of materials - That some materials are used for more than one thing (metal can be used for cans, coins, foil). - That some everyday objects can be made from different materials, (a spoon can be made from metal, plastic or wood) - Why materials are chosen for particular purposes based on their properties (glass suitable for windows because of its transparency) - About the work of the scientists Charles Macintosh.

YEAR 3

SCIENTIFIC SKILLS (Taught throughout the year)

WORKING SCIENTIFICALLY

- Ask relevant scientific questions.
- Use observations and knowledge to answer scientific questions.
- Set up a simple enquiry to explore a scientific question.
- Set up a test to compare two things.
- Set up a fair test and explain why it is fair.
- Make careful and accurate observations, including the use of standard units.
- Use equipment to make measurements.
- Gather, record, classify and present data in different ways to answer scientific questions.
- Use diagrams, keys, bar charts and tables, using scientific language.
- Use findings to report in different ways, including oral and written explanations.
- Draw conclusions and suggest improvements.
- Make a prediction with a reason.
- Identify differences, similarities and changes related to an enquiry.

CONCEPTS	SCIENCE BLOCK 1 (6 WEEKS) ROCKS	SCIENCE BLOCK 2 (6 WEEKS) PLANTS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – MOVING VEHICLES
	Identifying, classifying and grouping Research Explaining	Observing over time Comparative & fair testing Research Explaining	Pattern seeking Comparative & fair testing Explaining
	SCIENCE BLOCK 4 (6 WEEKS) FORCES AND MAGNETS	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) LIGHT
	Comparative & fair testing Pattern seeking Explaining	Pattern seeking Research Explaining	Observing over time Comparative & fair testing Explaining

VOCABULARY	SCIENCE BLOCK 1 (6 WEEKS) ROCKS	SCIENCE BLOCK 2 (6 WEEKS) PLANTS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – MOVING VEHICLES
	Sedimentary Igneous Metamorphic Fossil Organic material Mineral	Function Nutrients Reproduce Pollinate/ pollination Dispersed/ dispersal	
	SCIENCE BLOCK 4 (6 WEEKS) FORCES AND MAGNETS	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) LIGHT
	Force Motion Pole Attract Repel Friction Magnetic	Vertebrate/ Invertebrate Exoskeleton Carbohydrates Protein Fibre	Source Reflect/ reflective Opaque Transparent Translucent

NATIONAL CURRICULUM	SCIENCE BLOCK 1 (6 WEEKS) ROCKS - Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. - Describe in simple terms how fossils are formed when things that have lived are trapped within rock. - Recognise that soils are made from rocks and organic matter.	SCIENCE BLOCK 2 (6 WEEKS) PLANTS - Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. - Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant. - Investigate the way in which water is transported within plants. - Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – MOVING VEHICLES - Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams & prototypes - Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately - Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
	SCIENCE BLOCK 4 (6 WEEKS) FORCES AND MAGNETS - Compare how things move on different surfaces - Notice that some forces need contact between two objects, but magnetic forces can act at a distance. - Observe how magnets attract or repel each other and attract some materials and not others. - Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials. - Describe magnets as having two poles. - Predict whether two magnets will attract or repel each other, depending on which poles are facing.	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS - Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. - Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	SCIENCE BLOCK 6 (6 WEEKS) LIGHT - Recognise that they need light in order to see things and that dark is the absence of light. - Notice that light is reflected from surfaces. - Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. - Recognise that shadows are formed when the light from a light source is blocked by an opaque object. - Find patterns in the way that the size of shadows change.

