Science

By the end of Year 6 we want our pupils to:

- have a strong understanding of the world around them.
- acquire the specific skills and knowledge for them to work scientifically.
- understand and persevere with learning scientific processes.
- have an understanding and be curious of the implications of the use of science today and in the future.
- understand that the science that they are learning now can lead them to an aspirational career in science in the future.

Purpose of study

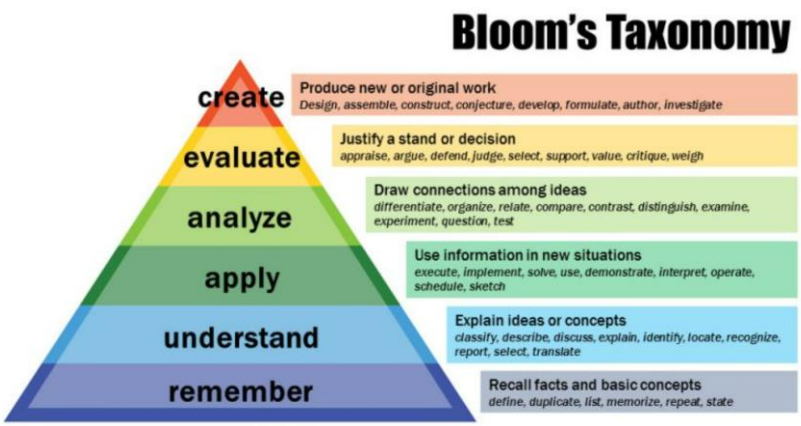
A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, 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.

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.

Developing Experts™



Pupils know more and remember more about:

- **substantive knowledge** e.g. the concept of a plant, the theory of evolution or the heliocentric model of our solar system
- **disciplinary knowledge** refers to what pupils need to know about how science establishes and refines scientific knowledge e.g. knowledge of biological classification, variables, models and measurement

Science Curriculum coverage from Preschool to Year 6

Year group	**Autumn**	**Spring**	**Summer**
Preschool	TBC	TBC	TBC
Foundation	Celebrations Autumn/Winter Our year in school	How have I changed since I was a baby? Winter/Spring Our Year in school	How has transport changed over time? What do we wear in different seasons? Spring/Summer Our Year in school
Year 1	Seasonal Changes All About me:Humans	All about Me: Animals Plants	Everyday Materials
Year 2	Habitats from around the world. Living things and habitats	Animals including humans: Life Cycle Plants	Use of everyday materials Animals including humans: Health and Survival.
Year 3	Rocks Stone Age	Animals including humans Plants	Light Forces and Magnets
Year 4	Classifying Living and their habitats Nature and the environment	Food and Digestion States of Matter	Sound Electricity
Year 5	Living things and habitats Properties of materials	Changes of materials Forces	Life Cycles Earth and Space
Year 6	Looking after the environment Living things and their environment Food and farming	Evolution and Inheritance Electricity World Trade	Light Animals including humans

Direct links to other curriculum areas within existing year group

Geography History

Progression of vocabulary

	Explanation	*Examples*	*Recommendation for teaching*
Tier 1	**Everyday** words encountered in everyday conversation	dog go happy drink phone play sad	These words do not necessarily need to be explicitly taught, especially in upper grades with native English speakers. *Note: Children with learning difficulties or an English as a Second Language background may still benefit from explicit teaching of some Tier 1 words.*
Tier 2	Words that are needed in an academic context, and provide access to more complex topics and discussions outside of the everyday. Words that are useful across **multiple topic and subject areas**.	relative vary formulate specificity accumulate calibrate itemise falsely description hypothesis misfortune dignified faltered distinctly resolve	**Teachers should explicitly teach these words,** to ensure they can develop their students' understanding and expression of complex ideas. **These words are useful for multiple purposes**, and their use and understanding reflect and mature understanding of academic language. Students should learn to use Tier 2 words in multiple contexts and for multiple purposes.
Tier 3	Words that are **relevant for specific subjects or content-areas**. Words that have distinct meanings and purposes, relevant to a specialised topic or discourse.	lava carburettor legislature circumference aorta polyglot sonata isosceles	**Students should learn these for the particular content-areas**, but should not be preferenced over more useful Tier 2 words. Students should learn to use Tier 3 words in the context of the specific subject matter where they are useful.

TIER 1					
Preschool					
EYFS	**Weather and Seasons**: rain, ice, cloud,wind,air,sky,snowflake,snowman,cold,yellow,blue,warm,bird **Animals:** tree, farm, pet, bird,mud,grass, build,farm, pig, cow,goat,horse,chicken, dinosaur **Food:** exercise,tooth,healthy,egg, chick, fox, milk, cream, cheese, butter, fruit, vegetables **Forces:** push, pull, press, suck, swing, sea, boat, ant, fly, ladybird, spider, snail, honey, worm **Plants:** seed, soil, water, plant **Senses:** eyes, ears, mouth, touch, taste, noise, sound, hearing,				
Y1	**Seasonal Changes** weather harvest compare changes grow	**All about me: humans** head body eyelash	**All about me:animals** fish bird pet wild	**Plants** plant tree soil supermarket fruit vegetable	**Everyday Materials** fabric wood plastic metal glass dull stiff float sink sponge soak umbrella

