



Brabourne CEP School

Whole School Science Progression Map
September 2022

Introduction

This document details how each year group progress within the strands of the Science National Curriculum at Brabourne School and is also a reference tool for teachers to use when planning to see what objectives the children need to be taught currently, what they have previously covered and what steps are next, to ensure no overlapping of curriculum content or teaching at different year group levels.

At Brabourne CEP School, we use the Science PlanIt units of work from Twinkl for both Key Stage 1 and Key Stage 2. Science concepts are delivered to our mixed year classes to ensure coverage across our rolling 2 year cycle. Coverage is monitored to ensure there is progression in skills and knowledge across Key Stage 1 and Key Stage 2.

Intent

At Brabourne CEP School, our intent is to spark every child's curiosity in science. We aim to give them a broad and balanced Science curriculum, which enables them to confidently explore and discover what is around them, so that they have a deeper understanding of the world we live in. We want our children to love science. We want them to have no limits to what their ambitions are and grow up wanting to be astronauts, forensic scientists, toxicologists or microbiologists. We want our children to remember their science lessons in our school, to cherish these memories and embrace the scientific opportunities they are presented with. To achieve this, it involves exciting, practical hands on experiences that encourage curiosity and deep questioning. Our aim is that these stimulating and challenging experiences help every child secure and extend their scientific knowledge and vocabulary, as well as promoting a love and thirst for learning. At Brabourne, we have a coherently planned and sequenced curriculum, which has been carefully designed and developed with the need of every child at the centre of what we do. We want to equip our children with not only the minimum statutory requirements of the science National Curriculum, but to prepare them for the opportunities, responsibilities and experiences of later life.

The principal aims of Science at Brabourne are 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

By then end of EYFS, children will:

Explore the natural world around them, making observations and drawing pictures of animals and plants.

Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

By the end of Key Stage 1, children will:

By the end of KS1, basic fundamentals of the biology strand have been established. Pupils explore animals, humans and changes within environments and begin to develop simple scientific vocabulary linked to this. Children use different types of scientific enquiry to answer a range of questions. Children are encouraged to ask questions, discuss their findings and present their ideas in a variety of ways.

By the end of key stage 2, children will:

By the end of KS2, pupils have a deep understanding of a range of scientific ideas. Children are able to link scientific ideas to the world around them and, through research, understand how scientific ideas are developed over time. Children use secondary sources of information and purposeful, practical enquiry to draw conclusions and find things out.

Implementation

At Brabourne, all Science lessons will follow the same teaching sequence outlined below:



- Topics can be blocked to allow children to focus on developing their knowledge and skills, studying each topic in depth.
- Every year group will build upon the learning and key concepts from prior year groups therefore developing depth of understanding and progression of skills.
- Teachers promote enjoyment and foster interest of the scientific disciplines; Biology, Chemistry and Physics.
- Children use and consolidate the skills of 'Plan, Do, Record, Review' which are built upon every year.
- Children present their findings and learning using science specific language, observations and diagrams.
- Science forms part of 'Curriculum Writes', termly opportunities to write extended pieces of scientific writing.
- In order to support children in their ability to 'know more and remember more' there are regular opportunities to review the learning taken place in previous topics as well as previous lessons. 'Concept Cartoons' are used to produce discussion at the start of a lesson and to assess misconceptions and prior knowledge.
- At the start of each topic children will review previous learning and will have the opportunity to share what they already know about a current topic through 'Knowledge Mind-Maps'. These are reviewed at the end of the unit of work.
- Children are given a 'knowledge organiser' at the start of each topic which details some key Science Curriculum Statement information, dates and vocabulary. This is not used as part of an assessment, but to support children with their acquisition of knowledge and are used as a reference document.
- Effective CPD and standardisation opportunities are available to staff to ensure high levels of confidence and knowledge are maintained.
- Effective use of education visits and visitors are planned, to enrich and enhance the pupil's learning experiences within the Science curriculum.
- Teachers use highly effective assessment for learning in each lesson to ensure misconceptions are highlighted and addressed.
- Effective modelling by teachers ensures that children are able to achieve their learning intention, with misconceptions addressed within it.
- Through using a range of assessment tools, differentiation is facilitated by teachers, to ensure that each pupil can access the Science curriculum.
- Children are given a 'Key Question' which forms the basis of their lesson's objectives.
- Pupils are regularly given the opportunity for self or peer assessment, which will then be used to inform planning, preparation, differentiation and address misconceptions within that lesson, or for the next lesson.
- Cross-curricular links are planned for, with other subjects such as Maths, English and Computing.

- End of unit assessment quizzes inform teacher assessment and data drops are collected 3 times a year.
- Moderation of work and monitoring by the Subject Leader take place 3 times a year.