SCIENCE KNOWLEDGE	SCIENCE BLOCK 1 (6 WEEKS) ROCKS	SCIENCE BLOCK 2 (6 WEEKS) PLANTS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – MOVING VEHICLES
	To know: • The three main types of rock: sedimentary, igneous & metamorphic. • How each type of rock is formed (in basic terms). • To name some common types of rock, for example: sandstone, granite, marble, slate, limestone, basalt & chalk. • That a fossil is formed over thousands of years when a living thing dies and is trapped in rock. • About the work and significance of Mary Anning. • That soil is made up of organic materials, minerals (from broken down rocks), air and water. • The use of rocks around school and in the wider world • Which rocks are useful for certain uses.	To know: • The function of the roots in a flowering plant is to take in water and nutrients from the soil and anchor it in place. (They are usually covered in tiny hairs). • The function of a stem in a flowering plant is to provide support and to transport nutrients and water to other parts of the plant. • The function of the leaves in a flowering plant is to take in light from the sun which is turned into food for the plant. • The function of the flower in a flowering plant is to make seeds in order to reproduce. The petals scent and colours of the flower attract insects that help with pollination. NB: children are not introduced to the process of photosynthesis until KS3. • The life cycle of a flowering plant. • How some seeds are dispersed. (On the wind – dandelion seeds, by attaching to animals or exploding out of seed head) • That plants need the right conditions to live and grow: air, light, water, nutrients from soil and room to grow. • Not all plants need exactly the same conditions to live and grow, for example watercress and cacti.	To Know: • The materials used to make the vehicle can affect the performance of the vehicle • How to attach an axle and wheels to a vehicle • How different materials have different properties that make them more suited to being a vehicle. • The work of the scientist John McAdam

SCIENCE KNOWLEDGE	SCIENCE BLOCK 4 (6 WEEKS) FORCES AND MAGNETS	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) LIGHT
	To know: - That forces will change the motion(movement) of an object. They will either make it start to move, speed it up, slow it down or make it stop. - That magnets can act without direct contact. - Some everyday uses of magnets, on a fridge door, compass for example. - The name of some different types of magnet: bar, button, horseshoe. - Some forces need contact, pushing a swing for example. - Magnets have a north and south pole which are found at opposite ends of a magnet. - Opposite poles on a magnet attract. - Like poles on a magnet repel. - Name different types of magnets - The names of some magnet materials. - The names of some non-magnetic materials. - The terms: magnet, magnetic, force, friction, attract, repel, poles.	To know: - That plants make their own food but animals, including humans cannot. - That animals, including humans get their nutrition from what they eat. - That there are different food groups. - That carbohydrates provide energy. - That protein helps growth and repair. - That fibre helps you digest the food you have eaten. - That fats provide energy. - That vitamins and minerals keep you healthy. - That water moves nutrients around the body and helps you get rid of waste. - That too much sugary and fatty foods are unhealthy and can damage our bodies. - That some animals including humans have a skeleton – vertebrate. - That some animals do not have a skeleton – invertebrate. - That some invertebrates have an exoskeleton for support and protection, for example a crab, scorpion or snail. - The function of a skeleton in animals including humans: support, protection and movement. - The role of muscles in the movement of animals including humans. - Muscles are attached to bones with tendons. - That muscles can only pull so must work in pairs to move bones, triceps and bicep for example. - The terms: see bold above.	To know: - That we need light in order to see. - That darkness is the absence of light. - A number of light sources, eg. Electric light, candle, sun. The moon is not a light source. - That it is dangerous to look directly at the sun. - Eyes can be protected when looking at bright lights. - Mirrors and other surfaces reflect light. - Light from a source can be blocked – resulting in shadows. - Shadows can change size when a light source moves or the distance between an object and the light source changes. - The terms: source, light, reflect/reflective, bright, dull, mirror, opaque, transparent, translucent.

YEAR 4

SCIENTIFIC SKILLS (Taught throughout the year)

WORKING SCIENTIFICALLY

- Ask relevant scientific questions.
- Use observations and knowledge to answer scientific questions.
- Set up a simple enquiry to explore a scientific question.
- Set up a test to compare two things.
- Set up a fair test and explain why it is fair.
- Make careful and accurate observations, including the use of standard units.
- Use equipment to make measurements.
- Gather, record, classify and present data in different ways to answer scientific questions.
- Use diagrams, keys, bar charts and tables, using scientific language.
- Use findings to report in different ways, including oral and written explanations.
- Draw conclusions and suggest improvements.
- Make a prediction with a reason.
- Identify differences, similarities and changes related to an enquiry.