	chick warm sun	eyesight pupil ear tongue mouth sweet smell nose brain skin touch		farm flower bush		
Y2	**Habitats from around the world** earthworm desert lizard cactus pond	**Living things and their habitats** senses insect caterpillar frozen food	**Plants** Seeds bulbs growth plant healthy	**Animals including humans: life cycles** grow survive helpless caterpilla r frog	**Use of everyday materials** material property object brick bridge triangle stretchy elastic floppy bend twist squash stretch road	**Animals including humans: survival and health** food fat fresh food grow germs exercise
Y3	**Rocks** appearance texture		**Animals including humans** nutrition label carbohyd rate protein vitamin mineral balanced diet	**Plants** nutrients fertiliser nursery	**Light** light natural sunburn surface materials rays blocks shadow opposite direction length size shape closer further puppet	**Forces and magnets** texture tilt magnet bar-magnet horseshoe-magnet iron steel recycle compass magnetic needle magnetic-north direction
Y4	**Classifying Living things and their habitats.** threatened	**Nature and the environm ent** rainforest recycling	**Food and digestion** stomach tooth jaw gum	**States of matter** temperat ure thermom eter	**Sound** materials reflect absorb volume power	**Electricity** electricity batteries power battery wire bulb metal copper rubber switch control

		freshwater pure water protect	digestive system	melting	travel sound fade	
Y5	**Living things and their habitats** caterpillar reproduction pouch egg hatch living organism life cycle vertebrate warm-blooded	**Properties of materials** magnetic transparent degrees Celsius (°C) insulator hardness force iron steel stone mixture filtering sieving	**Changes of materials** mixture melting fuel oxygen compare product reaction predict acid bicarbonate of soda carbon dioxide	**Forces** weight parachute sink	**Earth and Space** season sundial shadow	**Life Cycles** mood swing develop lifestyle milk teeth growth spurt childhood constant
Y6	**Looking after the environment** weather prevent recycle landfill rubbish coal fuel habitat vulnerable	**Living things and their habitats** plant living organism habitat reproduction	**Evolution and inheritance** offspring habitat nutrition feature nutrients fossil tools	**Electricity** symbol circuit battery wires electricity brightness traffic light	**Light** light eye light-source symbol reflected shadow block opaque transparent plan sun-shade real life problem	**Animals including humans** microscope blood nutrient diet exercise painkiller drug absorb

TIER 2			
Preschool			
EYFS	**Weather and Seasons**: river,sail,flood,cool,raindrop **Animals:** living, non living, young,ocean,nest,lizard,museum **Food:** diet,lay,grain, flour **Forces:** sink, float, insect,beetle **Plants:** seed, stem, roots, weeds, sunlight **Senses:** trumpet, ripple, hearing,		

Y1	**Seasonal Changes** season spring summer autumn winter frost sleet temperature	**All about me: humans** limb joint sound odour taste flavour finger tips	**All about me:animals** amphibian reptile mammal feather warm-blooded backbone hatchling shelter veterinary natural	**Plants** Seed stem petal root weed daisy dandelion wild seasons branch tractor growth young plant adult plant	**Everyday Materials** material object property brick elastic natural man made factory rubber predict	
Y2	**Habitats from around the world** habitat environ-ment mate rainforest moisture trench Antarctic Arctic caribou narwhal tundra	**Living things and their habitats** survive shelter habitat producer consumer herbivore carnivore omnivore automated forklift truck refrigerated lorry canned	**Plants** life cycle thrive forest desert manure crop seedling energy	**Animals including humans: life cycles** life cycle independent adult toddler develop hatchling chick predict amphibian frogspawn tadpole froglet	**Use of everyday materials** force suitable obstacle structure construction hinder limit safety waterproof protective bound	**Animals including humans: survival and health** balance coordination survival shelter nutrition healthy survive vital non-essential prevent pre-cooked processed strength flexibility essential protein carbohydrate dairy vitamins balanced diet
Y3	**Rocks** igneous rocks intrusive igneous rock		**Animals including humans**	**Plants** potassium	**Light** artificial reflect	**Forces and magnets** force contact-force non-contact forces

	extrusive igneous rock crystals magma sedimentary rock metamorphic rock limestone marble sandstone fossil amber clay soil chalky soil sandy soil		portion energy	absorb reproduction vulnerable anchor sapling formation	source vitamin D exposure protection high visibility opaque sundial position cast	air resistance friction motion surface-resistance attract repel magnetism magnetic magnetic-field non-magnetic materials orienteering
Y4	**Classifying Living things and their habitats.** hide producer consumer prey predator	**Nature and the environment.** ecosystem Northern Hemisphere Southern Hemisphere marine sanctuaries conservation areas chemicals water treatment plant conserve endangered	**Food and digestion** small intestine large intestine absorb oesophagus saliva	**States of matter** matter solid liquid gas volume arranged cooled heated freezing reverse boiling absorb process	**Sound** eardrum signals source energy particles echo vacuum insulate defenders decibels decibel metre instruments orchestra energy particles	**Electricity** mains electricity appliance socket current complete circuit incomplete circuit non-renewable energy renewable energy wind turbines solar panels hydropower
Y5	**Living things and their habitats** metamorphosis amphibian larva pupa genes fledgling egg tooth endangered	**Properties of materials** pure substance evaporation conductive durable versatile thermal conduction molecules dissolve	**Changes of materials** evaporate reversible physical-change effervescence chemical change fair test variable control	**Forces** opposing water resistance buoyant friction resistance Newton meter	**Earth and Space** Solar System spherical astronomy axis poles hemisphere time-zone sundial	**Life Cycles** reproduce duration extreme breeding hormones midwife motor skills pregnant childhood dependent

			variable corrosion rusting irreversible		rocky planet gas planet moon	
Y6	**Looking after the environment** climate global warming climate change biodegrade council net zero renewable non-renewable greenhouse gases emissions industrial revolution fossil fuel combustion COP sustainability conference pledge species sensitive natural disaster	**Living things and their habitats** fern living organism conifer kingdom cell Latin bacteria fungi virus	**Evolution and inheritance** characteristic inherit variation environmental adaptation climate toxic predators pollinate Jurassic coast ancestor primate	**Electricity** circuit diagram current voltage voltmeter blown resistor variable resistor LED dimmer switch variable fair test timer-based closed electric circuit conductor insulator	**Light** prediction fair test variable table periscope angle mirror line of sight utilise translucent rotate direction	**Animals including humans** heart rate BPM pulse vessel valves concentration