Impact

The impact of this curriculum design will lead to outstanding progress over time, across key stages, relative to a child's individual starting point and their progression of skills. Children will therefore be expected to leave Brabourne reaching at least age related expectations for Science. Through various workshops, trips and interactions with experts our Science curriculum will lead pupils to be enthusiastic Science learners and understand that science has changed our lives and that it is vital to the world's future prosperity. We want to empower our children so they understand they have the capability to change the world. This is evidenced in a range of ways, including pupil voice, their work, assessments and their overwhelming enjoyment for science.

Brabourne Curriculum Overview Cycle A						
	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
	<i>Power & Legitimacy</i>		<i>Energy and Sustainability</i>		<i>Movement and People</i>	
Venus EYFS	This is Me!	Terrific Tales	A Ticket to Ride	Amazing Animals	Come Outside	Commotion in the Ocean
Mars Yr1 + Yr2	Kings and Queens		What a Wonderful World		Beside the Seaside	
	Science: Physics		Science: Physics		Science: Biology	

	<i>Seasonal Changes (Autumn and Winter)</i>	<i>Seasonal Changes (Spring and Summer)</i>	<i>Animals Including Humans Animals, Living things & Habitats</i>
Neptune Yr3 + Yr 4	Ruthless Romans	Our Environment (Local Study)	Traders and Raiders
	Science: Physics <i>T1:Sound</i>	Science: Biology <i>T3:Living things and Their Habitats</i>	Science: Biology <i>Plants</i>
	<i>T2: Light</i>	Science: Physics <i>T4:Electricity</i>	
Jupiter Yr 5 + Yr 6	Battles, Blackouts, Blitz	Endangered!	Storms and Ship Wrecks
	Science: Chemistry <i>T1: Properties and Changes of Materials</i>	Science: Biology <i>T1: Animals Including Humans (Year 5)</i>	Science: Physics <i>Forces (Year 5)</i>
	Science: Physics <i>T2: Light (Year 6)</i>	<i>T2: Living things and their Habitats (Year 5)</i>	

Brabourne Curriculum Overview Cycle B

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
	Cause and Effect		Ecology and Evolution		Change and Continuity	
Venus EYFS	This is Me!	Terrific Tales	A Ticket to Ride	Amazing Animals	Come Outside	Commotion in the Ocean
Mars Yr1 + Yr2	London's Burning		Near and Far		Into the Woods	
	Science: Chemistry <i>Everyday Materials Uses of Everyday Materials</i>		Science: Biology <i>Animals including Humans (Year1+2)</i>		Science: Biology <i>Plants</i>	
Neptune Yr3 + Yr 4	Hard Times		Mountains and Rivers		Gods and Mortals	
	Science: Physics <i>Forces and Magnets</i>		Science: Chemistry <i>T3: Rocks and Solids (Year 3)</i>		Science: Biology <i>Animals Including Humans and Skeletons</i> <i>(Year 3 and Year 4)</i>	
			<i>T4: States of Matter (Year 4)</i>			
Jupiter Yr 5 + Yr 6	Magnificent Maya		Extreme Earth - Natural Disasters		Scavengers and Settlers	
	Science: Biology <i>Living Things and Habitats (Year 6)</i>		Science: Physics <i>Earth and Space (Year 5)</i>		Science: Biology <i>Evolution and Inheritance (Year 6)</i>	
	Science: Physics <i>Electricity (Year 6)</i>				Science: Biology <i>Animals Including Humans (Year 6)</i>	

Big Ideas in Science

We have used the Science National Curriculum and Key stage expectations to plan our Science Curriculum. Through their learning in Key Stage 1 all children will develop their scientific knowledge and conceptual understanding through the different disciplines of biology, physics and chemistry. In Key Stage 2 children will continue to develop their scientific knowledge and understanding within these disciplines and will be able to interconnect their learning within each discipline to make sense of the world around them. Referring to the Big Ideas of Science as part of our teaching in Key Stage 2 enables children to revisit the ideas within each discipline, make meaningful connections between their learning in Science and understand the how and why of some of the phenomena they experience in the world around them occurs. This will enable them to answer questions and will equip them with the scientific knowledge require to understand the uses and implications of science, now and for the future.

	Biology	Physics	Chemistry
Big Ideas of Science	<ul style="list-style-type: none">Organisms are organised on a cellular basis and have a finite life span.Organisms require a supply of energy and materials for which they depend on, or compete with, other organisms.Genetic information is passed down from one generation of organisms to another.The diversity of organisms, living and extinct, is the result of evolution.	<ul style="list-style-type: none">Objects can affect other objects at a distance.Changing the movement of an object requires a net force to be acting upon it.The total amount of energy in the universe is always the same but can be transferred from one energy store to another during an event.Our solar system is a very small part of one of billions of galaxies in the universe.	<ul style="list-style-type: none">All matter in the universe is made from very small particles.The composition of the Earth and its atmosphere, and the processes occurring within them, shape the Earth's surface and its climate.

