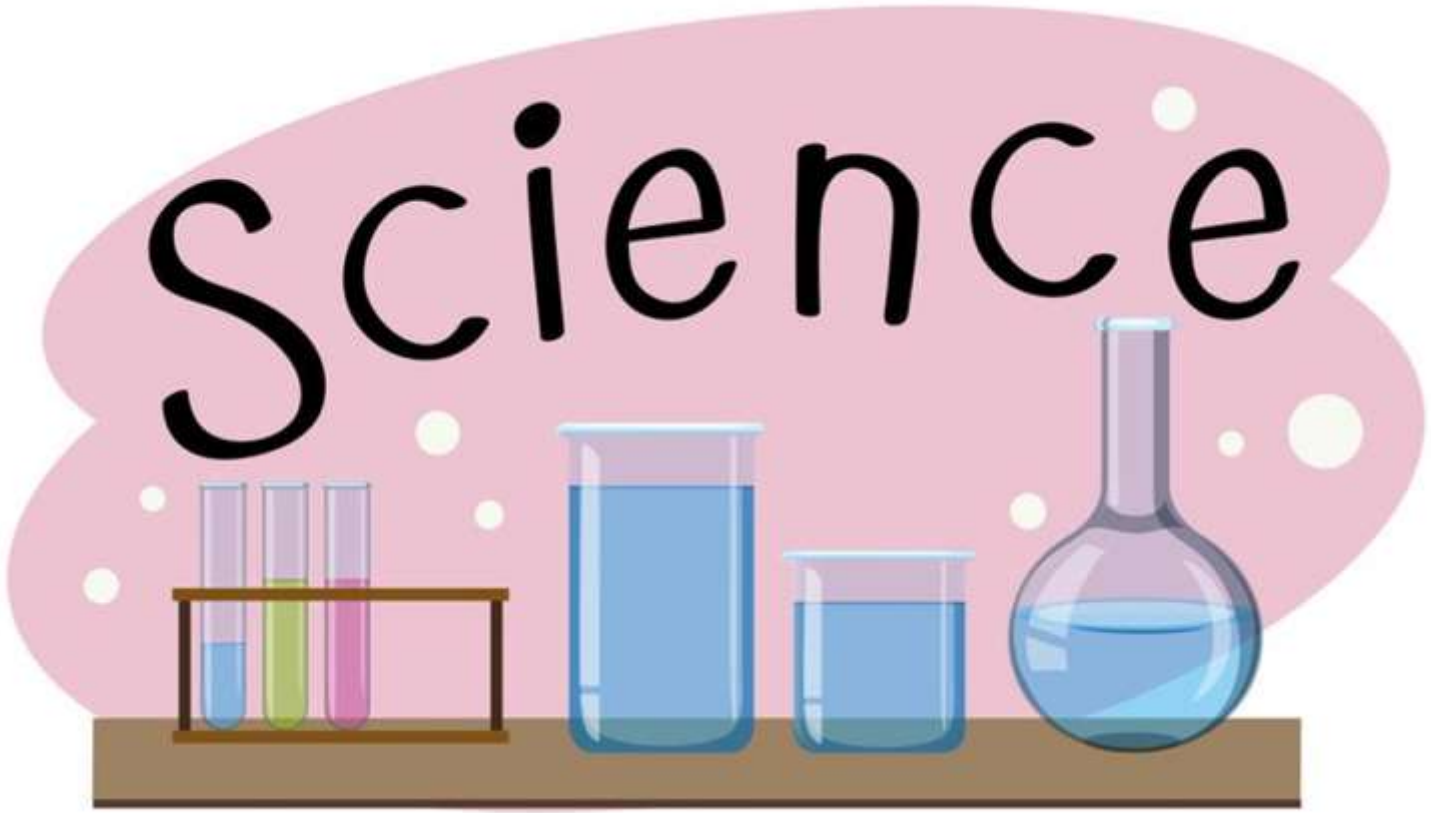
Curriculum
Science – Whole School

CARE ACHIEVE BELIEVE



Curriculum
Science Rationale

CARE ACHIEVE BELIEVE

Intent:	Our Science curriculum should provide children with solid foundations for understanding the world around them. We aim to develop inquisitive and enthusiastic scientists who are excited and curious about natural phenomena. Children are taught the implications of science in the present day and in the future through learning about key scientists who have changed our world because of their discoveries, ideas, inventions and enquiries. We provide a broad and balanced curriculum which covers aspects of biology, chemistry and physics to prepare children for secondary school as well as the use of science in adult life.
Implementation:	In each Science lesson, learners are encouraged to question as well as participate in or lead them own scientific enquiries. By the end of Key Stage Two, we aim for pupils to competently and confidently design their own enquiries. This is achieved through 'working scientifically' underpinning learning in Science with numerous opportunities for children to question, find patterns, notice similarities and differences, classify, make predictions, undertake fair and comparative tests and conclude their findings, drawing upon their scientific knowledge and vocabulary. Each year children participate in Science Week activities which provide them with opportunities to witness first-hand the way in which Science is all around us. Revisiting scientific topics and aspects of 'working scientifically' is built into our curriculum so that we can ensure children progressively develop their knowledge, skills and understanding. Furthermore, we utilise other areas of the curriculum such as Mathematics and Physical Education to make effective and purposeful links as well as allowing children to apply their learning from other subjects.
Impact:	We elicit children's ideas at the beginning and end of Science topics through pre and post-assessments. Pre-assessments provide teachers with a clear picture of children's knowledge so misconceptions can be addressed and lessons can be pitched accordingly. Post-assessments show the progress pupils have made following a series of lessons. Pre and post-assessments are carried out in a variety of ways: discussions about concept maps and Explorify activities; self and peer-assessment; creation of mind maps; creation of retrieval cards and quizzes; presenting their knowledge to others; use of KWL (What I KNOW, what I WANT to know and what I have LEARNT) grids and observation and questioning when children plan, carry out and evaluate scientific enquiries. Children's skills for working scientifically as well as conceptual understanding of scientific topics are focused upon during assessment tasks to ensure our pupils become well-rounded scientists by the end of Year 6. We moderate staff judgements for Science by using the Primary Science Teaching Trust resources; example tasks support staff to decide whether children are working towards, working at and working at greater depth for their year group expectations. There is published data for Science at the end of KS1 and KS2.

Curriculum Map
Science – Whole School

Cycle A

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Materials	Animals, including humans	Light and Sound	Plants	Living things and their habitats	Forces and Earth & Space
	Seasonal changes (covered each half term) Focal point: looking towards Over Peover Cricket Club/the Cenotaph					
KS1 Yr1/2	Animals, including humans		Uses of everyday materials (outdoor focus)		Plants	
	Seasonal changes (covered each half term) Focal point: view of the park from school gate					
LKS2 Yr3/4	Animals, including humans	Rocks	Light	Forces & Magnets	Plants	
UKS2 Yr5/6	Living things and their habitats	Light	Properties of materials	Electricity	Living things and their habitats	Evolution and Inheritance

Curriculum Map
Science – Whole School

Cycle B

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
EYFS	Materials	Animals, including humans	Light and Sound	Plants	Living things and their habitats	Forces and Earth & Space