TIER 3			
Preschool			

EYFS	**Weather and Season:** rainforest,rise,movement,sail,droplet, sleet,melt,arc,Spring, Summer, Autumn, Winter,seasons **Animals:** adult,habitat,desert,museum,meteorite,reptile **Food:** fuel **Forces:** force **Insects and invertebrates:** invertebrate, sap, greenfly **Plants:** nutrients, compost heap **Senses:** senses, vibration, reeds, aroma, odour, taste buds, saliva					
Y1	**Seasonal Changes** hibernate protect protection heatwave rainfall measuring record results graph	**All about me: humans** skeleton sign-language organ nostril nose hair vibration deafness	**All about me:animals** characteristic cold-blooded herbivore carnivore omnivore predator canines	**Plants** environment predict seedling observe	**Everyday Materials** opaque transparent polyester submerge buoyant absorbent waterproof	
Y2	**Habitats from around the world** microhabitat organism extinct climate endangered biodiversity deforestation poaching pollution plankton ocean ecosystem coral reef	**Living things and their habitats** nutrition reproduce excrete respire microhabitat fungi antennae suitable condition colony food chain life cycle nutrients rot	**Plants** compare predict investigate control-experiment method photosynthesis carbon dioxide oxygen glucose germination reproduction glucose pollination reproduction insulate adapt condition survive	**Animals including humans: life cycles** foetus womb offspring inherit gene resemble differences reproduction bar chart transformation larva chrysalis metamorphosis	**Use of everyday materials** mackintosh fluorescent merchant highway	**Animals including humans: survival and health** hygiene bacteria virus oxygen calcium nutrients
Y3	**Rocks** weathering		**Animals including humans**	**Plants** stunted	**Light** ultraviolet rays	**Forces and magnets**

	chemical weathering physical weathering biological weathering acid rain submerged erosion receding extinct sediment embedded decompose fragments		vertebrate invertebrate endoskeleton exoskeleton hydrostatic skeleton humerus ulna radius tibia fibula endoskeleton skull rib cage spine muscle contract hamstrings biceps diaphragm	chlorophyl stomata xylem photosynthesis UV light phloem stomata transpiration anther stigma style filament pollination pollen nectar seed dispersal pollinator germination	fluorescent reflective	
Y4	**Classifying Living things and their habitats.** tundra interdependence ecosystem food web	**Nature and the environment** migrate monsoon deforestation drought biodiversity fossil fuels pollution greenhouse gases emissions climate change sewage contaminate pesticides	**Food and digestion** peristalsis liver gall bladder incisors canines molars enamel plaque decay cavity fluoride ecosystem producer consumer prey food web tundra interdependence threatened	**States of matter** particle bond particle melting point sublimation deposition water vapour evaporation condensation water cycle precipitation surface runoff transpiration groundwater	**Sound** vibration medium waves amplitude pitch high pitch low pitch	**Electricity** circuit series circuit component cell voltage conductor insulator

Y5	**Living things and their habitats** asexual fertilisation tuber mammary glands placental mammal monotreme mammal marsupial embryo documentary naturalist primatologist natural sciences	**Properties of materials** pure substance solute insoluble soluble solvent substance saturation	**Changes of materials** pure substance solute solvent solution combustion extinguish smother	**Forces** gravity astronomy mass streamlined air resistance upthrust lubricant lever load pivot fulcrum pulley mechanism gear mesh rack and pinion bevel gear	**Earth and Space** terrestrial planet gas giant planets orbit heliocentric geocentric dwarf planet gnomon moon phase waxing waning eclipse	**Life Cycles** neurodegenerative foetus adolescent adolescence puberty gestation pregnant womb umbilical cord embryo trimester keratin elasticity cataracts hormones
Y6	**Looking after the environment** subsidy	**Living things and their habitats** classify microorganism mrs gren cell multicellular unicellular classification species domain protozoa microscopic mycelium ecosystem	**Evolution and inheritance** epiphytes Palaeontologist ichthyosaurus evolved extinct natural selection theory Homo sapien Neandertal	**Electricity** output control test systematically synchronised signal sensor indicating resistor	**Light** scientific diagram optical phenomena disperse spectrum refraction	**Animals including humans** circulatory system atrium ventricle artery vein capillary blood-plasma platelet white-blood-cell red-blood-cell diffusion osmosis stimulant depressant hallucinogens