Science in EYFS at Brabourne School

At Brabourne School children in the Reception year follow the Early Years Foundation Stage Curriculum. Science falls into the Early Learning Goal – Understanding The World – The Natural World and children at the expected level of development will:

Communication and Language:

- Listening and Attention

- * Make comments about what they have heard and ask questions to clarify their understanding

Personal, Social and Emotional Development

- Managing Self

- * Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.

Understanding the World

- The Natural World

- * Explore the natural world around them making observations and drawing pictures of animals and plants
- * Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- * Understand some importance processes and changes in the natural world around them, including the seasons and changing states of matter.

The Reception classroom is designed so that during daily sustained periods of Independent Learning, children are able to develop their skills, understanding and knowledge towards the goals above. Such as a playdough area where children have the opportunity to measure and mix ingredients to make their own dough, observing and experimenting with the changes throughout the processes. Another example is the outdoor water area, complete with resources to promote observational skills and enquiry skills such as floating and sinking and changing states of matter during hot and cold weather. Whilst these areas are permanent features of the continuous provision in the Early Years environment; resources within them may be part of our enhanced provision which cater for the learning needs and may change over time based upon the observations and assessments that the adults make of the children whilst engaged in play, in order to enable the children to move forward in their learning.

The children in the Reception class make frequent use of the outdoor area, school grounds and local environments. Such learning opportunities will be planting, growing and caring for sunflowers, exploring seasonal change by observing our horse chestnut trees at different stages in the year, hunting for minibeast at varying times of the year and visiting the local pond to pond dip, amongst many other things. Through the use of high quality texts, videos and trips, throughout the year children have further opportunities to make comparisons to different places. Children in the reception year also have the opportunity to observe and care for chicks/ducklings in the spring term to develop their knowledge and understanding of animals and life cycles.

Coverage of Units

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology	Animals including Humans	✓	✓	✓	✓	✓	✓
	Plants	✓	✓	✓			
	Living Things and Their Habitats		✓		✓	✓	✓
	Evolution and Inheritance						✓
Physics	Seasonal Changes	✓					
	Forces			✓ Forces and Magnets		✓ Forces	
	Light			✓			✓
	Sound				✓		
	Earth and Space					✓	
	Electricity				✓		
Chemistry	Materials	✓ Everyday Materials	✓ Use of materials	✓ Rocks	✓ States of Matter	✓ Properties and Changes of Materials	
	Scientists and Inventors	✓	✓	✓	✓	✓	✓

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
BIOLOGY	Animals including Humans	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe the changes as humans develop to old age. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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.
	Vocabulary Progression	<ul style="list-style-type: none"> Names of animal groups: fish, amphibians, reptiles, birds, mammals. Animal diets: carnivore, herbivore, omnivore. Human and animal body parts: e.g. body, head, neck, arms, elbows, legs, knees, face, ears, eyes, nose, hair, mouth, teeth, hands, feet, tail, wings, feathers, fur, beak, fins, gills. Human senses: sight, hearing, touch, smell, taste. Exploring senses: loud, quiet, soft, rough. Other: human, animal, pet. 	<ul style="list-style-type: none"> Being born and growing: Young, offspring, live young, grow, develop, change, hatch, lay, fly, crawl, talk. Young and adult names: e.g. lamb and sheep, kitten and cat, duckling and duck. Life cycle stages: e.g. baby, toddler, child, teenager, adult; frogspawn, tadpole, froglet, frog. Survival and staying healthy: basic needs, survive, food, air, exercise, diet, nutrition, healthy, balanced diet, hygiene, germs. Food groups: fruit and vegetables, proteins, dairy and alternatives, carbohydrates, oil and spreads, fat, salt, sugar. <p>Previously introduced vocabulary: water.</p>	<ul style="list-style-type: none"> Food groups and nutrients: fibre, fats (saturated and unsaturated), vitamins, minerals. Skeletons and muscles: skeleton, muscles, tendons, joints, protection, support, organs, voluntary muscles, involuntary muscles, biceps, triceps, contract, relax, bone, cartilage, shell, vertebrate, invertebrate, endoskeleton, exoskeleton, hydrostatic skeleton. Names of human bones: e.g. skull, spine, backbone, vertebral column, ribcage, pelvis, clavicle, scapula, humerus, ulna, pelvis, radius, femur, tibia, fibula. Other: energy. <p>Previously introduced vocabulary: movement.</p>	<ul style="list-style-type: none"> Digestive system: digest, digestion, tongue, teeth, saliva, salivary glands, oesophagus, stomach, liver, pancreas, gall bladder, small intestine, duodenum, large intestine, rectum, anus, faeces, organ. Types of teeth and dental care: molar, premolar, incisor, canine, wisdom teeth, tooth decay, plaque, enamel, baby (milk) teeth. Food chains and animal diets: decomposer, food web. <p>Previously introduced vocabulary: producer, consumer, prey, predator, excretion, habitat.</p>	<ul style="list-style-type: none"> Process of reproduction: gestation, asexual reproduction, sexual reproduction, sperm, egg, cells, clone. Changes and life cycle: embryo, foetus, uterus, prenatal, adolescence, puberty, menstruation, adulthood, menopause, life expectancy, old age, hormones, sweat. Changing body parts: e.g. breasts, penis, larynx, ovaries, genitalia, pubic hair. <p>Previously introduced vocabulary: reproduction, reproduce, types of animals and animal groups, fertilisation.</p>	<ul style="list-style-type: none"> Circulatory system: circulation, heart, pulse, heartbeat, heart rate, lungs, breathing, blood vessels, blood, pump, transported, oxygenated blood, deoxygenated blood, oxygen, arteries, veins, capillaries, chambers, plasma, platelets, white blood cells, red blood cells. Lifestyle: drug, alcohol, smoking, disease, calorie, energy input, energy output. Other: water transportation, nutrient transportation, waste products. <p>Previously introduced vocabulary: carbon dioxide.</p>

