

Our Science Curriculum – A Journey of Discovery

At St John's we believe that pupils should regularly engage in scientific enquiry, including practical work, and should have many opportunities to develop practical science skills. We provide a balanced programme of science education for all year groups that develops science knowledge and understanding and has a significant focus on developing skills. Our science units are taught in blocks and are linked to our thematic topics. Science is recorded in beautiful and creative cohort books - we would love you to come in and browse through these learning journeys.

National Curriculum Purpose of study

The National Curriculum 2014 states:

'A high-quality science education provides 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 should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.'

National Curriculum Aims

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop 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
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

National Curriculum Key stage 1

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.

YEAR 1

Working scientifically: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions.	
AUTUMN 1	SCIENCE UNIT: ANIMALS INCLUDING HUMANS – How can you sort common animals?
Lost & Found THE NORTH & SOUTH POLE	NC14 – • 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, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Famous scientist: David Attenborough

	KNOWLEDGE • Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat. • They should understand how to take care of animals taken from their local environment and the need to return them safely after study. • Pupils should become familiar with the common names of fish, amphibians, reptiles, birds and mammals, including those that are kept as pets. Pupils should learn about pets and farm animals. • Basic understanding of features that determine animals class - 5 classes. SKILLS • Identify animal classes, name, sort and group them. • Compare and contrast animals at first hand or through videos and photographs. • Describing how they identify and group them. • Grouping animals according to what they eat. • Using their senses. Working scientifically: Identify and classify. VOCABULARY fish, reptiles, mammals, birds, amphibians, herbivore, carnivore, omnivore, wings, beak.
AUTUMN 2	SCIENCE UNIT: EVERYDAY MATERIALS – What are everyday materials made from? E.g. window, glass...
The Great Fire of London CAPITAL CITIES KINGS & QUEENS	NC14 – • 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. Famous scientist: local fireman

	KNOWLEDGE • What is an object/material? • Pupils should explore, name, discuss and raise and answer questions about everyday materials so that they become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque and transparent. • Pupils should explore and experiment with a wide variety of materials, not only those listed in the programme of study, but including for example: brick, paper, fabrics, elastic, foil. SKILLS • Grouping the different materials. • Concrete sorting activity (1st introduction of a Venn diagram). • Perform simple tests to answer question e.g. what's the best material for a roof? Working scientifically: Identify and classify/fair testing. VOCABULARY object, material, wood, plastic, glass, paper, fabric, metal, rock, hard, soft, smooth, shiny, rough, bendy (flexible), water, properties.
SPRING 1	<u>SCIENCE UNIT: SEASONAL CHANGES – How do the seasons change throughout the year?</u>
Toys in Space HISTORY OF TOYS	NC14 – • observe changes across the 4 seasons. • observe and describe weather associated with the seasons and how day length varies. Famous scientist: Farmer
	KNOWLEDGE • Pupils should observe and talk about changes in the weather and the seasons. • What type of weather is associated with the seasons? • How does day length vary? SKILLS • Observe change across four seasons. • Record appropriately e.g. weather observations. • Making tables and charts about the weather and making displays of what happens in the world around them, including day length, as the seasons change. Working scientifically: observation over time and pattern seeking. VOCABULARY summer, spring, autumn, winter, season, sun, day, moon, night, light, dark.
SPRING 2	<u>SCIENCE UNIT: ANIMALS INCLUDING HUMANS – What's in the box?</u>
Meerkat Mail ALIENS/BELONGING	NC14 – • 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, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Famous scientist: Charity spokesperson (guide dog walker and the importance of five senses) KNOWLEDGE • Pupils should use the local environment throughout the year to explore and answer questions about animals in their habitat. • They should understand how to take care of animals taken from their local environment and the need to return them safely after study. • Pupils should become familiar with the common names of fish, amphibians, reptiles, birds and mammals, including those that are kept as pets. Where are the parts of a body? What are the 5 senses? Humans are animals SKILLS • Compare and contrast animals at first hand or through videos and photographs. • Describing how they identify and group them. • Grouping animals according to what they eat. • Compare different textures, sounds and smells using senses. • Make close observations. Working scientifically: Identify and classify/fair testing. VOCABULARY head, ear, eye, mouth, nose, leg, knee, arm, elbow, back, senses.
SUMMER 1	<u>SCIENCE UNIT: PLANTS (link to seasons) – What are the key parts of a plant?</u>
The Tiny Seed PLANTS	NC14 – • 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. Famous scientist: Mr Bowman