Progression of Substantive Knowledge in Science from Preschool to Y6

Pre-School Understanding the World: The Natural World	I know how to use my senses to explore natural objects I know how to explore collections of materials with similar or different properties I know how to talk about what I can see I know how to plant seeds and care for growing plants I know the key features of a life cycle of a plant and an animal I am beginning to understand the need to respect and care for the natural environment and all living things I know about the different forces that I can feel I know about the differences between materials and can notice changes				
Foundation Stage Understanding the World: The Natural World	I know how to explore the natural world around me I know how to describe what I can see, hear and feel outside I know about the effect of the changing seasons around me				
Y1	**Seasonal Change** I know the changes across the 4 seasons (spring, summer, autumn, winter). I know the weather associated with the seasons and how day length varies.	**All about me: humans** I know the names, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	**All about me: animals** I know the names of a variety of common animals including fish, amphibians, reptiles, birds and mammals. I know the names of a variety of common animals that are carnivores, herbivores and omnivores. I know to describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets).	**Plants** I know the names of a variety of common and wild and garden plants, including deciduous and evergreen trees. I know the basic structure of a variety of common flowering plants, including trees.	**Everyday Materials** I know that an object and the material from which it is made are different things. I know the names of a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. I know the simple physical properties of a variety of everyday materials.

Y2	**Habitats from around the world** I know 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. I know that 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.	**Living things and habitats** I know the differences between things that are living, dead, and things that have never been alive. I know 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. I know the names of a variety of plants and animals in their habitats, including microhabitats. I know that 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.	**Plants** I know how seeds and bulbs mature into plants. I know that plants need water, light and a suitable temperature to grow and stay healthy.	**Animals including humans: life cycles** I know that animals, including humans, have offspring which grow into adults.	**Use of everyday materials** I know that materials can be identified and compared based on the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. I know that the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**Animals including humans: health and survival** I know the basic needs of animals, including humans, for survival (water, food and air). I know the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
Y3	**Rocks** I know that different kinds of rocks can be grouped together on the basis of their		**Animals including humans**	**Plants** I know the functions of different	**Light** I know that I need light in order to see	**Forces and magnets** I know that things move on

	appearance and simple physical properties. I know that fossils are formed when things that have lived are trapped within rock. I know that soils are made from rocks and organic matter.		I know 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. I know that humans and some other animals have skeletons and muscles for support, protection and movement.	parts of flowering plants: roots, stem/trunk, leaves and flowers. I know 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. I know which water is transported within plants. I know that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	things and that dark is the absence of light. I know that light is reflected from surfaces. I know that light from the sun can be dangerous and that there are ways to protect my eyes. I know that shadows are formed when the light from a light source is blocked by an opaque object.	different surfaces. I know that some forces need contact between 2 objects, but magnetic forces can act at a distance. I know that magnets attract or repel each other and attract some materials and not others. I know that magnets have 2 poles.
Y4	**Classifying Living things and their habitats.** I know how to construct and interpret a variety of food chains, identifying producers, predators	**Nature and the environment** I know that classification keys to help group, identify and name a variety of living things in their local and wider environment. I know that environments	**Food and digestion** I know the simple functions of the basic parts of the digestive system in humans. I know the different types of teeth in humans and	**States of matter** I know the part played by evaporation and condensation in the water cycle and associate the rate of evaporation	**Sound** I know that sounds are made, associating some of them with something vibrating. I know that vibrations from sounds travel through a	**Electricity** I know common appliances that run on electricity. I know what to do to construct a simple series electrical circuit. I know the names of the basic parts of a

	and prey. I know that living things can be grouped in a variety of ways**.**	can change and that this can sometimes pose dangers to living things.	their simple functions.	with temperature.	medium to the ear. I know that sounds get fainter as the distance from the sound source increase.	circuit, including cells, wires, bulbs, switches and buzzers. I know 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. I know that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. I know some common conductors and insulators, and associate metals with being good conductor.
Y5	**Living things and their habitats** I know the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I know the life process of reproductio n in some	**Properties of materials** I know, 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.	**Changes of materials** I know 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.	**Forces** I know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I know the effects of air resistance, water resistance and friction,	**Earth and Space** I know that the movement of the Earth and other planets is relative to the sun in the solar system. I know the movement of the moon is relative to the Earth. I know that the sun, Earth and moon as	**Life Cycles** I know the changes as humans develop to old age.

	plants and animals.		I know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution**.** I know that mixtures might be separated, including through filtering, sieving and evaporating. I know that dissolving, mixing and changes of state are reversible changes.	that act between moving surfaces. I know that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	approximately spherical bodies. I know that the idea of the Earth's rotation is to explain day and night and the apparent movement of the sun across the sky.	
Y6	**Looking after the environment** I know that environments can change and that this can sometimes pose dangers to living things.	**Living things and their habitats** I know that living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. I know the reasons for classifying plants and animals based on specific characteristics.	**Evolution and inheritance** I know that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. I know that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.	**Electricity** I know that the brightness of a lamp or the volume of a buzzer is associated with the number and voltage of cells used in the circuit. I know the reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off	**Light** I know that light appears to travel in straight lines. I know that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. I know that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.	**Animals including humans** I know the names of the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. I know the impact of diet, exercise, drugs and lifestyle on the way their bodies function. I know the ways in which nutrients and water are

			I know that animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	position of switches. I know the symbols when representing a simple circuit in a diagram.	I know that light travels in straight lines to explain why shadows have the same shape as the objects that cast them**.**	transported within animals, including humans.