	Seasonal changes (covered each half term) Focal point: looking towards Over Peover Cricket Club/the Cenotaph					
KS1 Yr1/2	Animals, including humans		Everyday materials (indoor focus)		Plants	Living things and their habitats
	Seasonal changes (covered each half term) Focal point: facing woodland between playground and field					
LKS2 Yr3/4	Animals, including humans	Electricity	States of matter		Sound	Living things and their habitats
UKS2 Yr5/6	Changes of materials		Earth and Space	Forces	Animals, including humans	Animals, including humans

Curriculum Map
Science – EYFS

EYFS (yearly cycle)

Autumn 1 – Materials	Autumn 2 – Animals, including humans	Spring 1 – Light and Sound	Spring 2 - Plants	Summer 1 – Living things and their habitats	Summer 2 – Forces and Earth & Space
Composite To begin to name and recognise simple properties of materials in their environment.	**Composite** To recognise animals, including humans and how to care for them	**Composite** To understand the term shadow To recognise the term sound	**Composite** To understand what a plant is	**Composite** To know what a habitat is	**Composite** To recognise the everyday use of simple forces. To recognise the changes in the natural world around them.
Components • To name the material I am using to make a model and begin to identify a key property the material has. • To reuse materials and talk about what can be recycled. • To test a material to see if they are suitable e.g. is this bridge strong enough for the Billy Goats Gruff. • To take photos or draw pictures to record how materials change.	**Components** • To know animals, need to be cared for • To make observations of common animals • To know how to describe myself (hair, eyes, skin) • To name and describe people in my family and community • To know ways to look after myself (wash hands, teeth, toilet hygiene, keeping warm)	**Components** • To know what a shadow looks like. • To know that we see shadows on a sunny day. • To know shadows changes during the day. • To know and name the sounds I hear. • To understand the source of sounds. • To know how I make different sounds.	**Components** To make observations of familiar plants To know plants, need to be cared for To name and describe some plants To draw pictures of plants	**Components** • To know that a habitat is a home for animals and plants • To explore a variety of habitats (woodland, pond, park, under a log) • To build a home for an animal (bug hotel etc)	**Components** • To understand that movement changes as a result of pushing and pulling an object • To know that different objects can float or sink. • To understand the key features that identify the Sun, the Moon and the stars through observation. • To know the differences between day and night.
Key Vocabulary: ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, big, bigger, biggest, smaller, smaller, smallest, hard, soft, bendy, rigid, wood, plastic, paper, card, metal, strong, weak, hot, apply heat, waterproof, soggy, not waterproof, best, change, change back	**Key Vocabulary:** hair (black, brown, dark, light, blonde, ginger, grey, white, long, short, straight, curly), eyes (blue, brown, green, grey), skin (black, brown, white), big/tall, small/short, bigger/smaller, baby, toddler, child, adult, old person, old, young, brother, sister, mother, father, aunt, uncle, grandmother, grandfather, cousin, friend, family, boy, girl, man, woman, bald, elderly, wrinkles, male, female, freckles	**Key Vocabulary:** Sun, sunny, light, shadow, shady, clouds, torch, see-through, non-see-through, source, light source sound, noise, listen, hear, music, voices, bird song, traffic, sirens, thunder, high, low, loud, quiet, soft, volume, crackle, thunder, hum, buzz, roar	**Key Vocabulary:** Plant, tree, bush, flower, weed, leaves, stem	**Key Vocabulary:** plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environments e.g. beach, forest	**Key Vocabulary:** float, sink, up, down, top, bottom, surface, move, roll, drop, fly, turn, spin, fall, fast, slow, faster, slower, fastest, slowest, further, furthest, wind, air, water, blow, bounce Sun, Moon, Earth, star, planet, sky, day, night, space, round, bounce, float