	KNOWLEDGE • Parts of a plant • Types of common flowers/plants • Pupils should use the local environment throughout the year to explore and answer questions about plants growing in their habitat. Where possible, they should observe the growth of flowers and vegetables that they have planted. SKILLS • Observing closely, perhaps using magnifying glasses. • Comparing and contrasting familiar plants. • Describing how they were able to identify and group them, and • Drawing diagrams showing the parts of different plants including trees. Working scientifically: Identify and classify VOCABULARY branches, trunk, leaves, flowers (blossom) petals, fruit, roots, bulb, seed, stem,				
SUMMER 2 Just the one Bear TRADITIONAL TALES	SCIENCE UNIT: PLANTS NC14 – • 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. Famous scientist: Mr Bowman				
	<table border="1"> <tr> <td data-bbox="453 1084 975 1675"> KNOWLEDGE • Plants in different habitats e.g. cactus, seaweed, pine trees. • They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem). </td><td data-bbox="975 1084 1511 1675"> SKILLS • Keeping records of how plants have changed over time, for example the leaves falling off trees and buds opening. • Comparing and contrasting what they have found out about different plants. Working scientifically: Research </td></tr> <tr> <td colspan="2" data-bbox="453 1675 1511 1792"> VOCABULARY cactus, habitats, evergreen & deciduous trees, fruit and vegetables, moss, seaweed, jungle, desert, forest. </td></tr> </table>	KNOWLEDGE • Plants in different habitats e.g. cactus, seaweed, pine trees. • They should become familiar with common names of flowers, examples of deciduous and evergreen trees, and plant structures (including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem).	SKILLS • Keeping records of how plants have changed over time, for example the leaves falling off trees and buds opening. • Comparing and contrasting what they have found out about different plants. Working scientifically: Research	VOCABULARY cactus, habitats, evergreen & deciduous trees, fruit and vegetables, moss, seaweed, jungle, desert, forest.	
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VOCABULARY cactus, habitats, evergreen & deciduous trees, fruit and vegetables, moss, seaweed, jungle, desert, forest.					

YEAR 2

Working scientifically: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying
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- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions.

AUTUMN 1	SCIENCE UNIT: ANIMALS INCLUDING HUMANS – How do different animals grow?
Troll Swap TRADITIONAL TALES	NC14 – • 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. Famous scientist: Zoo keeper KNOWLEDGE • Pupils should be introduced to the basic needs of animals for survival (humans can be a focus for later in the year). • They should also be introduced to the process of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs. The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep - process of reproduction in animals (growth – egg, chick, chicken etc.) looking at real life frogspawn. SKILLS • Observing (real life), through video or first-hand observation and measurement, how different animals grow; • Asking questions about what things animals need for survival suggesting ways to find answers to their questions. Working scientifically: Research and observation over time VOCABULARY survival, water, air (oxygen), food, adult, baby, offspring, kitten, calf, puppy, foal Exercise, hygiene, baby, toddlers, timeline.
AUTUMN 2	SCIENCE UNIT: LIVING THINGS AND THEIR HABITATS – How does a food chain work?
The Owl Who Was Afraid	NC14 – • 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. Famous scientist: Owl of prey expert

	KNOWLEDGE • Develop knowledge of habitats and mini beasts? • Learning about food chains including for humans. • Pupils should be introduced to the idea that all living things have certain characteristics that are essential for keeping them alive and healthy. • Pupils should be introduced to the terms 'habitat' (a natural environment or home of a variety of plants and animals) and 'micro-habitat' (a very small habitat, for example for woodlice under stones, logs or leaf litter). • Pupils should compare animals in familiar habitats with animals found in less familiar habitats, for example, on the seashore, in woodland, in the ocean, in the rainforest. SKILLS • Sorting and classifying things as to whether they are living, dead or were never alive. • Recording their findings using charts • Describing how they decided where to place things, • Exploring questions such as: 'Is a flame alive? Is a deciduous tree dead in winter?' • Talking about ways of answering their questions. • Constructing a simple food chain that includes humans (e.g. grass, cow, human); • Describing the conditions in different habitats and micro-habitats (under log, on stony path, under bushes); • Finding out how the conditions affect the number and type(s) of plants and animals that live there. Working scientifically: Identify and classify and pattern seeking VOCABULARY living, dead, habitat, micro-habitat energy, food chain, prey, predator woodland, pond, desert.
SPRING 1	<u>SCIENCE UNIT: USE OF EVERYDAY MATERIALS – How do different materials change? (some materials can be changed and some cannot - can you bend metal, break glass etc.)</u>
Dragon Machine	NC14 – • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses • compare how things move on different surfaces. • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching Famous scientist: Builder/Engineer