Progression of Disciplinary Knowledge in Science from Preschool through to Year 6

Do children have opportunities to …

Pre school	**Explore** how things work? Plant seeds and **observe** growing plants? **Understand** the key features of the life cycle of a plant and animal Begin to **understand** the need to respect and care for the natural environment and all living things? **Explore and talk about the** different forces that they feel? **Talk** about the differences between materials and the changes that they **notice?**			
Foundation	**Explore** the natural world around them? **Describe** what they **see, hear and feel** outside? **Compare and contrast** different environments from the one we live in? **Observe and understand** the effect of the changing seasons on the natural world around them?			
Year group	**Science Methods**	**Apparatus and techniques including measurements**	**Data analysis and presentation.**	**How science uses evidence to develop explanations**
Year 1 Seasonal Change	**Observe** over different periods of the year how the world around them changes.	**Observe** and take measurements using their senses about how the seasons change. **Measure** with support, using a thermometer.	**Compare and contrast** temperatures at different times of the year.	**Discuss** the changes that they see in the seasons in the environment.
All About Me: Humans	**Investigate** simple tests to explore the different senses. **Consider** different questions to ask about how the body parts and senses work.	**Measure** using rulers, recordings on the ipads and observations.	**Compare and contrast** how the different senses are used in the body.	**Discuss** the findings from the experiments and what we have learnt.
All about Me: Animals	**Investigate** how we can classify animals into different groups. **Consider** the different questions we can ask to put the animals in different groups e.g. Does this animal have a backbone? Does this animal have scales?	**Observe** the differences between the different types of animals.	**Organise** and sort animals into different groups based on their structure.	**Discuss** the findings from the experiments and what we have learnt.
Plants	**Observe** over time the growth of flowers from seeds and bulbs. **Ask questions** with support, to find the	**Measure** using hand held magnifying glasses the parts of plants.	**Present** classifications in tables or Venn diagrams.	**Discuss** the findings from the experiments and what we have learnt.

	answer to an experiment, e.g. what will a seed need to grow? **Organise** and sort plants into different groups.	**Measure** how tall their plants grow with a ruler.		
Everyday materials	**Ask** questions, with support, to identify different materials, e.g. is this smooth or bumpy? Is it hard or soft? **Organise** and sort materials into different groups.	**Measure** using a measuring cylinder how much water is absorbed by different cloths. **Measure** using a torch, how reflective an object is.	**Compare and contrast** which materials would be best to use.	**Discuss** the findings from experiments and why certain materials are used in everyday life, e.g. bricks are hard and sturdy so the buildings will not fall down easily.
Year 2 Habitats from around the world	**Ask** questions to identify the different habitats that animals live in.	**Observe** the local environment to identify the different habitats.	**Compare and contrast** the differences between habitats.	**Understand** that animals are suited to live in specific habitats based on the answers to their questions.
Living things and habitats	**Ask** questions to understand if something is living or dead. **Ask simple questions to find out where animals live, e.g. where do birds live?** **ASk** simple questions to find out about what animals eat.	**Observe** closely living matter in the local environment. **Research** using the internet or texts to find out about the food animals eat.	Compare and contras**t things that are living and dead.** Name a variety of different plants and living things. **Gather** data to find out the food that animals eat.	Explain how animals find food to eat. **Describe** the foods that animals eat. **Report** findings that answer simple questions.
Plants	Identify and classify different seeds and bulbs. Measure and observe the growth of plants closely over a period of time.	**Measure** the effect of different environments, by observing closely and measuring growth with a ruler.	**Record information in a table.**	Explain what is needed for a plant to grow **Use** answers to explain how plants grow.
Animals including humans: Life cycles	**Ask** simple questions about the different life cycles of animals **Identify and classify** the different stages of human life cycles.	Observe the differences between the life cycles of different animals.	**Record** answers in tables or diagrams. **Record** data in bar charts.	**Describe the differences between the life cycles of animals.**
Use of everyday materials	**Perform** simple tests to test how waterproof an item is.	**Observe** closely the differences in how materials change.	**Record** data in tables.	**Use** findings to answer the questions posed.

	Perform simple tests to test a good shape for a road. **Observe** how materials change shape.			
Animals including humans: Survival and health	**Identify and classify** different types of food into the correct food groups. **Perform a simple test** to explore the effect of exercise. **Observe** over time the effects of poor hygiene.	**Observe** over a period of time and describe the effects of poor hygiene. **Observe** how the body changes when you exercise.	**Record** data in a table.	**Use** data to form answers to questions.
Year group	**Science Methods**	**Apparatus and techniques including measurements**	**Data analysis and presentation.**	**How science uses evidence to develop explanations**
Year 3 Animals including humans	**Identify** differences, similarities or changes related to simple scientific ideas and processes.	**Identify** ways to gather, record, classify and present data in a variety of ways to help answer questions. .	**Record** findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	**Evaluate** how to use straightforward scientific evidence to answer questions or to support findings.
Plants	**Ask** relevant questions and use different types of scientific enquiries to answer them. **Identify** ways to set up simple practical enquiries, comparative and fair tests using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. **Observe** carefully and systematically.	**Identify** ways to gather, record, classify and present data in a variety of ways to help in answering questions.	**Record** findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	**Report** on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
Light	**Identify** differences, similarities or changes related to simple scientific ideas and processes.	**Gather**, record, classify and present data in a variety of ways to help in answering questions	**Record** findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables.	**Report** on findings from enquiries, including oral and written explanations, displays or presentations of