CONCEPTS	SCIENCE BLOCK 1 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 2 (6 WEEKS) ELECTRICITY	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – KITE POWERED CAR
	Research Pattern seeking Explaining	Identifying, classifying and grouping Comparative & fair testing Explaining	Pattern seeking Comparative & fair testing Explaining
	SCIENCE BLOCK 4 (6 WEEKS) STATE OF MATTER	SCIENCE BLOCK 5 (6 WEEKS) SOUND	SCIENCE BLOCK 6 (6 WEEKS) LIVING THINGS AND THEIR HABITATS
	Identifying, classifying and grouping Explaining Observing over time	Comparative & fair testing Pattern seeking Explaining	Identifying, classifying and grouping Explaining

VOCABULARY	SCIENCE BLOCK 1 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 2 (6 WEEKS) ELECTRICITY	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – KITE POWERED CAR
	Herbivore Carnivore Omnivore Incisor Canine Molar/ premolar Small & large intestine Producer Predator Prey	Circuit Cell Battery Conductor Insulator	
	SCIENCE BLOCK 4 (6 WEEKS) STATE OF MATTER	SCIENCE BLOCK 5 (6 WEEKS) SOUND	SCIENCE BLOCK 6 (6 WEEKS) LIVING THINGS AND THEIR HABITATS
	Solid Liquid Gas Evaporation Condensation Water cycle	Vibration Distance Pitch Volume Absorb	Vertebrate Invertebrate Mammal Fish Bird Amphibian Reptile Classification key

NATIONAL CURRICULUM	SCIENCE BLOCK 1 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 2 (6 WEEKS) ELECTRICITY	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – KITE POWERED CAR
	- Describe the simple functions of the basic parts of the digestive system in humans. - Identify the different types of teeth in humans and their simple functions. - Construct and interpret a variety of food chains, identifying producers, predators and prey.	- Identify common appliances that run on electricity. - Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. - Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. - Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. - Recognise some common conductors and insulators, and associate metals with being good conductors.	- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams & prototypes - Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately - Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities
	SCIENCE BLOCK 4 (6 WEEKS) STATE OF MATTER	SCIENCE BLOCK 5 (6 WEEKS) SOUND	SCIENCE BLOCK 6 (6 WEEKS) LIVING THINGS AND THEIR HABITATS
	- Compare and group materials together, according to whether they are solids, liquids or gases. - Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). - Identify the part played by evaporation and condensation in the water cycle and - associate the rate of evaporation with temperature.	- Identify how sounds are made, associating some of them with something vibrating. - Recognise that vibrations from sounds travel through a medium to the ear. - Find patterns between the pitch of a sound and features of the object that produced it. - Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases.	- Recognise that living things can be grouped in a variety of ways. - Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. - Recognise that environments can change and that this can sometimes pose dangers to living things. - About the work of the scientist Jane Goodall.

SCIENCE KNOWLEDGE	SCIENCE BLOCK 1 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 2 (6 WEEKS) ELECTRICITY	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – KITE POWERED CAR
	To know: - The main body parts associated with the digestive system, such as mouth, tongue, teeth, oesophagus, stomach, intestine, gall bladder, anus. - The function of each body part (above) involved in the digestive process. - The different types of teeth in humans and some animals. - The different functions of teeth in humans and other animals eg, canines for tearing, molars for grinding food. - The differences in teeth in herbivore, carnivore and omnivores. - What can damage the teeth and how to look after them. - A number of plausible food chains explaining the relationship between the plants and animals and the energy transfer. (Children should not make unrealistic food chains – grass, rabbit, fox, lion for example or fish, penguin, polar bear), and should show an awareness of apex predators in different habitats. - The terms: herbivore, omnivore, carnivore, incisor, canine, molar, premolar, stomach, small intestine, large intestine, oesophagus, gall bladder, liver, rectum, anus, duodenum, producer, predator, prey, food chain.	To know: - Electricity can be dangerous and know how to stay safe. - The names of some appliances that use electricity – mains and battery powered. - Electricity can only flow around a complete circuit. - There must be wires connected to both the positive and negative end of the power supply/battery. - How to construct a simple series circuit with a component in it. The names of simple components: cell, wire, bulb, switch and buzzer. NB: in science we refer to a single battery as a 'cell' - That a switch enables a circuit to be broken or complete. - That some materials conduct electricity (allow it to flow through) - That some materials are insulators (not allowing electricity to flow through) - The names of some insulators and conductors of electricity. - The terms: electricity/electrical, circuit, complete, broken, switch, wire, cell, battery, wire, bulb, buzzer, motor, conductor, insulator, appliances, energy, renewable, non-renewable. NB: Y4 children are not required to use conventional circuit symbols.	To know: - The materials used to make the vehicle can affect the performance of the vehicle - How to attach an axle and wheels to a vehicle - How different materials have different properties that make them more suited to being a vehicle. - That wind can be harnessed and used to power a vehicle.