	KNOWLEDGE - Knowing different materials and their suitability - Manmade and natural materials - Materials can be used for more than one thing SKILLS - Focus on suitability and purpose of different materials - How can objects be changed? (by bending, squashing... etc) - Identify and classify uses of everyday materials Working scientifically: Identify and classify and fair testing VOCABULARY As for Y1 + stiff, shiny, dull, rough, smooth, waterproof, absorbent, transparent, opaque, brick, fabric, foil, squashing, bending, twisting, stretching, elastic, brick, rock, paper
SPRING 2	<u>SCIENCE UNIT: ANIMALS INCLUDING HUMANS - What does a healthy human look like?</u> NC14 – - 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. Famous scientist: School nurse/sports coaches
My Name is not Refugee	KNOWLEDGE - Pupils should be introduced to the basic needs of animals for survival. Basic human needs for survival – water, food, air, shelter, warmth etc. - Animals are humans and a link to whole school refugee theme. SKILLS - Observing (real life), through video or first-hand observation and measurement, how different animals grow. - Asking questions about what things animals need for survival suggesting ways to find answers to their questions. - How does exercise affect our bodies? - Ask questions to get answers. - Importance of types of food. Working scientifically: Observing over time and fair testing VOCABULARY Survival, water, air, (oxygen) food, adult, baby, offspring, kitten, calf, puppy, foal Exercise, hygiene
SUMMER 1	<u>SCIENCE UNIT: PLANTS – What happens after you plant a seed?</u> NC14 – - 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.
The Last Wolf	

	Famous scientist: Alan Titchmarsh KNOWLEDGE • Life cycle of a seed → plant • What do plants need to grow and stay healthy? • Life cycle of a plant – they are living but eventually die • Understanding of germination, reproduction and growth in plants SKILLS • Observe growing of a bulb (local environments) • Recording of findings Working scientifically: Observation over time VOCABULARY Seeds, bulb, water, light, temperature, growth (revise Y1)
SUMMER 2 Major Glad, Major Dizzy	<u>SCIENCE UNIT: USE OF EVERYDAY MATERIALS – What materials are used for toys and why? E.g. compare an action figure or teddy bear</u> NC14 – • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses • compare how things move on different surfaces. • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching Famous scientist: Builder/Engineer KNOWLEDGE • Knowing different materials and their suitability • Manmade and natural materials • Materials can be used for more than one thing SKILLS • Knowing different materials and their suitability • Manmade and natural materials • Materials can be used for more than one thing Working scientifically: Research and identify and classify VOCABULARY As for Y1 + stiff, shiny, dull, rough, smooth, waterproof, absorbent, transparent, opaque, brick, fabric, foil, squashing, bending, twisting, stretching, elastic, brick, rock, paper

National Curriculum Key stage 2

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.

YEAR 3

Working scientifically

- asking relevant questions and using different types of scientific enquiries to answer them
- 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
- 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
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

AUTUMN 1

SCIENCE UNIT: ANIMALS INCLUDING HUMANS – How does your height have an impact on the size of your bones?

Seal Surfer

NC14 –

- 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.