	Identify patterns in the way that the size of shadows changes. .			results and conclusions.
Rock	**Identify** differences, similarities or changes related to simple scientific ideas and processes.	**Make** systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment.	**Use** results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	**Report** on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
Forces and Magnets	**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. **Predict** whether 2 magnets will attract or repel each other, depending on which poles are facing. **Test** simple practical enquiries, comparative and fair tests.	**Make** systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment.	**Observe** systematically and carefully and, where appropriate, take accurate measurements using standard units, using a range of equipment. **Record** findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables.	**Report** on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
Year 4 Classifying Living things and their habitats	**Identify** differences, similarities or changes related to simple scientific ideas and processes. **Classify** living things in a variety of ways.		**Gather,** record, classify and present data in a variety of ways to help in answering questions. **Record** findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. **Record** findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	**Report** on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.
Nature and the environment			**Record** findings using simple scientific language, labelled	**Report** on findings from enquiries including oral and

			diagrams and drawings.	written presentations.
Food and Digestion	**Observe** systematically and carefully. **Set** up simple practical enquiries, comparative and fair tests.		**Record** findings using simple scientific language, drawings, labelled diagrams and tables.	**Report** on findings from enquiries, including oral and written explanations.
States of matter	**Classify** materials based on solids, liquids and gases.	**Observe** carefully that some materials change state when they are heated or cooled. **Report** the measurements on the temperatures(using a thermometer) at which the states change.	**Record** findings using simple scientific language, drawings, labelled diagrams and tables. **Analyse** findings to make predictions for new values and suggest improvements for further scientific enquiry.	**Report** on findings from enquiries, including oral and written explanations. **Report** on findings from enquiries, including oral and written explanations to help in answering questions.
Sound	**Identify** patterns between the pitch of a sound and features of the object that produce it. **Identify** patterns between the volume of a sound and the vibrations that produced it. **Identify** similarities and differences.	**Observe** carefully and make accurate measurements using equipment like decibel metres. **Execute** simple practical enquiries for comparative and fair tests.	**Record** findings using simple scientific language, drawings, labelled diagrams, bar charts and tables.	**Report** on findings from enquiries, including oral and written explanations.
Electricity	**Ask** relevant questions about: how a circuit works. the effects of different components on a circuit. the insulation and inducting properties of materials.	**Observe** carefully the effects of different components on a circuit.		**Report** on findings from enquiries, including oral and written explanations to present findings. **Report** on findings from enquiries, including oral and written explanations to help in answering questions.
Year 5 Living things and their habitats	**Ask** relevant questions and use different types of scientific enquiries to answer them.	**Observe** carefully during scientific enquiry.	**Record** findings using simple scientific language, drawings, labelled diagrams and charts.	**Report** on findings from enquiries, including oral and written explanations to present findings. **Recognise** the causal

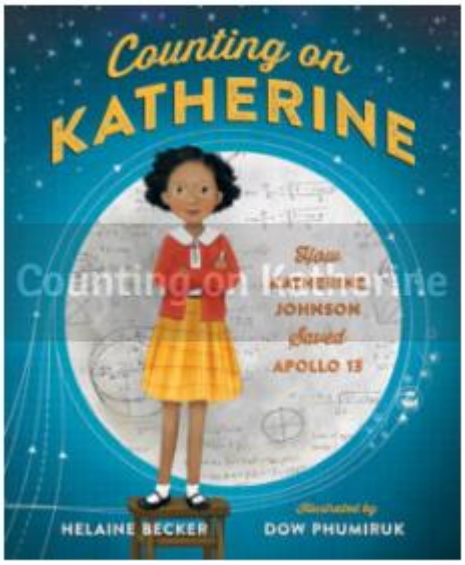
				relationships between findings. **Report** scientific evidence that has been used to support or deny written explanations.
Properties of materials	**Classify** materials by their properties and their everyday uses including metals, wood and plastic. **Comparative tests** to explore: The differences between materials (solubility, hardness, conductors or insulators). The different ways to separate a mixture- sieving, filtering, evaporation. **Conduct** fair tests to explore the effect of one variable on an object.	**Observe** carefully during scientific enquiry. **Record** measurements using rulers, timers, thermometers.	**Record** findings using simple scientific language, drawings, labelled diagrams and tables bar and line graphs. **Analyse** test results to make predictions of further scientific enquiries with comparative and fair tests.	**Report** on findings from enquiries, including oral and written explanations to present findings. **Critique** the reliability of results. **Recognise** the causal relationships between findings- e.g. the harder the material the harder it is the break.
Changes in materials	**Comparative tests** to explore: rusting, chemical reactions, reversible and irreversible changes, burning and using acids and bicarbonate. **Conduct** fair tests to explore the effect of one variable on an object.	**Observe** carefully the effects of: rusting, chemical reactions, reversible and irreversible changes, burning and using acids and bicarbonate.	**Record** findings using simple scientific language, drawings, labelled diagrams and tables bar and line graphs. **Analyse** test results to make predictions of further scientific enquiries with comparative and fair tests.	**Report** on findings from enquiries, including oral and written explanations to present findings. **Critique** the reliability of results. **Recognise** the causal relationships between findings- e.g. the warmer the temperature the quicker evaporation takes place.
Forces	**Implement** different types of scientific enquiries: Investigate the relationship between gears, levers and pulleys.	**Observe** measurements using Newton Metres with accuracy and precision.	**Record** findings using simple scientific language, drawings, labelled diagrams and tables.	**Report** scientific evidence that has been used to support or deny written explanations.