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
BIOLOGY	Plants	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 			
	Vocabulary Progression	<ul style="list-style-type: none"> • <u>Names of common plants:</u> wild plant, garden plant, evergreen tree, deciduous tree, common flowering plant, weed, grass. • <u>Name some features of plants:</u> e.g. flower, vegetable, fruit, berry, leaf/leaves, blossom, petal, stem, trunk, branch, root, seed, bulb, soil. • <u>Name some common types of plant</u> e.g. sunflower, daffodil. 	<ul style="list-style-type: none"> • <u>Growth of plants:</u> germination, shoot, seed dispersal, grow, food store, life cycle, die, wilt, seedling, sapling. • <u>Needs of plants:</u> sunlight, nutrition, light, healthy, space, air. • <u>Name different types of plant:</u> e.g. bean plant, cactus. • <u>Names of different habitats:</u> e.g. rainforest, desert. <p>Previously introduced vocabulary: water, temperature, warm, hot, cold, habitat.</p>	<ul style="list-style-type: none"> • <u>Water transportation:</u> transport, evaporation, evaporate, nutrients, absorb, anchor. • <u>Life cycle of flowering plants:</u> pollination (insect/wind), pollen, nectar, pollinator, seed formation, seed dispersal (animal/wind/water), reproduce, fertilisation, fertilise, stamen, anther, filament, carpel (pistil), stigma, style, ovary, ovule, sepal, carbon dioxide. <p>Previously introduced vocabulary: life cycle.</p>			

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
BIOLOGY	Living Things and Their Habitats		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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. 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 Progression		<ul style="list-style-type: none"> • Living or dead: living, dead, never living, not living, alive, never been alive, healthy. • Habitats including microhabitats: depend, shelter, safety, survive, suited, space, minibeast, air. • Life processes: movement, sensitivity, growth, reproduction, nutrition, excretion, respiration. • Food chains: food sources, food, producer, consumer, predator, prey. • Names of habitats and microhabitats: e.g. under leaves, woodland, rainforest, sea shore, ocean, urban, local habitat. <p>Previously introduced vocabulary: senses, carnivore, herbivore, omnivore, seed, water, names of materials.</p>		<ul style="list-style-type: none"> • Living things: organisms, specimen, species. • Grouping living things: classification, classification keys, classify, characteristics. • Names of invertebrate animals: snails and slugs, worms, spiders, insects. • Invertebrate body parts: e.g. wing case, abdomen, thorax, antenna, segments, mandible, proboscis, prolegs. • Environmental changes: environment, environmental dangers, adapt, natural changes, climate change, deforestation, pollution, urbanisation, invasive species, endangered species, extinct. <p>Previously introduced vocabulary: carbon dioxide, fish, bird, mammal, amphibian, reptile, skeleton, bone, vertebrate, invertebrate, backbone, names for animal body parts, names of common plants, photosynthesis.</p>	<ul style="list-style-type: none"> • Reproduction: asexual reproduction, sexual reproduction, gestation, metamorphosis, gametes, tuber, runners/side branches, plantlet, cuttings, embryo, adolescent, penis, vagina, egg, pregnancy, gestation. <p>Previously introduced vocabulary: life cycle, pollination, offspring, fertilise, fertilisation, sepal, filament, anther, stamen, pollen, petal, stigma, style, ovary, carpel, ovule, stem, bulb, roots, mammal, adult, baby, sperm, cells, live young.</p>	<ul style="list-style-type: none"> • Classifying: Carl Linnaeus, Linnaean system, flowering and non-flowering plants, variation. • Microorganisms: bacteria, single-celled, microbes, microscopic, virus, fungi, fungus, mould, antibiotic, yeast, ferment, microscope, decompose.
	Vocabulary Progression					

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
BIOLOGY	Evolution and Inheritance		•				<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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.
	Evolution and Inheritance						