Famous scientist: Dr. Winston Kim (surgeon)/or a dietician

	KNOWLEDGE • Health is influenced by nutrition and exercise (YR2 look at simple balanced diet) • Clean air/water • Identifying and grouping animals with and without skeletons. • Observing and comparing their movement. • Exploring ideas about what would happen if humans did not have skeletons. SKILLS • Research food groups, health benefits and implications • Compare diets of different animals and group them on what they eat (revisit omnivore and herbivore from Y1) • Design healthy meal (complete during DT in Autumn 2) Working scientifically: Pattern seeking and observation over time VOCABULARY Bones, muscles, skull, ribs, skeleton, support, protection, movement, herbivore, carnivore, omnivore, teeth, canine, incisor, molar
AUTUMN 2	<u>SCIENCE UNIT: FORCES AND MAGNETS – How does a surface impact on magnetic property?</u>
Winter's Child	NC14 – • compare how things move on different surfaces • notice that some forces need contact between 2 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 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing. Famous scientist: Mr hall (or Thales of Miletus)

	KNOWLEDGE • The impact of the texture of surfaces against one another creates a varying levels of friction • Some materials are magnetic and some are not – what are they? • Magnetic force can act at a distance • Magnets have two poles • Most forces require direct contact – magnetism does not • Names of different magnets – bar, horseshoe, button, ring SKILLS • Comparing how different things move and grouping them. • Raising questions and carrying out tests to find out how far things move on different surfaces. • Gathering and recording data to find answers to their questions. • Exploring the strengths of different magnets and finding a fair way to compare them. • Sorting materials into those that are magnetic and those that are not. • Looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another. • Identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets. Working scientifically: Fair testing and pattern seeking VOCABULARY Force, push, pull, contact, magnetic, attract, repel, poles (north / south) Friction, resistance
SPRING 1	<u>SCIENCE UNIT: ROCKS – Are all rocks the same?</u> NC14 –
Stone Age Boy	• 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. Famous scientist: Geologist (university)

	KNOWLEDGE • Knowing the three main rock types. • 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. • Rocks and soils can feel and look different. • Rocks and soils can be different in different places/environments. SKILLS • Observing rocks, including those used in buildings and gravestones. • Exploring how and why they might have changed over time. • Using a hand lens or microscope to help them. • Identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. • Research and discuss the different kinds of living things whose fossils are found in sedimentary rock. • Explore how fossils are formed. • Explore different soils. • Identify similarities and differences between them. • Investigate what happens when rocks are rubbed together or what changes occur when they are in water. • Raise and answer questions about the way soils are formed. Working scientifically: Fair testing and identify and classify VOCABULARY Sandstone, limestone, granite, marble, pumice, slate, crystals, properties, permeable / impermeable, hardness, sedimentary, igneous, metamorphic, fossils, soil, organic matter, humus
SPRING 2	WELCOMING NEWCOMERS SCIENCE UNIT: LIGHT – What are shadows and how are they formed?
The Silence Seeker	• NC14 - recognise that shadows are formed when the light from a light source is blocked by a solid object • find patterns in the way that the size of shadows change. KNOWLEDGE • Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them answer questions about how light behaves. SKILLS • Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes. VOCABULARY Light, dark, shadows

SUMMER 1	RIVERS SCIENCE UNIT: LIGHT – How does light help us see? NC14 – • 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 •
Journey	KNOWLEDGE • They should think about why it is important to protect their eyes from bright lights. They should look for, and measure shadows and find out how they are formed and what might cause shadows to change. SKILLS • Looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes. VOCABULARY Light, dark, shadows, blocking, mirror, reflect, reflective, reflection,
SUMMER 2	ANCIENT CIVILIZATIONS SCIENCE UNIT: PLANTS
Zeraffa Giraffe	NC14 – • 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.

	KNOWLEDGE • Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. • They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction. SKILLS • Comparing the effect of different factors on plant growth, for example the amount of light, the amount of fertiliser; • Discovering how seeds are formed by • Observing the different stages of plant cycles over a period of time; • Looking for patterns in the structure of fruits that relate to how the seeds are dispersed. • Observing how water is transported in plants, for example, by putting cut, white carnations into coloured water. • Observing how water travels up the stem to the flowers. VOCABULARY Air, light, water, soil, nutrients, reproduction, seed formation, dispersal, germination, pollination, transportation, species, location (photosynthesis)
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YEAR 4