	Compare the relationship between air resistance and parachutes. The effect of friction on different surfaces. Explore factors that affect water resistance.			
Earth and Space	**Identify** similarities and differences between different planets and bodies in the solar system.	**Observe** carefully the cycles of the moon and the changes. **Observe** carefully the changes between night and day.	**Record** findings using simple scientific language, drawings, labelled diagrams and tables.	**Report** scientific evidence that has been used to support or deny written explanations. **Report** on findings from enquiries, including oral and written explanations to present findings.
Life Cycles	**Ask** relevant questions and use different types of scientific enquiries to answer them.	**Observe** carefully during scientific enquiry.	**Record** findings using simple scientific language, drawings, labelled diagrams and charts.	**Report** on findings from enquiries, including oral and written explanations to present findings. **Recognise** the causal relationships between findings. **Report** scientific evidence that has been used to support or deny written explanations.
Year 6 Looking after the environment	**Observe** weather patterns over a period of time. **Explore** data to identify patterns.	**Observe** the patterns of weather of a period of time and make conclusions. **Record** results on the amount of energy consumed in each classroom.	**Record** findings using simple scientific language, drawings, labelled diagrams and charts.	**Report** on findings from enquiries, including oral and written explanations to present findings. **Report** scientific evidence that has been used to support or deny written explanations
Living things and their habitats	**Classify** living things into the appropriate groups and areas of the animal kingdom.	**Observe** the effect of spore dispersal over a period of time.	**Record** findings using simple scientific language, drawings,	**Report** on findings from enquiries, including oral and written

		Apply the Carl Linneaus classification system to classify living things.	labelled diagrams, keys and charts.	explanations to present findings. **Recognise** the causal relationships between findings e.g. the dodo failed to evolve therefore it became extinct. **Report** scientific evidence that has been used to support or deny written explanations. **Critique** the reliability of results
Evolution and inheritance	**Apply** research to support answers to scientific questions.		**Record** findings using simple scientific language, drawings, labelled diagrams and charts.	**Report** on findings from enquiries, including oral and written explanations to present findings. **Recognise** the causal relationships between findings e.g. the dodo failed to evolve therefore it became extinct. **Report** scientific evidence that has been used to support or deny written explanations. **Critique** the reliability of results
Electricity	**Investigate** and solve problems in an electrical circuit. **Apply** knowledge of electrical circuits to build a set of traffic lights. **Classify** different parts of an electrical circuit.	**Observe** carefully the effects of different components on the output of an electrical circuit.	**Record** findings using simple scientific language, drawings, labelled diagrams, and charts.	**Report** on findings from enquiries, including oral and written explanations to present findings. **Recognise** the causal relationships between findings e.g. the closer the light source the smaller the shadow.

				Report scientific evidence that has been used to support or deny written explanations. **Critique** the reliability of results
Light	**Identify** ways to set up fair and comparative tests.	**Record** measurements accurately using rulers and metre sticks. **Observe** over a period of time and record results.	**Record** findings using simple scientific language, drawings, labelled diagrams, charts, bar and line graphs.	**Report** on findings from enquiries, including oral and written explanations to present findings. **Recognise** the causal relationships between findings e.g. the closer the light source the smaller the shadow. **Report** scientific evidence that has been used to support or deny written explanations. **Critique** the reliability of results
Animals including humans	**Explore** patterns to consider the effects of exercise on your body. **Compare** the function of blood vessels. **Classify** parts of the circulatory system by their function. **Classify** effects that drugs and alcohol can have on the body. **Implement** a fair or comparative test that explores the effects of exercise on the body.	**Record** measurements of the rate of pulse by counting pulse beats or using a pulse oximeter.	**Record** findings using simple scientific language, drawings, labelled diagrams, charts, bar and line graphs.	**Report** on findings from enquiries, including oral and written explanations to present findings. **Recognise** the causal relationships between findings e.g. the faster I run the higher my pulse will be. **Report** scientific evidence that has been used to support or deny written explanations. **Critique** the reliability of results

Potential literacy texts to link


Counting on
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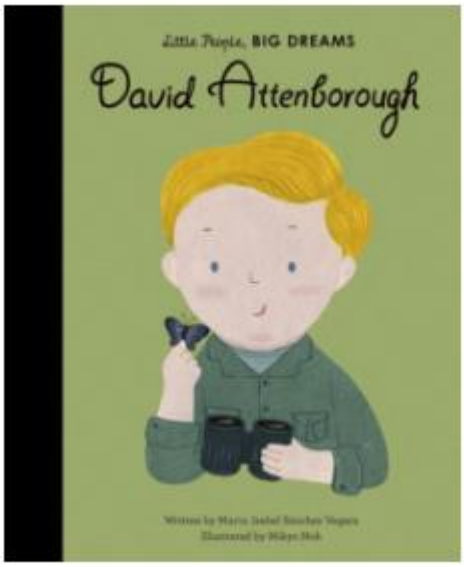
How KATHERINE JOHNSON Saved APOLLO 13
HELAINE BECKER
DOW PHUMIRUK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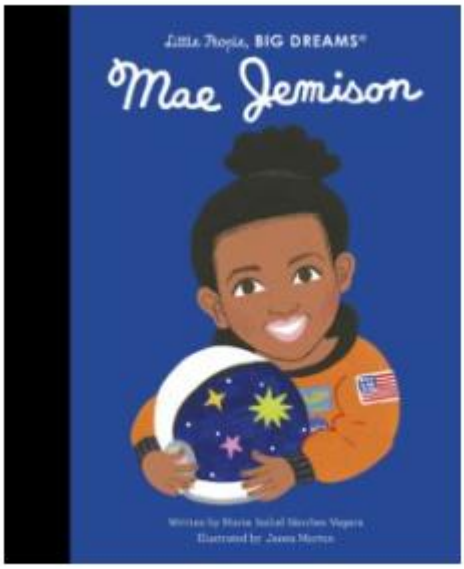
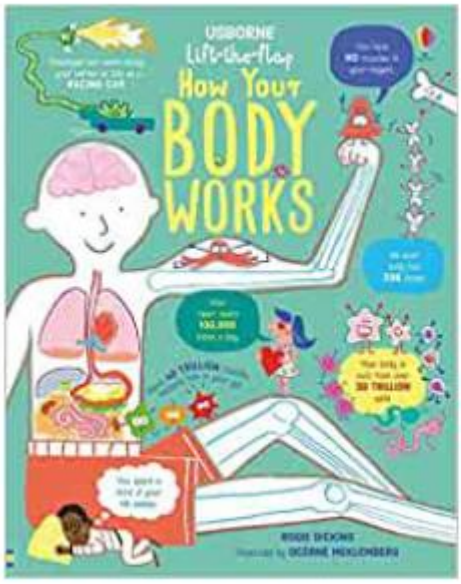
David Attenborough