SCIENCE KNOWLEDGE	SCIENCE BLOCK 4 (6 WEEKS) STATE OF MATTER	SCIENCE BLOCK 5 (6 WEEKS) SOUND	SCIENCE BLOCK 6 (6 WEEKS) LIVING THINGS AND THEIR HABITATS
	To know: - There are 3 states of matter: Solid, Liquid & Gas. Children do not need to know about the 4th state of matter – plasma, in key stage 2 - That a solids hold their shape. - That a liquid can form a pool rather than a pile. - That a gas can escape from an unsealed container. - That water can be a solid, liquid or gas and know what conditions are need for each state to occur. - That other materials can change state by cooling or heating, chocolate for example. - The temperature at which water freezes and becomes a solid. - The temperature at which water boils and becomes a gas. Evaporation occurs when water turns into water vapour. This happens quickly when the water is hot and can happen slowly, like a puddle evaporating in the warm air. Condensation occurs when water vapour is cooled down and turns into water. - How evaporation and condensation work in the context of the water cycle. - The terms: see above in bold	To know: - Sound is a type of energy. Sounds are created by vibrations. The louder the sound, the bigger the vibration. - That different musical instruments can make different sounds. - Some instruments make high pitched sounds (piccolo, triangle, violin). - Some instruments make low pitched sounds (double bass, bassoon, cello). - The size of an instrument is linked to its pitch: a larger instrument will make a low pitched sound, a tuba compared to a cornet for example. - How the pitch and volume can be changed on a range of instruments: by shortening the string length on a violin by pressing a finger on it or by striking a drum or pulling a bow across a string with greater force. - Sound (vibrations) can pass through solids, liquids and gases to the ear. - That sounds get fainter the further away they are made. - Some materials that can be used to quieten a sound (soundproofing). - The terms: sound, vibration, distance, pitch, volume, absorb, instrument. NB: children do not need to know how the ear works in detail at this stage.	To know: - That habitats change throughout the year in line with seasonal change (making links to Y1 learning). - How to group a range of living things into broad groups including animals, flowering plants and non-flowering plants. - How to put vertebrate animals into groups such as fish, birds, mammals, amphibians and reptiles. - How to group invertebrate animals such as snails, crabs, worms, spiders and insects. - How humans impact on environments (both positive – nature reserves, garden ponds and negative – deforestation, litter). - How humans activity (above) impacts on animals and plants in those places positive and negative. - How to make and use a classification key/ branching diagram to identify and sort animals and plants according to observable features. - The terms: mammal, fish, bird, amphibian, reptile, insect, invertebrate, vertebrate, plant, flowering/ non-flowering, classification key.

YEAR 5

SCIENTIFIC SKILLS (Taught throughout the year)

WORKING SCIENTIFICALLY

- Plan different types of scientific enquiry.
- Control variables in an enquiry.
- Measure accurately and precisely using a range of equipment.
- Record data and results using scientific diagrams and labels, classification keys, tables, scattergraphs, bar and line graphs.
- Use the outcome of test results to make predictions and set up a further comparative fair test.
- Report findings from enquires in a range of ways.
- Explain a conclusion from an enquiry.
- Explain. Causal relationships in an enquiry.
- Relate the outcomes from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument/ theory.
- Read, spell and pronounce scientific vocabulary accurately

CONCEPTS	SCIENCE BLOCK 1 (6 WEEKS) FORCES	SCIENCE BLOCK 2 (6 WEEKS) PROPERTIES AND CHANGES OF MATERIALS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – CHAIN REACTION
	Comparative & fair testing Explaining Research	Identifying, classifying and grouping Comparative & fair testing Explaining	Pattern seeking Comparative & fair testing Explaining
	SCIENCE BLOCK 4 (6 WEEKS) LIVING THINGS AND THEIR HABITATS	SCIENCE BLOCK 5 (6 WEEKS) EARTH AND SPACE	SCIENCE BLOCK 6 (6 WEEKS) ANIMALS INCLUDING HUMANS
	Pattern seeking Research Explaining	Research Explaining	Observing over time Research Explaining