Working scientifically • asking relevant questions and using different types of scientific enquiries to answer them • 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 • 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 • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.	
AUTUMN 1	SCIENCE UNIT: ANIMALS INCLUDING HUMANS – How do humans digest food?
Gorilla	NC14 – • 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. KNOWLEDGE • Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them understand their special functions. • Understanding the different types of teeth, their functions and how to look after them. • Structure of a single tooth e.g. enamel, root, crown SKILLS • Comparing the teeth of carnivores and herbivores. • Suggesting reasons for differences. • Finding out what damages teeth and how to look after them. • Drawing and discussing their ideas about the digestive system e.g. sculpting with playdough. • Comparing them with models or images e.g. dummy. VOCABULARY Mouth, tongue, teeth, canine, incisor, molar, oesophagus, stomach, small intestine, large intestine, herbivore, carnivore, omnivore, enamel, root
AUTUMN 2 Leon & the Place Between	THE CIRCUS SCIENCE UNIT: ELECTRICITY – How do you set up a working circuit? NC14 – • 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.

	KNOWLEDGE - Pupils should construct simple series circuits, trying different components, for example, bulbs, buzzers and motors, and including switches, and use their circuits to create simple devices. Pupils should draw the circuit as a pictorial representation, not necessarily using conventional circuit symbols at this stage; these will be introduced in Year 6. - Pupils might use the terms current and voltage, but these should not be introduced or defined formally at this stage. Pupils should be taught about precautions for working safely with electricity. SKILLS - Observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit. VOCABULARY Cells (batteries) wires, switches, circuit, series (parallel, buzzers, bulbs, Mains electricity insulators, conductors
SPRING 1	<u>SCIENCE UNIT: SOUND – How does sound travel?</u> NC14 –
Escape from Pompeii	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 KNOWLEDGE - Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways. SKILLS - Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. - They might make ear muffs from a variety of different materials to investigate which provides the best insulation against sound. - They could make and play their own instruments by using what they have found out about pitch and volume. VOCABULARY Volume, vibration, sound wave, loud, soft, high pitch, low pitch, tone, speaker,

	(amplitude, frequency)
SPRING 2	SCIENCE UNIT: SOUND – Why can I hear my echo in a cave?
Wisp	NC14 – • 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 KNOWLEDGE Pupils should explore and identify the way sound is made through vibration in a range of different musical instruments from around the world; and find out how the pitch and volume of sounds can be changed in a variety of ways. SKILLS • Finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes or elastic bands of different thicknesses. • They might make ear muffs from a variety of different materials to investigate which provides the best insulation against sound. • They could make and play their own instruments by using what they have found out about pitch and volume. VOCABULARY Volume, vibration, sound wave, loud, soft, high pitch, low pitch, tone, speaker, (amplitude, frequency)
SUMMER 1	SCIENCE UNIT: STATES OF MATTER – How can I change states of matter?
When the Giant Stirred	NC14 – • 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. KNOWLEDGE • Pupils should explore a variety of everyday materials and develop simple descriptions of the states of matter (solids hold their shape; liquids form a pool not a pile; gases escape from an unsealed container). • Pupils should observe water as a solid, a liquid and a gas and should note the changes to water when it is heated or cooled. SKILLS • Grouping and classifying a variety of different materials. • Exploring the effect of temperature on substances such as chocolate, butter, cream (for example, to make food such as chocolate crispy cakes and ice-cream for a party). • Researching the temperature at which materials change state, for example, when iron melts or when oxygen condenses into a liquid. • Observing and recording evaporation over a period of time, such as a puddle in the playground or washing on a line. • Investigating the effect of temperature on washing drying or snowmen melting. VOCABULARY Solid, liquid, gas, temperature, heating, freezing point, boiling point, particles, evaporation, condensation, thermometer, thermal insulation
SUMMER 2 Where the Forest Meets the Sea	RAINFORESTS <u>SCIENCE UNIT: ALL LIVING THINGS – How can the change in an environment affect the living things within it?</u> NC14 – • 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.