Vocabulary Progression							<ul style="list-style-type: none"> • Evolution and inheritance: evolve, adaptation, inherit, natural selection, adaptive traits, inherited traits, mutations, theory of evolution, ancestors, biological parent, chromosomes, genes, Charles Darwin. • Other: selective breeding, artificial selection, breed, cross breeding, genetically modified food, cloning, DNA. <p>Previously introduced vocabulary: classification, offspring, characteristics, habitat, environment, adapt, variations, human, fossil, suited, cells, names of different habitats, names of animals and their body parts, species, sedimentary rock, lava, igneous rock, metamorphic rock, magma, heat, fossilisation.</p>

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PHYSICS	Seasonal Changes	Pupils should be taught to: <ul style="list-style-type: none"> • observe changes across the 4 seasons; • observe and describe weather associated with the seasons and how day length varies. 	•				
	Vocabulary Progression	<ul style="list-style-type: none"> • Seasons: spring, summer, autumn, winter, seasonal change. • Weather: e.g. sun, rain, snow, sleet, frost, ice, fog, cloud, hot/warm, cold, storm, wind, thunder, weather forecast. 					

		<ul style="list-style-type: none"> • <u>Measuring weather</u>: temperature, rainfall, wind direction, thermometer, rain gauge. • <u>Day length</u>: night, day, daylight. 					
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		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PHYSICS	Forces		•	<p>Forces and Magnets</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 		<p>Forces</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 	

				<p>whether they are attracted to a magnet, and identify some magnetic materials;</p> <ul style="list-style-type: none"> describe magnets as having 2 poles; predict whether 2 magnets will attract or repel each other, depending on which poles are facing. 		<p>smaller force to have a greater effect.</p>	
	Vocabulary Progression			<ul style="list-style-type: none"> <u>How things move</u>: move, movement, surface, distance, strength. <u>Types of forces</u>: push, pull, contact force, non-contact force, friction. <u>Magnets</u>: magnetic, magnetic field, magnetic force, bar magnet, horseshoe magnet, ring magnet, magnetic poles (north pole, south pole), attract, repel, compass. <u>Magnetic and non-magnetic materials</u>: e.g. iron, nickel, cobalt. <p>Previously introduced vocabulary: metal, names of materials.</p>		<ul style="list-style-type: none"> <u>Types of forces</u>: air resistance, water resistance, buoyancy, upthrust, Earth's gravitational pull, gravity, opposing forces, driving force. <u>Mechanisms</u>: levers, pulleys, gears/cogs. <u>Measurements</u>: weight, mass, kilograms (kg), Newtons (N), scales, speed, fast, slow. <u>Other</u>: streamlined, Earth. <p>Previously introduced vocabulary: air, heat, moon.</p>	

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PHYSICS	Light		<ul style="list-style-type: none"> 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise that they need light in order to see things and that dark is the absence of light; notice that light is reflected from surfaces; recognise that light from the sun can be dangerous and that there are ways to protect their eyes; recognise that shadows are formed when the light from a 			<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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;

				<p>light source is blocked by an opaque object;</p> <ul style="list-style-type: none"> find patterns in the way that the size of shadows change. 			<ul style="list-style-type: none"> use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
	Vocabulary Progression			<ul style="list-style-type: none"> Light and seeing: dark, absence of light, light source, illuminate, visible, shadow, translucent, energy, block. Light sources: e.g. candle, torch, fire, lantern, lightning. Reflective light: reflect, reflection, surface, ray, scatter, reverse, beam, angle, mirror, moon. Sun safety: dangerous, glare, damage, UV light, UV rating, sunglasses, direct. <p>Previously introduced vocabulary: opaque, transparent, sunlight, sun.</p>			<ul style="list-style-type: none"> Reflection: periscope. Seeing light: visible spectrum, prism. How light travels: light waves, wavelength, straight line, refraction. <p>Previously introduced vocabulary: names and properties of materials, absorb.</p>

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PHYSICS	Sound		<ul style="list-style-type: none"> 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 		

					<p>strength of the vibrations that produced it;</p> <ul style="list-style-type: none"> recognise that sounds get fainter as the distance from the sound source increases. 		
	Vocabulary Progression				<ul style="list-style-type: none"> <u>Parts of the ear:</u> eardrum. <u>Making sound:</u> vibration, vocal cords, particles. <u>Measuring sound:</u> pitch, volume, amplitude, sound wave, quiet, loud, high, low, travel, distance. <u>Other:</u> soundproof, absorb sound. 		