Curriculum Map
Science – EYFS

EYFS (yearly cycle)

Seasonal changes (covered each half term)
Focal point: looking towards Over Peover Cricket Club/the Cenotaph

Composite:
To recognise the changes in the natural world around them.

Components:
- To understand the differences between day and night.
- To know that there are changes in the natural world around them, including the seasons

Key Vocabulary:
spring, summer, autumn, winter, seasons, sunny, cloudy, hot, warm, cold, shower, raining, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, windy, rainbow, animals, young, plants, flowers, migrate, hibernate, snowflake

Curriculum Map
Science – Overview KS1

Cycle A

Autumn 1 & 2 – Animals, including humans (Year 1 unit) Link Scientist: Chris Packham	Spring 1 & 2 – Uses of everyday materials (Year 2 – OUTDOOR FOCUS) Link Scientist: Charles Macintosh	Summer 1 & 2 – Plants (Year 2 unit) Link Scientist: Jane Colden
Composite To identify and compare a variety of common animals and their structures	**Composite** To compare materials suitability for different uses. To recognise that some materials can change shape by applying a force.	**Composite** To know how to grow a healthy plant
Components • To name a variety of animals (fish, amphibians, reptiles, birds and mammals) • To understand the terms carnivores, herbivores & omnivores • To name animals that are carnivores, herbivores & omnivores • To compare the structures of a variety of common animals (e.g. wings, ears, tails) • To know the basic parts of the human body, including the parts responsible for the 5 senses	**Components** • I know how to distinguish between an object and the material it is made from. (This is a table it is made of wood, this is a window it is made of glass, etc) • I know how to group everyday materials into metals, rock, fabrics, wood, plastic and glass. • To understand why a material is suitable or not suitable for a specific purpose using the vocabulary, **opaque, transparent and translucent, reflective, non-reflective, flexible, rigid.** • To label a picture or diagram of an object made from a combination of different materials describing their properties. e.g. house is made from bricks, slate, glass because … • To understand what properties a suitable material needs to have. • To know how the shape of a material can be changed in a variety of ways - **squashing, bending, twisting and stretching.**	**Components** • To label a plant: roots, stem (trunk), petals or flowers • To know a plant starts as a seed or a bulb • To observe and describe how seeds and bulbs grow. • To know that plants need water, light and warmth to grow and stay healthy.
Key Vocabulary: Fish, amphibians, reptiles, birds, mammals, carnivore, herbivore, omnivore, taste, smell, sight, sound, touch, fingers, skin, tongue, head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, vertebrates,	**Key Vocabulary:** Names of materials: wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials: hard, soft, stiff, bendy, floppy, waterproof, absorbent, rough, smooth, shiny, dull, opaque, transparent, translucent, reflective, non-reflective, flexible, rigid Shape, push, pull, twist, squash, bend, stretch, breaks, tears	**Key Vocabulary:** Light, shade, Sun, warm, cool, water, space, grow, healthy, bulb, germinate, shoot, seedling, roots, stem, trunk, petals, flowers

Curriculum Map
Science – Overview KS1

Cycle A

Seasonal changes (covered each half term)

Focal point: view of the park from school gate

Composite:

To understand that we experience four seasons.