VOCABULARY	SCIENCE BLOCK 1 (6 WEEKS) FORCES	SCIENCE BLOCK 2 (6 WEEKS) PROPERTIES AND CHANGES OF MATERIALS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – CHAIN REACTION
	Gravity Weight Mass Friction Resistance Buoyancy Streamline Mechanism Newtons	Properties State Liquid Solid Gas Conductor/ conductivity Dissolve Melt Reversible/ irreversible Solution Reaction	
	SCIENCE BLOCK 4 (6 WEEKS) LIVING THINGS AND THEIR HABITATS	SCIENCE BLOCK 5 (6 WEEKS) EARTH AND SPACE	SCIENCE BLOCK 6 (6 WEEKS) ANIMALS INCLUDING HUMANS
	Reproduction Pollinate/pollination Life cycle Asexual Sexual Fertilise Gestation Metamorphosis Stamen Style Ovule Egg Sperm Cells	Satellite Orbit Planet Star Solar system Axis	Reproduction Sexual Fertilise/ fertilisation Gestation Life cycle Egg Sperm Cells Prenatal Infancy Childhood Adolescence Larynx Pubic Scrotum Penis Testes/testicles Vagina Uterus Ovaries Menstruate/ menstruation

NATIONAL CURRICULUM	SCIENCE BLOCK 1 (6 WEEKS) FORCES	SCIENCE BLOCK 2 (6 WEEKS) PROPERTIES AND CHANGES OF MATERIALS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – CHAIN REACTION
	- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. - Identify the effects of air resistance, water resistance and friction, that act between moving surfaces. - Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. - Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. - Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. - Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. - Demonstrate that dissolving, mixing and changes of state are reversible changes. - Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams & prototypes. - Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.
	SCIENCE BLOCK 4 (6 WEEKS) LIVING THINGS AND THEIR HABITATS	SCIENCE BLOCK 5 (6 WEEKS) EARTH AND SPACE	SCIENCE BLOCK 6 (6 WEEKS) ANIMALS INCLUDING HUMANS
	- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. - Describe the life process of reproduction in some plants and animals.	- Describe the movement of the Earth and other planets relative to the sun in the solar system. - Describe the movement of the moon relative to the Earth. - Describe the sun, Earth and moon as approximately spherical bodies. - Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	Describe the changes as humans develop to old age.

SCIENCE KNOWLEDGE	SCIENCE BLOCK 1 (6 WEEKS) FORCES	SCIENCE BLOCK 2 (6 WEEKS) PROPERTIES AND CHANGES OF MATERIALS	SCIENCE BLOCK 3 (6 WEEKS) STEM CHALLENGE – CHAIN REACTION
	To know: - What air resistance is and explain its effects on falling objects. - What water resistance is and explain its effect on movement through water. - How forces make things move, get faster or slow down. - That gravity is an invisible force that acts on unsupported objects causing them to fall to the Earth. - How friction acts to slow and stop moving objects and apply their knowledge to a real life example (a brake on a bicycle wheel). - That simple machines, pulleys, and levers can reduce the force needed to make an object move. 'Mechanical advantage'. - The difference between balanced and unbalanced forces - The difference between weight and mass. - About the work of Galileo Galilei and Isaac Newton in developing the theory of gravitation. - The terms: gravity, weight, mass, friction, resistance, buoyancy, streamline, mechanism, newtons	To know: - The names of everyday materials. - Properties by which materials could be grouped and explain those properties eg. Transparency means it is see through. - How to apply their y3 and y4 knowledge of magnetism and conductivity to their learning. - When a change is reversable or irreversible. - That evaporating, filtering, sieving, melting and dissolving are examples of reversable change. - That burning, rusting and other reactions (such as vinegar and bicarbonate of soda) are examples of irreversible change. - The difference between melting and dissolving. - How to dissolve some materials and how to retrieve them. - About the work of Spencer Silver (the inventor of post it note glue) - The terms: dissolve, melt, change, properties, state, liquid, solid, gas, reversable, irreversible, solution, conductor/conductivity, sieve, separate, reaction	To know: - That the position of objects next to each other can allow a chain reaction to occur. - How to equipment to measure length and mass accurately.