Little People, BIG DREAMS
Mae Jemison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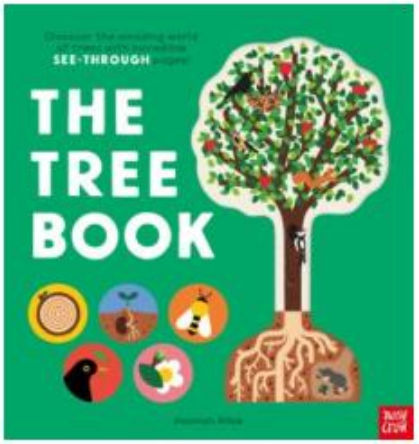
Lift-the-flap
How Your
BODY
WORKS


Usborne
Lift-the-flap
Very First Questions and Answers
What are germs?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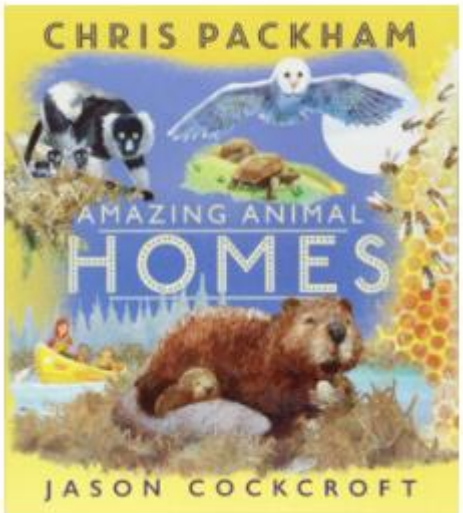
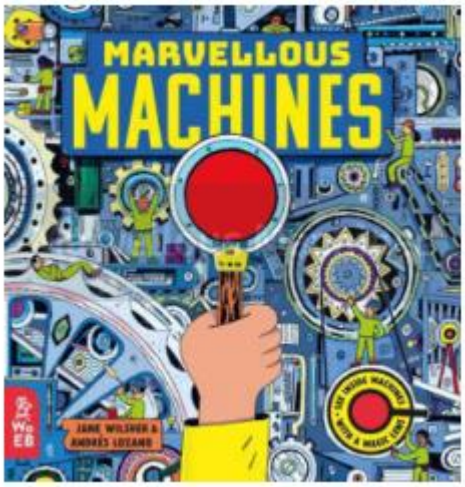
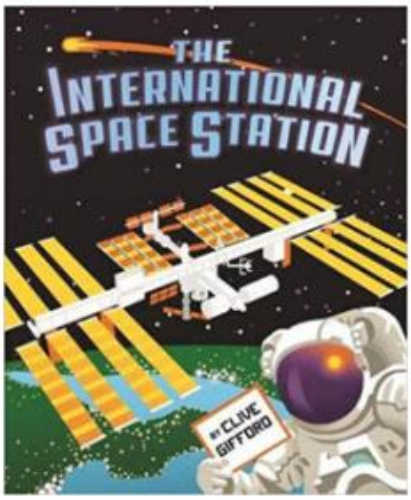
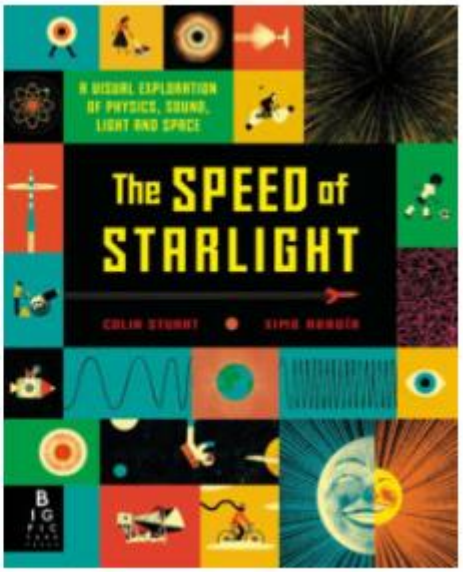
THE
TREE
BOOK


CHRIS PACKHAM
AMAZING ANIMAL
HOMES
JASON COCKCROFT


MARVELLOUS
MACHINES
JANE WILSHER &
ANDRÉS LOZANO


THE
INTERNATIONAL
SPACE STATION
BY CLIVE GIFFORD


TIMELINES
OF
SCIENCE
From fossils to quantum physics


A VISUAL EXPLORATION
OF PHYSICS, SOUND,
LIGHT AND SPACE
The SPEED of
STARLIGHT