Components:

- To know different types of weather.
- To know the names of the four seasons.
- To understand the differences in the local environment inc living things, throughout the year
- To understand how things in my life change during the seasons. i.e. the clothes I wear, the activities I do etc

Key Vocabulary

weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length

Curriculum Map
Science – Overview KS1

Cycle B

Autumn 1 & 2 – Animals, including humans (Year 2 unit) Link Scientist: Patricia Bath	Spring 1 & 2 – Everyday materials (Year 1 unit – INDOOR FOCUS) Link Scientist: Ole Kirk Christiansen	Summer 1 – Plants (Year 1 unit) Link Scientist: Beatrix Potter	Summer 2 – Living things and their habitats (Year 2 unit) Link Scientist: Steve Backshall
Composite To understand how animals, including humans grow into healthy adults	**Composite** To identify, group and describe everyday materials using their properties.	**Composite** To identify, name and describe a variety of plants	**Composite** To understand the importance of a habitat
Components • To know the basic parts of the human body, including the parts responsible for the 5 senses • To understand the term offspring • To know offspring grow into adults • To know that some offspring don't look like their adult • To know that animals, including animals need water, food & air to survive • To know to grow into a healthy adult the importance of exercise, healthy eating and hygiene	**Components** • I know how to group everyday materials into metals, rock, fabrics, wood, plastic and glass. • I know how to distinguish between an object and the material it is made from. (This is a table it is made of wood, this is a window it is made of glass, etc) • I know how to sort and compare everyday materials using a range of vocabulary	**Components** • To name some garden plants • To name some wild plants • To understand the term evergreen • To label a plant: roots, stem (trunk), petals or flowers	**Components** • To compare things that are living, dead and never been alive • To name a variety of plants/animals suited to a habitat/microhabitat (movement, finding food) • To understand that habitats provide shelter, food & water for animals & plants • To understand that plants/animals within a habitat depend on each other • To construct a simple food chain starting with a plant
Key Vocabulary: Offspring, reproduction, growth, baby, toddler, child, teenager, adult, old person, survive, survival, water, food, air, exercise, heartbeat, breathing, hygiene, germs, disease, food types (meat, fish, vegetables, bread, rice, pasta, dairy), taste, smell, sight, sound, touch, fingers, skin, tongue, eyes, ears, mouth Names of animals and their babies (e.g. chick/hen, kitten/cat, caterpillar/butterfly)	**Key Vocabulary:** Object, material, wood, plastic, glass, water, metal, rock, brick, paper, fabric, elastic, foil, card, cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see-through, not see-through.	**Key Vocabulary:** Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees: hawthorn, ash, sycamore, oak, holly, beech, birch, cedar, chestnut, elm, Names of garden and wild flowering plants:	**Key Vocabulary:** Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, water, air, survive, survival, pond, woodland, field, under logs, in bushes, conditions, light, dark, shady, sunny, wet, damp, dry, hot, cold

Curriculum Map
Science – Overview KS1

Cycle B

Seasonal changes (covered each half term)

Focal point: facing woodland between playground and field

Composite:

To understand that we experience four seasons.

Components:

- To know different types of weather.
- To know the names of the four seasons.
- To understand the differences in the local environment inc living things, throughout the year
- To understand how things in my life change during the seasons. i.e. the clothes I wear, the activities I do etc

Key Vocabulary

weather, sunny, rainy, raining, shower, windy, snowy, cloudy, hot, warm, cold, storm, thunder, lightning, hail, sleet, snow, icy, frost, puddles, rainbow, seasons, winter, summer, spring, autumn, Sun, sunrise, sunset, day length