SCIENCE KNOWLEDGE	SCIENCE BLOCK 4 (6 WEEKS) LIVING THINGS & THEIR HABITATS	SCIENCE BLOCK 5 (6 WEEKS) EARTH & SPACE	SCIENCE BLOCK 6 (6 WEEKS) ANIMALS INCLUDING HUMANS
	To know: • The life cycle of a mammal. • The life cycle of a bird. • The life cycle of an amphibian. • The life cycle of an insect. • How life cycles differ between the above groups. • The life cycle of a flowering plant and a vegetable plant. • About the work of scientist David Attenborough. • About different types of reproduction – sexual and asexual in plants and sexual in animals. • The terms: reproduction, asexual, sexual, pollinate/pollination, fertilise, gestation, life cycle, metamorphosis, stamen, style, ovule, egg sperm, cells.	To know: • The name of the 8 planets in our solar system (Pluto is not included in this list anymore and has been re-classified as a dwarf planet). • The order of the planets from the sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. • That the sun is a star at the centre of our solar system • That a moon is a is a celestial body that orbits a planet (Earth has 1 moon, Jupiter has 4 large moons and numerous small ones). • How night and day work using a model to explain and demonstrate their understanding. • The terms: solar system, star, moon, sun, orbit, axis • That ideas about the solar system have changed and developed over time – understanding how the geocentric model of the solar system gave way to the heliocentric model. • About the work of scientists Ptolemy, Alhazen and Copernicus. • The terms: sun, moon, satellite, orbit, planet, star, solar system, axis	To know: • The stages in the growth and development in humans. • The changes that occur in male and female bodies as they grow during puberty. • The gestation periods of humans and other mammals eg rabbit, elephant, horse. • The terms: reproduction, sexual, fertilise, gestation, life cycle, egg sperm, cells, fertilisation, prenatal, infancy, childhood, adolescence, larynx, pubic, scrotum, penis, testes, vagina, uterus, ovaries, menstruate/menstruation.

YEAR 6

SCIENTIFIC SKILLS (Taught throughout the year)

WORKING SCIENTIFICALLY

- Plan different types of scientific enquiry.
 - Control variables in an enquiry.
 - Measure accurately and precisely using a range of equipment.
 - Record data and results using scientific diagrams and labels, classification keys, tables, scattergraphs, bar and line graphs.
 - Use the outcome of test results to make predictions and set up a further comparative fair test.
 - Report findings from enquiries in a range of ways.
 - Explain a conclusion from an enquiry.
 - Explain causal relationships in an enquiry.
 - Relate the outcomes from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument/ theory.
- Read, spell and pronounce scientific vocabulary accurately

CONCEPTS	SCIENCE BLOCK 1 (6 WEEKS) ELECTRICITY	SCIENCE BLOCK 2 (6 WEEKS) LIGHT	SCIENCE BLOCK 3 (6 WEEKS) LIVING THINGS & THEIR HABITATS
	Identifying, classifying and grouping Comparative & fair testing Explaining	Observing over time Research Pattern seeking Explaining	Identifying, classifying and grouping Pattern seeking Explaining
	SCIENCE BLOCK 4 (6 WEEKS) EVOLUTION & INHERITANCE	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) STEM CHALLENGE – EPIC FAIL INVENTION FAIR
	Identifying, classifying and grouping Research Explaining	Research Comparative & fair testing Pattern seeking Explaining	Pattern seeking Comparative & fair testing Explaining

VOCABULARY	SCIENCE BLOCK 1 (6 WEEKS) ELECTRICITY	SCIENCE BLOCK 2 (6 WEEKS) LIGHT	SCIENCE BLOCK 3 (6 WEEKS) LIVING THINGS & THEIR HABITATS
	Cell Battery Resistance Series Parallel Amps Volts/ voltage Current	Source Reflect Periscope	
	SCIENCE BLOCK 4 (6 WEEKS) EVOLUTION & INHERITANCE	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) STEM CHALLENGE – EPIC FAIL INVENTION FAIR
	Classification Vertebrate Family Classification Vertebrate/ Invertebrate Micro-organism Kingdom Species Taxonomy	Species Reproduce Adaption Inheritance/ inherit Evolution/ evolve Natural selection Offspring Variation	Nutrients Aorta Arteries Atrium Blood vessels Capillaries Circulation Oxygenated Carbon dioxide Oxygen Pulse Respiration Veins Vena cava Ventricle