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PHYSICS	Earth and Space		•			<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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; 	

	Vocabulary Progression					<ul style="list-style-type: none"> • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. 	
						<ul style="list-style-type: none"> • <u>Solar system</u>: star, planet. • <u>Names of planets</u>: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Neptune, Uranus. • <u>Shape</u>: spherical bodies, sphere. • <u>Movement</u>: rotate, axis, orbit, satellite. • <u>Theories</u>: geocentric model, heliocentric model, astronomer. • <u>Day length</u>: sunrise, sunset, midday, time zone. <p>Previously introduced vocabulary: Sun, moon, shadow, day, night, heat, light, reflect.</p>	

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PHYSICS	Electricity		<ul style="list-style-type: none"> • 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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

	Vocabulary Progression				<p>series circuit, based on whether or not the lamp is part of a complete loop with a battery;</p> <ul style="list-style-type: none"> 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. 		<p>bulbs, the loudness of buzzers and the on/off position of switches;</p> <ul style="list-style-type: none"> use recognised symbols when representing a simple circuit in a diagram.
					<ul style="list-style-type: none"> Electricity: mains-powered, battery-powered, mains electricity, plug, appliances, devices. Circuits: circuit, simple series circuit, complete circuit, incomplete circuit. Circuit parts: bulb, cell, wire, buzzer, switch, motor, battery. Materials: electrical conductor, electrical insulator. Other: safety. <p>Previously introduced vocabulary: names of materials.</p>		<ul style="list-style-type: none"> Flow and measure of electricity: voltage, amps, resistance, electrons, volts (V), current. Circuits: symbol, circuit diagram, component, function, filament. Variations: dimmer, brighter, louder, quieter. Types of electricity: natural electricity, human-made electricity, solar panels, power station. Other: positive, negative.

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
CHEMISTRY	Materials	<p>Everyday Materials</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<p>Use of Everyday Materials</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses; find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. 	<p>Rocks</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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. 	<p>States of Matter</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 	<p>Properties and Changes of Materials</p> <p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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; 	

Vocabulary Progression	the basis of their simple physical properties.			the rate of evaporation with temperature.	<ul style="list-style-type: none"> 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.
	<ul style="list-style-type: none"> Names of materials: wood, plastic, glass, metal, water, rock, paper, cardboard, rubber, fabric. Properties of materials: hard, soft, shiny, dull, stretchy, rough, smooth, bendy, not bendy, transparent, opaque, waterproof, not waterproof, absorbent, not absorbent, sharp, stiff. Other: object. 	<ul style="list-style-type: none"> Changing shape: squash, bend, twist, stretch. Properties of materials: e.g. strong, flexible, light, hard-wearing, elastic. Other: suitability, recycle, pollution. 	<ul style="list-style-type: none"> Types of rock: sedimentary rock, igneous rock, metamorphic rock. Properties of rocks: permeable, semi-permeable, impermeable, durable. Names of rocks: e.g. marble, chalk, granite, sandstone, slate. Formation of rocks and fossils: natural, human-made, magma, lava, molten rock, sediment, erosion, fossilisation, layers, bone, fossil. Soil: sandy, chalky, clay, peaty, loamy, topsoil, subsoil, bedrock, mineral, organic matter, compost. Other: palaeontology. <p>Previously introduced vocabulary: soil, water, air</p>	<ul style="list-style-type: none"> States of matter: solids, liquids, gases, particles. State change: evaporate, condense, melt, freeze, heat, cool, melting point, freezing point, boiling point, water vapour. Water cycle: precipitation, evaporation, condensation, ground run-off, collection, underground water, bodies of water (sea, river, stream), water droplets, hail. Other: atmosphere. <p>Previously introduced vocabulary: temperature, rain, cloud, snow, wind, sun, hot, cold, absorb, carbon dioxide</p>	<ul style="list-style-type: none"> Properties of materials: thermal conductor/insulator, magnetism, electrical resistance, transparency. Mixtures and solutions: dissolving, substance, soluble, insoluble. Changes of materials: reversible change, physical change, irreversible change, chemical change, burning, new material, product. Separating: sieving, filtering, magnetic attraction. <p>Previously introduced vocabulary: electrical conductor/insulator, bulb, translucent.</p>

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Scientists and Inventors	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> identify and name a variety of common wild and garden plants, including deciduous and evergreen trees; describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets); 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> find out and describe how plants need water, light and a suitable temperature to grow and stay healthy; describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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; identify that humans and some other animals have skeletons and muscles for 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise that environments can change and that this can sometimes pose dangers to living things; identify the different types of teeth in humans and their simple functions; compare and group materials together, according to 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird; compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> give reasons for classifying plants and animals based on specific characteristics; identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood;

	<ul style="list-style-type: none"> • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense; • 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; • observe and describe weather associated with the seasons and how day length varies. 	<ul style="list-style-type: none"> • identify and name different sources of food; • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene; • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses; • find out about people who have developed new materials (non-statutory). 	<ul style="list-style-type: none"> • support, protection and movement; • 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; • notice that light is reflected from surfaces; • observe how magnets attract or repel each other and attract some materials and not others. 	<ul style="list-style-type: none"> • 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); • recognise that vibrations from sounds travel through a medium to the ear; • 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; • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. 	<ul style="list-style-type: none"> • conductivity (electrical and thermal), and response to magnets; • use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating; • describe the movement of the Earth, and other planets, relative to the Sun in the solar system; • find out about the work of naturalists and animal behaviourists (non-statutory); • describe how scientific ideas have changed over time (non-statutory). 	<ul style="list-style-type: none"> • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function; • recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago; • use recognised symbols when representing a simple circuit in a diagram.
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Working Scientifically