Curriculum Map
Science – Overview LKS2

Cycle A

Autumn 1 – Animals, including humans (Year 3 unit) Link Scientist: Wilhelm Roentgen	Autumn 2 – Rocks (Year 3 unit) Link Scientist: Mary Anning	Spring 1 – Light (Year 3 unit) Link Scientist: Percy Shaw	Spring 2 – Forces & Magnets (Year 3 unit) Link Scientist: William Gilbert	Summer 1 & 2 – Plants (Year 3 unit) Link Scientist: Carolus Linnaeus
Composite • To understand the function of a skeleton and muscles • To understand the importance of nutrition for animals, including humans • To know animals do not make their own food	**Composite** To identify and compare rocks, fossils and soils.	**Composite** To understand light is an energy that can be manipulated.	**Composite** To know that forces are a push or a pull in a direction and understand magnetism.	**Composite** To know the functions of different parts of flowering plants
Components • To know the names of some bones (skull, spine, ribs) • To know the purpose of the skeleton and muscles – movement, protection, support • To know the nutrients found in food: carbohydrates, protein, vitamins, minerals, fats, sugars, fibre • To know a balance of nutrients is needed to stay healthy	**Components** • To know that rock is a naturally occurring material. • To know the name of some types of rock including **marble, chalk, granite, sandstone, slate.** • To know examples of **igneous** (granite), **sedimentary** (sandstone, chalk) and **metamorphic** (slate marble) rock. • To understand the vocabulary of (grain, crystals, layers, hard, soft, texture, absorb water) to describe the observable features of the named rocks. • To understand how a fossil is formed. • To understand that soils are a mixture of rocks and living/dead matter.	**Components** • To understand darkness is the absence of light. • To know how we see objects in light. • To understand that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses. • To know the terms transparent, translucent and opaque • To understand how shadows are formed • To understand how shadows change size.	**Components** • To know examples of forces in everyday life • To understand that objects can move differently on different surfaces • To know that magnets have two poles which attract and repel • To understand that not all metals are magnetic/attracted to a magnet	**Components** • To explain the function of the roots, stem/trunk, leaves & flowers • To know the requirements plants, need to grow: air, light, water, nutrients from soil and room to grow • To know that different plants require different amounts of air • To know that water travels from the soil, to the roots to the stem and the • To understand the term pollination (using male and female parts) • To know 3 forms of seed dispersal – wind, animal, water (river/stream/canal)
Key Vocabulary: Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	**Key Vocabulary:** rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, fossil, bone, flesh, minerals, marble, chalk, granite, sandstone, slate, soil, types of soil (e.g. peaty, sandy, chalk, clay), igneous, sedimentary, metamorphic	**Key Vocabulary:** light, light source, Sun, sunlight, dangerous	**Key Vocabulary:** Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole	**Key Vocabulary:** Photosynthesis, pollen, insect/wind pollination, male, female, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal), air, nutrients, minerals, soil, absorb, transport

Curriculum Map
Science – Overview LKS2

Cycle B

Autumn 1 – Animals, including humans (Year 4 unit) Link Scientist: David Attenborough	Autumn 2 – Electricity (Year 4 unit) Link Scientist: Thomas Edison	Spring 1 & 2 – States of matter (Year 4 unit) Link Scientist: Daniel Fahrenheit	Summer 1 – Sound (Year 4 unit) Link Scientist: Alexander Graham Bell	Summer 2 – Living things and their habitats (Year 4 unit) Link Scientist: Rachel Carson
Composite To understand the journey of food through the human body To understand food chains	**Composite** To know how a simple electric circuit works	**Composite** To recognise that materials can change state by heating and cooling.	**Composite** To know that sound is a vibration which travels through a medium to the ear.	**Composite** To classify living things and understand how habitats can change
Components • To know the 4 types of teeth and their functions – Incisors for cutting, canines for tearing, molars and premolars for chewing • To identify the key stages of digestion – teeth & saliva, oesophagus, stomach, small intestine, large intestine & rectum • To know the nutrients found in food: carbohydrates, protein, vitamins, minerals, fats, sugars, fibre • To know the terms producer, prey, predator • To construct a food chain using the correct terminology	**Components** • To know that electricity is a form of energy. • To understand that a source of electricity (mains or battery) is needed for electrical devices to work. • To know that electricity sources push electricity round a circuit. • To understand a complete circuit is needed for electricity to flow and devices to work. • To understand that some materials allow electricity to flow easily and these are called conductors. • To know that materials that don't allow electricity to flow easily are called insulators.	**Components** • To understand materials can be grouped into solids, liquids and gases. • To understand how heating causes solids to melt into liquids and liquids to evaporate into gases. • To understand how cooling causes gases to condense into liquids and liquids to freeze into solids. • To know melting point of water is 0°C and the boiling point is 100°C. • To know that the higher the temperature the faster the rate of evaporation. • To understand how condensation and evaporation occur within the water cycle.	**Components** • To understand that sound is a type of energy created by vibrations; the louder the sound, the bigger the vibration. • To understand that sound travels from its source in all directions and we hear it when it travels to our ears. • To know that sound travel can be blocked. • To know that sound moves through all materials by making them vibrate; changing the way an object vibrates changes its sound. • To know that sound volume changes dependant on the distant from the sound source • To know that faster vibrations (higher frequencies) produce higher pitched sounds	**Components** • To know how to group living things in a variety of ways (key features) • To use a classification key • To know some positive ways humans can impact a habitat (e.g. nature reserves) • To know some negative ways habitats can be humans or nature can impact a habitat (e.g. littering, deforestation)
Key Vocabulary: Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, joints, support, protect, move, skull, ribs, spine	**Key Vocabulary:** Electricity, electrical appliance/device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol	**Key Vocabulary:** solid, liquid, gas, heating, cooling, state change, melting, freezing, melting point, boiling, boiling point, evaporation, condensation, temperature, water cycle	**Key Vocabulary:** Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation	**Key Vocabulary:** Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate

Curriculum Map
Science – Overview UKS2

Cycle A

Autumn 1 – Living things and their habitats (Year 5 unit) Link Scientist: Jane Goodall	Autumn 2 – Light (Year 6 unit) Link Scientist: Alhazen	Spring 1 – Properties of materials (Year 5 unit) Link Scientist: Stephanie Kwolek	Spring 2 – Electricity (Year 6 unit) Link Scientist: Nikola Tesla	Summer 1 - Living things and their habitats (Year 6 unit) Link Scientist: Eva Crane	Summer 2 – Evolution and Inheritance (Year 6 unit) Link Scientist: Charles Darwin
Composite To understand the lifecycles of a variety of plants & animals	**Composite** To understand that light travels in straight lines and to know how we see objects	**Composite** To justify materials suitability for different uses.	**Composite** To know and understand that the amount of voltage in a circuit can affect the output of a component, including brightness, volume and speed.	**Composite** To classify living things based on specific and common characteristics	**Composite** To describe how living things have adapted and evolved over time.
Components • To know the terms sexual and asexual reproduction • To know how plants, reproduce sexually (through pollination) • To know how plants, reproduce asexually (through bulbs, tubers, runners, plantlets) • To know how different animals, reproduce sexually • To compare the life cycles of different animals (mammals, insects, birds, amphibians, reptiles)	**Components** • To understand that animals see light sources when light travels from the source into their eyes. • To understand that animals see objects when light is reflected off that object and enters their eyes. • To know that light reflects off all objects (unless they are black). Non-shiny surfaces scatter the light so we don't see the beam. • To know that light travels in straight lines, called rays or beams of light	**Components** • To know how to group everyday materials based upon properties including their hardness, solubility, transparency, conductivity *(electrical and thermal), and response to magnets.* • To understand why a material is suitable or not suitable for a specific purpose based upon its physical properties. • To understand that when some materials are mixed a chemical reaction can create a change of state or a new material. These changes are **irreversible** e.g. burning and rusting.	**Components** • To know that batteries/cells are a store of energy and this energy pushes electricity around the circuit. • To know that battery/cell energy is measured in voltage. • To understand that when the battery's/cell's energy is gone it stops pushing. (Voltage measures the 'push.') • To know the symbols for: lamp, wire, buzzer, cell, battery, motor, switch (open), switch (closed). • To understand that a series circuit will not work if a lamp is broken or a wire is disconnected. • To understand how to vary the output of a component e.g. bulb, buzzer, motor	**Components** • To know that living things can be grouped into plants, animals and micro-organisms • To understand the terms vertebrate and invertebrates • To know animals can be grouped into vertebrates and invertebrates • To know the common characteristics of the vertebrates' group - fish, amphibians, reptiles, birds, mammals • To know that invertebrates can be grouped into insects, spiders, snails and worms • To know plants can be grouped into flowering and non-flowering	**Components** I can define the terms evolution and inheritance. I know that fossils provide information about living things that inhabited the Earth millions of years ago. I recognise that living things have adapted and evolved over time to survive within the environment. I understand that organisms reproduce and offspring inherit similar characteristics. I know that variation exists within a population and between offspring of some plants.
Key Vocabulary: life cycle, reproduce, sexual, fertilises, asexual, plantlets, runners, tubers, bulbs, cuttings, pollination, mammals, insects, birds, amphibians, reptiles	**Key Vocabulary:** light, light source, Sun, sunlight, dangerous, straight lines, light rays	**Key Vocabulary:** Thermal/electrical insulator/conductor, reversible/non-reversible change, burning, rusting	**Key Vocabulary:** Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage	**Key Vocabulary:** vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, warm-blooded, cold-blooded, insects, spiders, snails, worms, flowering, non-flowering, mosses, ferns, conifers	**Key Vocabulary:** offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils, evolve, evolution