	KNOWLEDGE • Pupils should use the local environment throughout the year to raise and answer questions that help them to identify and study plants and animals in their habitat. They should identify how the habitat changes throughout the year. • Pupils should explore possible ways of grouping a wide selection of living things that include animals and flowering plants and non-flowering plants, • Pupils could begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds, and mammals; and invertebrates into snails and slugs, worms, spiders, and insects. SKILLS • Using and making simple guides or keys [sorting, grouping, comparing, classifying] to explore and identify local plants and animals. • Making a guide [sorting, grouping, comparing, classifying] to local living things. • Raising and answering questions based on their observations of animals. • What they have found out about other animals that they have researched. VOCABULARY Fish, Reptiles, Mammals, Birds, Amphibians, snails, slugs, worms, spiders, insects, environment, habitat, vertebrate, invertebrate, exoskeleton, adaptation
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YEAR 5

Working scientifically • 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 • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and 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 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.	
AUTUMN 1	SCIENCE UNIT: FORCES – How does a parachute work? How does the size of a parachute and mass of object affect parachute movement? NC14 – • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
Queen of the Falls	

	• 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 KNOWLEDGE • 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. • There are different types of forces (push, pull, friction, air resistance, water resistance, magnetic forces, gravity). • Gravity can act without direct contact between the Earth and an object. • Friction, air resistance and water resistance are forces which slow down moving objects. • Friction, air resistance and water resistance can be useful or unwanted. • The effects of friction, air resistance and water resistance can be reduced or increased for a preferred effect. • More than one force can act on an object simultaneously (either reinforcing or opposing each other). • How did Newton and Galileo develop the theory of gravitation? SKILLS • Exploring falling paper cones or cup-cake cases. • Designing and making [exploring] a variety of parachutes. • Carrying out fair tests to determine which designs are the most effective. • Exploring resistance in water by making and testing boats of different shapes. • Design and make artefacts that use simple levers, pulleys, gears and/or springs and explore their effects. • Pupils should explore the effects of friction on movement and find out how it slows or stops moving objects, for example, by observing the effects of a brake on a bicycle wheel. (Link to D&T balloon cars.) VOCABULARY Force, friction, newton, gravity, newton meters, air/water resistance.
AUTUMN 2	TRADITIONAL TALES: WITCHES, THE TUDORS & THE STUARTS SCIENCE UNIT: ANIMALS INCLUDING HUMANS – How do humans
Lost Happy Endings	<u>develop over time?</u> NC14 – • describe the changes as humans develop to old age.

	• KNOWLEDGE • Describe the changes as humans develop to old age. • MRS NERG • Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete. • SKILLS • Researching the gestation periods other animals and comparing them with humans. • By finding out and recording the length and mass of a baby as it grows. VOCABULARY Foetus, embryo, womb, gestation, baby, toddler, teenager, puberty, adolescence, adult, elderly, development, growth.
SPRING 1	ANCIENT GREEKS <u>SCIENCE UNIT: LIVING THINGS AND THEIR HABITAT – Show and compare the life cycles of two different animals e.g. chick and frog, plant and chick (could be done through storyboard or written)</u>
Arthur and the Golden Rope	NC14 – • 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. KNOWLEDGE • 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. • They should observe life-cycle changes in a variety of living things, for example plants in the vegetable garden or flower border, and animals in the local environment. They should find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall. • Different types of reproduction, including sexual and asexual reproduction in plants and sexual reproduction in animals. SKILLS • Observing and comparing the life cycles of plants and animals in their local environment with other plants and animals around the world (in the rainforest, in the oceans, in desert areas and in prehistoric times). • Asking pertinent questions. • Suggesting reasons for similarities & differences. • They might try to grow new plants from different parts of the parent plant, for example, seeds, stem and root cuttings, tubers, bulbs. • Observe changes in an animal over a period of time (for example, by hatching and rearing chicks). • Comparing how different animals reproduce and grow. VOCABULARY