EYFS working Scientifically

(Statements taken from Development Matters for Three and Four Year olds and children in Reception as well as ELG's)

	<p>Communication and Language</p>	<ul style="list-style-type: none"> • Understand why questions, like “Why do you think the caterpillar got so fat?”
	<p>Personal, Social and Emotional Development</p>	<ul style="list-style-type: none"> • Make healthy choices about food, drink, activity and tooth brushing

<p style="text-align: center;">Three and Four Year Olds</p>	<p style="text-align: center;">Understanding the World</p>	<ul style="list-style-type: none"> • Use all their senses in hands-on exploration of natural materials. • Explore collections of materials with similar and/or different properties • Talk about what they see, using a wide vocabulary. • Begin to make sense of their own life-story and family's history • Explore how things work • Plant seeds and care for 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 different forces they can feel • Talk about the differences between materials and changes they notice.
<p style="text-align: center;">Reception</p>	<p style="text-align: center;">Communication and Language</p>	<ul style="list-style-type: none"> • Learn new vocabulary • Ask questions to find out more and to check what has been said to them • Articulate their ideas and thoughts in well-formed sentences • Describe events in some detail • Use talk to help work out problems and organise thinking and activities, and explain how things work and why they might happen. • Use new vocabulary in different contexts.
	<p style="text-align: center;">Personal, Social and Emotional Development</p>	<ul style="list-style-type: none"> • Know about the different factors that support overall health and wellbeing: <ul style="list-style-type: none"> - Regular physical activity - Healthy eating - Toothbrushing - Sensible amounts of 'screen time' - Having a good sleep routine - Being a safe pedestrian

	Understanding the World	<ul style="list-style-type: none"> • Explore the natural world around them • Describe what they see, hear and feel while they are outside • Recognise some environments that are different to the one in which they live • Understand the effect of changing seasons on the natural world around them.
Early Learning Goal	Communication and Language	<ul style="list-style-type: none"> • Make comments about what they have heard and ask questions to clarify their understanding.
	Personal, Social and Emotional Development	<ul style="list-style-type: none"> • Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.
	Understanding the World	<ul style="list-style-type: none"> • Explore the natural world around them, making observations and drawing pictures of animals and plants. • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

KS1 National Curriculum working Scientifically

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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.

Lower KS2 National Curriculum working Scientifically

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- 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.

Upper KS2 National Curriculum working Scientifically

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary;
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate;
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs;
- using test results to make predictions to set up further comparative and fair tests;
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations;
- identifying scientific evidence that has been used to support or refute ideas or arguments.

	KS1	Lower KS2	Upper KS2
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Plan	<p>KS1 Science National Curriculum</p> <p>Asking simple questions and recognising that they can be answered in different ways.</p> <p>Children can:</p> <ul style="list-style-type: none"> a explore the world around them, leading them to ask some simple scientific questions about how and why things happen; b begin to recognise ways in which they might answer scientific questions; c ask people questions and use simple secondary sources to find answers. 	<p>Lower KS2 Science National Curriculum</p> <p>Asking relevant questions and using different types of scientific enquiries to answer them.</p> <p>Children can:</p> <ul style="list-style-type: none"> a start to raise their own relevant questions about the world around them in response to a range of scientific experiences; b start to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; c recognise when a fair test is necessary; d help decide how to set up a fair test, making decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. 	<p>Upper KS2 Science National Curriculum</p> <p>Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.</p> <p>Children can:</p> <ul style="list-style-type: none"> a with growing independence, raise their own relevant questions about the world around them in response to a range of scientific experiences; b with increasing independence, make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions; c explore and talk about their ideas, raising different kinds of scientific questions; d ask their own questions about scientific phenomena; e select and plan the most appropriate type of scientific enquiry to use to answer scientific questions; f make their own decisions about what observations to make, what measurements to use and how long to make them for, and whether to repeat them; g plan, set up and carry out comparative and fair tests to answer questions, including recognising and controlling variables where necessary.
	<p>KS1</p>	<p>Lower KS2</p>	<p>Upper KS2</p>

KS1	Lower KS2	Upper KS2
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Do

KS1 Science National Curriculum

Observing closely, using simple equipment.

Performing simple tests.

Identifying and classifying.

Children can:

- a observe the natural and humanly-constructed world around them;
- b observe changes over time;
- c use simple measurements and equipment;
- d make careful observations, sometimes using equipment to help them observe carefully;
- e carry out simple practical tests, using simple equipment;
- f experience different types of scientific enquiries, including practical activities;
- g talk about the aim of scientific tests they are working on;
- h use simple features to compare objects, materials and living things;
- i decide how to sort and classify objects into simple groups with some help.

Lower KS2 Science National Curriculum

Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.

Setting up simple practical enquiries, comparative and fair tests.

Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.