Curriculum Map
Science – Overview UKS2

Cycle B

Autumn – Changes of materials (Year 5 unit) Link Scientist: Jamie Garcia	Spring 1 – Earth and Space (Year 5 unit) Link Scientist: Tim O'Brien	Spring 2 – Forces (Year 5 unit) Link Scientist: Archimedes	Summer 1 – Animals, including humans (Year 6 unit) Link Scientist: William Harvey	Summer 2 – Animals, including humans (Year 5 unit) Link Scientist: Robert Winston
Composite To identify that changes can be reversible or irreversible.	**Composite** To know and understand the movement of the Earth, Moon and other planets in the Solar System.	**Composite** To know that there are different types of forces and understand their different effects	**Composite** To understand the importance of a healthy circulatory system	**Composite** To understand how humans develop to old age
Components • To know how to group everyday materials based upon properties including their hardness, solubility, transparency, conductivity *(electrical and thermal), and response to magnets.* • To know that some materials will dissolve in liquid to form a solution, these are **soluble** and solids that do not dissolve are **insoluble**. • To understand when some materials are mixed, they can be separated by sieving, filtering, evaporating or by magnetic properties. These changes are reversible. • To understand that when some materials are mixed a chemical reaction can create a change of state or a new material. These changes are **irreversible**, e.g. burning and rusting. • To understand that heating can sometimes cause materials to change permanently. When this happens, a new substance is made.	**Components** • To know the approximate shape of the Sun, Earth and Moon – spherical • To understand the movement of planets in the Solar System • To know how the Earth and Moon move • To understand why we have day and night. • To know the moon has different phases.	**Components** • To understand that air resistance and water resistance are forces against motion caused by objects having to move air and water out of their way. • To know that friction is a force against motion caused by two surfaces rubbing against each other. • To understand that some objects require large forces to make them move; gears, pulley and levers can reduce the force needed to make things move. • To know that some objects/animals are streamlined to minimise the effects of air/water resistance.	**Components** • To know the main parts of the circulatory system and their function (heart, blood vessels and blood) • To know that water and nutrients are transported in the blood • To understand the effect of lifestyle choices (diet, exercise, drugs) on your circulatory system	**Components** • To know the stages of the human life cycle • To identify specific steps in each stage (baby – crawling, teenage – puberty)
Key Vocabulary: Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	**Key Vocabulary:** Sun, Moon, Earth, planets (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, Solar System, rotate, star, orbit	**Key Vocabulary:** Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	**Key Vocabulary:** Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle	**Key Vocabulary:** Puberty, reproduction, conception, foetus, embryo, womb, gestation, baby, toddler, teenager, adolescent, adult, elderly, growth, development

Curriculum Map
Science – Working Scientifically

Questioning

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Questioning	They are beginning to ask a range of questions. They can answer how or why questions about their environment. They can answer how and why questions about their experiences They can ask appropriate questions about what they have heard.	Ask some simple questions using everyday language and begin to use some simple scientific words. Begin to recognise that questions can be answered in different ways such as: observing changes over time, grouping and classifying and simple tests. With support, use observations and ideas to suggest answers to questions.	Ask simple questions using everyday language and year 2 scientific language. Recognise that questions can be answered in different ways such as: observing changes over time, grouping and classifying, simple tests, researching using secondary sources and noticing patterns. Use observations and ideas to suggest answers to questions.	Begin to ask some relevant questions using scientific language. Begin to make some decisions about which type of enquiry will be the best way of answering questions including: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources.	Ask a range of relevant questions using scientific language. Make some decisions about which type of enquiry will be the best way of answering questions including: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations); and researching using secondary sources.	Begin to ask some significant scientific questions based on scientific concepts. Begin to plan different types of scientific enquiries to answer questions: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations, including recognising and controlling variables); and researching using secondary sources.	Ask a range of significant scientific questions based on scientific concepts. Plan the most appropriate type of scientific enquiry to answer questions including: observing over time; pattern seeking; identifying, classifying and grouping; comparative and fair testing (controlled investigations, including recognising and controlling variables); and researching using secondary sources.

Curriculum Map
Science – Working Scientifically

Investigating

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Investigating	Begin to compare two things Can look for similarities and differences. Can identify a similarity or difference between two places, objects, materials or living things.	Begin to perform simple tests Begin to use practical resources to gather evidence to answer questions. With support, carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.	Perform simple tests Use practical resources to gather evidence to answer questions. Carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time.	Begin to set up simple practical enquiries, comparative and fair tests Begin to select practical resources to gather evidence to answer questions generated by themselves or given to them. With support, they follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.	Set up simple practical enquiries, comparative and fair tests Select from a range of practical resources to gather evidence to answer questions generated by themselves or given to them. They follow their plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking.	Plan different types of scientific enquiries to answer questions Begin to decide for themselves how to gather evidence to answer a scientific question, choosing a type of enquiry to carry out. Select from a range of practical resources to gather evidence. Begin to recognise how secondary sources can be used to answer questions. Decide what observations or measurements to make over time and for how long. With support, look for patterns and relationships using a suitable sample. Carry out fair tests, beginning to recognise and control variables.	Independently, plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Decide for themselves how to gather evidence to answer a scientific question, choosing a type of enquiry to carry out and justifying their choice. Independently select from a range of practical resources to gather evidence. Recognise how secondary sources can be used to answer questions. Independently decide what observations or measurements to make over time and for how long. Look for patterns and relationships using a suitable sample. Carry out fair tests, recognising and controlling variables.