	Reproduction, mammal, bird, insect, amphibian, reptile, offspring, complete/incomplete metamorphosis, hatch, gestation.
SPRING 2	WOMEN WHO CHANGED THE WORLD <u>SCIENCE UNIT: SCIENCE UNIT: EARTH AND SPACE – write a fact file on an inspirational female scientist/astronaut and her impact on astronomy</u> <u>Women in space – Link to aspirations (one of our four cornerstones)</u> • To empower all backgrounds and genders • To learn from well-known scientists who have had high aspirations
Malala's Magic Pencil	KNOWLEDGE • Women have played a major part in space exploration • Specific knowledge of a range of female scientists/astronauts (e.g. Valentina Tereshkova – first woman in space aged 26) • https://www.mnn.com/leaderboard/stories/10-female-astronomers-everyone-should-know • Today, these women are receiving recognition for their achievements and contributions to science. SKILLS • Research female scientists and astronauts and their role in history/space. • Debate or explore their lack of recognition in the past. • Consider impact of female scientists on Earth's history and our daily lives. VOCABULARY Astronaut, space, travel, NASA, space race, shuttle, orbit, satellite, space station, astronomer, astronomy.
SUMMER 1	EARTH & SPACE <u>SCIENCE UNIT: EARTH AND SPACE – can you prove that the Earth is travelling around the sun? E.g. create a sundial, use shadow sticks, torches.</u>
The Darkest Dark	NC14 –

	• 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. KNOWLEDGE • 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 Sun/Earth/Moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night. • The Earth spins once around its own axis in 24 hours, giving day and night. • The Earth orbits the Sun in one year. • We can see the Moon because the Sun's light reflects off it. • The Moon orbits the Earth in approximately 28 days and changes to the appearance of the moon are evidence of this. • The Sun appears to move across the sky from East to West and this causes shadows to change during the day. • Changes to shadow length over a day or changes to sunrise and sunset times over a year are evidence supporting the movement of the Earth. • Research Spencer Silver and Ruth Benerito SKILLS • Comparing the time of day at different places on the Earth through internet links and direct communication. • Creating simple models of the solar system. • Finding out why some people think that structures such as Stonehenge might have been used as astronomical clocks. VOCABULARY Earth, sea, sun, moon, axes, planets, solar system, star, constellation, phases of the moon, waxing, waning.
SUMMER 2 Leather Shoe Charlie	INDUSTRIAL MANCHESTER <u>SCIENCE UNIT: PROPERTIES AND CHANGES OF MATERIALS – what effect do various materials have on the efficiency of a circuit as measured by heat source and brightness of bulb?</u> <u>Explain the differences between reversible and irreversible changes and give examples.</u> NC14 – • 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.

KNOWLEDGE

- Heat always moves from hot to cold.
- Some materials (insulators) are better at slowing down the movement of heat than others.
- Objects/liquids will warm up or cool down until they reach the temperature of their surroundings.
- Carry out tests to answer questions such as 'Which materials would be the most effective for making a warm jacket, for wrapping ice cream to stop it melting, or for making blackout curtains?'
- Compare materials in order to make a switch in a circuit.
- Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.
- Changes can occur when different materials are mixed.
- Some material changes can be reversed and some cannot.
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SKILLS

- 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.
- Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.
- Compare a variety of materials and measure their effectiveness (e.g. hardness, strength, flexibility, solubility, transparency, thermal conductivity, electrical conductivity).
- Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
- Demonstrate that dissolving, mixing and changes of state are reversible changes.
- Distinguish between melting and dissolving.
- Mixtures of solids (of different particle size) can be separated by sieving.
- Mixtures of solids and liquids can be separated by filtering if the solid is insoluble (un-dissolved).
- Evaporation helps us separate soluble materials from water.

	- Changes to materials can happen at different rates (factors affecting dissolving, factors affecting evaporation – amount of liquid, temperature, wind speed). - Freezing, melting and boiling changes can be reversed (revision from YR4). VOCABULARY Hardness, solubility, mixing, dissolving, melting, solution, solute, transparency, conductivity, magnetic, filter, filtration, evaporation, condensation, reacting / reactants.
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YEAR 6

Working scientifically - 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 - recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and 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 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.	
AUTUMN 1	WORLD WAR 1 & 2 SCIENCE UNIT: ELECTRICITY – What is the effect of changing one component at a time in a circuit? NC14 – - 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
Star of Fear, Star of Hope	

	• use recognised symbols when representing a simple circuit in a diagram. KNOWLEDGE • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Use recognised symbols when representing a simple circuit in a diagram. Working safely with electricity SKILLS • 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. • Circuit diagrams can be used to construct a variety of more complex circuits predicting whether they will 'work'. (Build on Y4 by constructing simple circuits in a diagram by using recognized symbols) VOCABULARY Cells, batteries, wires, bulbs, switches, buzzers, circuit, series, conductors, insulators, amps, volts.
AUTUMN 2	ECOLOGY/CONSERVATION SCIENCE UNIT: LIVING THINGS AND THEIR HABITATS – <u>What do you need to include in a classification key for an unfamiliar animal?</u>
Can we Save the tiger?	NC14 – • 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.