NATIONAL CURRICULUM	SCIENCE BLOCK 1 (6 WEEKS) ELECTRICITY	SCIENCE BLOCK 2 (6 WEEKS) LIGHT	SCIENCE BLOCK 3 (6 WEEKS) LIVING THINGS & THEIR HABITATS
	- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit - Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches - Use recognised symbols when representing a simple circuit in a diagram.	- Recognise that light appears to travel in straight lines - Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye - Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes - Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. - Give reasons for classifying plants and animals based on specific characteristics.
	SCIENCE BLOCK 4 (6 WEEKS) EVOLUTION & INHERITANCE	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS	SCIENCE BLOCK 6 (6 WEEKS) STEM CHALLENGE – EPIC FAIL INVENTION FAIR
	- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago - Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents - Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	- Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood - Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function - Describe the ways in which nutrients and water are transported within animals, including humans	- Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams & prototypes. - Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately - Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities - Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

SCIENCE KNOWLEDGE	SCIENCE BLOCK 1 (6 WEEKS) ELECTRICITY To know: - How to stay safe when working with electrical circuits and their components. - The names of the basic electrical circuit components and their function; cell, battery, wire, bulb, motor, buzzer, switch. - The symbol for each of the electrical component (above). - How to construct a simple circuit. - The terminology: resistance, series, parallel, amps, volts/voltage, current. - What happens to the brightness of a bulb when more bulbs or other components are added to a circuit. - About the work of the scientist Michael Faraday. NB: children are not required to construct parallel circuits in key stage 2	SCIENCE BLOCK 2 (6 WEEKS) LIGHT To know: - That light comes from a range of sources, some natural and some manmade. - That the moon is NOT a light source but reflects light from the sun. - That it is dangerous to look directly at the sun with eye protection. - That darkness is the absence of light (Y3 objective – knowledge revisited). - That we see because light travels into our eyes directly or after being reflected off a surface. - That shadows can change size when the relationship between an object and the light source is changed. - That light can be reflected to allow us to see behind, above or below (rear-view mirrors, periscopes).	SCIENCE BLOCK 3 (6 WEEKS) LIVING THINGS & THEIR HABITATS To know: - The classification groups for vertebrates: mammal, reptile, fish, bird, amphibian and invertebrates: eg snail, slugs, worms, spiders, insects. (Y4) - That broad groups such as micro-organisms, plants and animals can be subdivided according to their observable differences. - How to use a classification diagram or key. - About the scientist Carl Linnaeus and his work. - To know the terms: species; classification, vertebrate/invertebrate, micro-organism.
	SCIENCE BLOCK 4 (6 WEEKS) EVOLUTION & INHERITANCE To know: - Of the work of Charles Darwin & Alfred Wallace and Mary Anning (revisited from Y3). - How fossils are made (Y3) and how they help scientists find out about animals and plants from long ago. - That animals and plants have changed over time. - That characteristics are passed from parents to offspring, for example eye colour. - That variation over time can make animals more or less able to survive in particular environments. - The terms: adaption, inheritance/inherit, evolution/evolve, natural selection, offspring, species, variation, reproduce	SCIENCE BLOCK 5 (6 WEEKS) ANIMALS INCLUDING HUMANS To know: - The names and locations of the major organs/body parts: oesophagus, stomach, intestine (Y4), lung, heart, blood vessels. - The function of the heart and lungs. - The main components of blood and their function. - The body has a double circulatory system. - Some of the ways drugs, alcohol & a sedentary lifestyle can affect the circulatory and respiratory systems. - That the heart has 4 chambers and 4 valves. - The terminology: aorta, arteries, atrium, blood vessels, capillaries, circulation, oxygenated, deoxygenated, carbon dioxide, oxygen, nutrients, pulse, respiration, veins, vena cava, ventricle. - That respiration is one of the 7 life processes. - The basics ideas of diffusion and osmosis in the transportation of nutrients and water to cells.	SCIENCE BLOCK 6 (6 WEEKS) STEM CHALLENGE – EPIC FAIL INVENTION FAIR To know: - How to use a ruler to make technical drawings to scale - How to use equipment to cut and join materials together - How to make and use gears and levels.