Curriculum Map
Science – Working Scientifically

Drawing conclusions

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Drawing conclusions	Begin to talk about what they have found out Begin to say what happened	Suggest answers to questions Describe what happened and whether they were surprised at the findings or not. Begin to orally answer questions based upon their findings and their experiences of the world	Suggest answers to questions and begin to look for patterns Use observations from their investigations to answer questions based upon their findings and their experiences of the world With support, begin to look for changes, patterns, similarities and differences in their findings	Draw simple conclusions and raise further questions Begin to use straightforward scientific evidence to answer questions or to support their findings using age-appropriate scientific language. With support, begin to look for changes, patterns, similarities and differences in their results in order to draw simple conclusions using age-appropriate scientific language. With support, begin to identify new questions arising from the results and make new predictions.	Use results to draw simple conclusions, suggest improvements and raise further questions Use straightforward scientific evidence to answer questions or to support their findings using age-appropriate scientific language. See patterns in results; begin to say what has been found out, linking cause and effect to develop simple conclusions. using age-appropriate scientific language. With support, begin to identify new questions arising from the results, make new predictions and suggest ways of improving what they have already done.	Draw conclusions, including any causal relationships and scientific explanations and set up further linked investigations Identify scientific evidence to support or refute ideas or arguments. Draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings. Use their findings to identify when further tests and observations are needed.	Draw conclusions, including any causal relationships and scientific explanations of and degree of trust in results and set up further linked comparative and fair tests Identify and explain the scientific evidence to support or refute ideas or arguments. Draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings including an analysis of the degree of trust in their findings. Use their findings to identify when further comparative, fair tests and observations are needed.

Curriculum Map
Science – Working Scientifically

Identifying & Classifying

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Identifying & Classifying	They are beginning to sort items using their senses Use all their senses in hands-on exploration. Explore collections of materials with similar and/or different properties. They can sort items by simple observable features.	Use their observations to identify & classify. Make careful observations to identify features and notice changes. Sort and group living things or materials using similarities and differences. Use simple charts to identify unknown animals and plants. Begin to identify and describe how they group items.	Use given criteria to identify and classify. Sort and classify things according to given criteria. Classify items using simple prepared tables and sorting rings. Describe the characteristics they used to identify a living thing.	Identify and classify in different ways. Record classifications using Venn diagrams, Carroll diagrams, tables etc. Compare, classify and group items using Scientific criteria (e.g. magnetic, not magnetic). Independently, classify and group in different ways.	With support, use similarities and differences in order to group and identify. Begin to identify similarities/ differences/ changes when talking about scientific processes. Use and begin to create simple keys.	Use similarities and differences in order to group and identify. Accurately, identify similarities/ differences/ changes when talking about scientific processes and materials.	Independently, use similarities and differences in order to group and identify. Independently, identify similarities/ differences/ changes when talking about scientific processes and living things. Use and develop keys to identify, classify and describe living things. Identify and explain patterns seen in the natural environment.

Curriculum Map
Science – Working Scientifically

Recording & Presenting

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Recording and Presenting	Begin to record and present To draw pictures (of plants and animals) To create group/class block graphs to record votes/findings To present what they found out orally	With support, record and present simple findings and ideas To begin to draw diagrams and label To draw pictures (or take photographs) over a period of time To present grouping in a simple format To begin to complete simple tally tables, block graphs and pictograms To present findings orally.	Record and present simple findings and ideas To draw diagrams, using observations, and label parts, including over a period of time To present grouping in a given format To complete simple tally tables, block graphs and pictograms with a simple scale To present findings orally, with simple scientific language, and visually.	With support, record and present results and ideas To produce detailed labelled diagrams using observations, including over a period of time To begin to present results by creating or completing Venn and Carroll diagrams, tally, columned tables and simple bar charts, using scales To present results orally, visually or in written form with support, using simple scientific language	Record and present results and ideas To produce detailed labelled diagrams using observations, including over a period of time To present results by creating or completing Venn and Carroll diagrams, simple keys, tally, columned tables and simple bar charts, using scales To present results orally, visually or in written form, using key vocabulary and scientific language	With support, record and present data and ideas in detail To produce detailed labelled diagrams using observations, including over a period of time To present data by creating Venn and Carroll diagrams, keys, columned tables, scatter graphs, bar charts and line graphs, using appropriate scales To present results orally, visually and in written form, using key vocabulary and scientific language	Independently, record and present data and ideas in detail To independently produce detailed and accurate labelled diagrams using observations, including over a period of time To choose the most appropriate form to present data: Venn and Carroll diagrams, keys, columned tables, scatter graphs, bar charts and line graphs, using appropriate scales To present results orally, visually and in written form, using relevant key vocabulary and scientific language