Children can:

- a make systematic and careful observations;
- b observe changes over time;
- c use a range of equipment, including thermometers and data loggers;
- d ask their own questions about what they observe;
- e where appropriate, take accurate measurements using standard units using a range of equipment;
- f set up and carry out simple comparative and fair tests;
- g talk about criteria for grouping, sorting and classifying;
- h group and classify things.

Upper KS2 Science National Curriculum

Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.

Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.

Children can:

- a choose the most appropriate equipment to make measurements and explain how to use it accurately;
- b take measurements using a range of scientific equipment with increasing accuracy and precision;
- c make careful and focused observations;
- d know the importance of taking repeat readings and take repeat readings where appropriate;
- e independently group, classify and describe living things and materials;
- f use and develop keys and other information records to identify, classify and describe living things and materials.

	KS1	Lower KS2	Upper KS2
Record	<p>KS1 Science National Curriculum Gathering and recording data to help in answering questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a record and communicate findings in a range of ways with support; b sort, group, gather and record data in a variety of ways to help in answering questions, such as in simple sorting diagrams, pictograms, tally charts, block diagrams and simple tables. 	<p>Lower KS2 Science National Curriculum Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.</p> <p>Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Children can:</p> <ul style="list-style-type: none"> a collect data from their own observations and measurements; b present data in a variety of ways to help in answering questions; c use, read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge; d record findings using scientific language, drawings, labelled diagrams, keys, bar charts and tables. 	<p>Upper KS2 Science National Curriculum Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.</p> <p>Children can:</p> <ul style="list-style-type: none"> a decide how to record data from a choice of familiar approaches; b record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar graphs and line graphs.

	KS1	Lower KS2	Upper KS2
	<p>KS1 Science National Curriculum</p> <p>Using their observations and ideas to suggest answers to questions.</p> <p>Children can:</p> <ul style="list-style-type: none"> a notice links between cause and effect with support; b begin to notice patterns and relationships with support; c begin to draw simple conclusions; d identify and discuss differences between their results; e use simple and scientific language; f read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1; g talk about their findings to a variety of audiences in a variety of ways. 	<p>Lower KS2 Science National Curriculum</p> <p>Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.</p> <p>Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Identifying differences, similarities or changes related to simple scientific ideas and processes.</p> <p>Using straightforward scientific evidence to answer questions or to support their findings.</p> <p>Children can:</p> <ul style="list-style-type: none"> a draw simple conclusions from their results; b make predictions; c suggest improvements to investigations; d raise further questions which could be investigated; e first talk about, and then go on to write about, what they have found out; f report and present their results and conclusions to others in written and oral forms with increasing confidence; g make links between their own science results and other scientific evidence; h identify similarities, differences, patterns and changes relating to simple scientific ideas and processes; i use straightforward scientific evidence to answer questions or support their findings; 	<p>Upper KS2 Science National Curriculum</p> <p>Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.</p> <p>Using test results to make predictions to set up further comparative and fair tests.</p> <p>Identifying scientific evidence that has been used to support or refute ideas or arguments.</p> <p>Children can:</p> <ul style="list-style-type: none"> a notice patterns; b draw conclusions based in their data and observations; c use their scientific knowledge and understanding to explain their findings; d read, spell and pronounce scientific vocabulary correctly; e identify patterns that might be found in the natural environment; f look for different causal relationships in their data; g discuss the degree of trust they can have in a set of results; h independently report and present their conclusions to others in oral and written forms; i use their test results to identify when further tests and observations may be needed;

j recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations.

j use test results to make predictions for further tests;

k use primary and secondary sources evidence to justify ideas;

l identify evidence that refutes or supports their ideas;

m recognise where secondary sources will be most useful to research ideas and begin to separate opinion from fact;

n use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas;

o talk about how scientific ideas have developed over time.

Working Scientifically – Vocabulary Progression

KS1	Lower KS2	Upper KS2
aim	accurate	accuracy and precision
answers	bar chart	bar graphs
block diagrams	chart	causal relationship
changes	classify	degree of trust
compare	comparative test	dependent variable
describe	conclusion (What have we found out?)	independent variable
difference	criteria	justify
different	data	line graphs
enquiry	develop	refute
equipment	diagram	repeat results
experience	evaluate	scatter graphs
explore	evidence	support
findings	explanation	variables (what do we change, what do we keep the same, how and what are we measuring?)
gather	key	
group	making a test fair	
identify (name)	method	
investigate	observations	
measure	plan (What will we do?)	
notice	practical enquiry	
observe	prediction (What do you think will happen?)	
patterns	primary sources	
pictograms	questioning	
questions	reasoning	
record	relationships	
same	results (What happened?)	
similarity	secondary sources	
simple tables	standard units	
sort	table	
sorting diagrams	What do we change, what do we keep the same, what are we measuring?	
tally charts		

<p>test</p> <p>What will we do? (plan)</p> <p>What do you think will happen? (prediction)</p> <p>What happened? (results)</p> <p>What have we found out? (conclusion)</p>		
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