	KNOWLEDGE • Characteristics of micro-organisms, plants and animals • Living things can be grouped into micro-organisms, plants and animals. • Vertebrates can be grouped as fish, amphibians, reptiles, birds and mammals. • Invertebrates can be grouped as snails and slugs, worms, spiders and insects. • Who was Carl Linnaeus? SKILLS • 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. • To be able to follow/create a classification key • (Build on Y4 by looking at the classification system in more detail. Introduce broad groupings) VOCABULARY Classification, mammals, birds, amphibians, fish, reptiles, insects, vertebrates/invertebrates, micro-organisms, bacteria, fungi.
SPRING 1	MULTICULTURALISM SCIENCE UNIT: EVOLUTION – How are animals adapted to their environments? What are the advantages and disadvantages of specific evolutionary traits, for example having two feet instead of four, short beak instead of long beak etc.?
Jemmy Button The Island	NC14 – • 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.

	KNOWLEDGE • 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. • Who were Charles Darwin, Alfred Wallace and Mary Anning? • Characteristics are passed from parent to offspring through genes. Consider dogs to show this. SKILLS • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. • Identify which characteristics would be beneficial to the offspring. VOCABULARY Evolution, fossils, adaptation, characteristics, reproduction, genetics.
SPRING 2	DISPLACEMENT & MIGRATION SCIENCE UNIT: ANIMALS INCLUDING HUMANS – How does the heart work within the body? How is this different when we exercise? <u>Record scientifically in graph form.</u> • NC14 - 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.
The Day War Came	

	KNOWLEDGE • 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. • Describe the ways in which nutrients and water are transported within animals, including humans. • The heart is a major organ and is made of muscle. • The heart pumps blood around the body through vessels and this can be felt as a pulse. • The heart pumps blood through the lungs in order to obtain a supply of oxygen. • Blood carries oxygen/essential materials to different parts of the body. • During exercise muscles need more oxygen so the heart beats faster and our breathing and pulse rates increase. • Animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete. • An adequate, varied and balanced diet is needed to help us grow and repair our bodies (proteins), provide us with energy (fats and carbohydrates) and maintain good health (vitamins and minerals). • Tobacco, alcohol and other 'drugs' can be harmful. All medicines are drugs, not all drugs are medicines. SKILLS • Scientific research about the relationship between diet, exercise, drugs, lifestyle and health. • Observing/Measuring changes to breathing, heart beat and or pulse rates after exercise. VOCABULARY Heart, circulatory system, blood vessels, blood, organ, veins, arteries, valves, oxygenated, deoxygenated, exercise, pulse, respiration.
SUMMER 1	TROPICAL SEAS
Manfish	<u>SCIENCE UNIT: LIVING THINGS AND THEIR HABITATS - What do you need to include in a classification key for an unfamiliar plant?</u> NC14 – • 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.

	KNOWLEDGE - Plants can be grouped as flowering plants (incl. trees and grasses) and non-flowering plants (such as ferns and mosses). SKILLS - 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. VOCABULARY Classification, mammals, birds, amphibians, fish, reptiles, insects, vertebrates/invertebrates, micro-organisms, bacteria, fungi.
SUMMER 2	THE SKIES ABOVE SCIENCE UNIT: LIGHT – Devise a device to help you see around the
Sky Chasers	corner NC14 – 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 Sc6/4.1d use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them KNOWLEDGE - Recognise that light appears to travel in straight lines. - Explain that we see things because the light that travels from light sources to our eyes or from light sources to objects and then to our eyes. SKILLS - 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. - Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. - Deciding [observe/explore] where to place rear-view mirrors on cars. - Designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. - Investigating the relationship between light sources, objects and shadows by using shadow puppets. - Extend their experience [explore and observe] of light by looking at a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters (they do not need to explain why these phenomena occur).

	VOCABULARY
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Reflection, refraction, lens, light, spectrum, colour, prism, rainbow.