Materials (Chemistry)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR **(States of matter)**	YEAR FIVE	YEAR 6
Science Knowledge	I explore a range of materials, including natural materials. I make objects from different materials, including natural materials. I observe, measure and record how materials change when heated and cooled. I compare how materials change over time and in different conditions. I explore the natural world around me. I describe what I see, hear and feel whilst outside.	I distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. I can describe the simple physical properties of a variety of everyday materials. I compare and group together a variety of everyday	I can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. I can find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.		I compare and group materials together, according to whether they are solids, liquids or gases. I 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). I identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	I can 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. I know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. I can use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. I can demonstrate that dissolving, mixing and changes of state are reversible changes. I can explain that some changes result in the formation of new materials, and that this kind of	

		materials on the basis of their simple physical properties.				change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically	Show curiosity and ask questions. Make observations using their senses and simple equipment. Make direct comparisons. Identify, sort and group. Record their observations by drawing, taking photographs, using sorting rings. or boxes and, in Reception, on simple tick sheets Talk about what they have done and found	• Ask their own simple questions about what they notice 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	• 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 dataloggers. • 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	• Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. • 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	

	out. Use their observations to help them to answer their 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.		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 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.	
Enquiry types		• observing changes over time. • noticing patterns. • identifying, grouping and classifying. • carrying out simple comparative tests. • finding things out using secondary sources.		• observing changes over time. • noticing patterns. • identifying, grouping and classifying. • carrying out comparative and fair tests. • finding things out using secondary sources.		• observing changes over time. • noticing patterns. • identifying, grouping and classifying. • carrying out comparative and fair tests. • finding things out using secondary sources.	
Why here/Why now?	Children can use senses to explain what they see, feel, and hear in relation to the world around them. In preparation for year 1.	Sets scene for Year Two materials, e.g., naming some materials and describing their properties.	Build on Year One knowledge. Examine properties of materials and see how they differ when changed.		Water cycle link to water and plant growth in Y3. Introduction of the change of state in preparation for year 5 materials.	Builds on changing state from Y4 and previous classification work.	

Key Vocabulary	ice, water, frozen, icicle, snow, melt, wet, cold, slippery, smooth, , hard, soft, bendy, rigid, wood, plastic, paper, card, metal, strong, weak, hot, apply heat, waterproof, soggy, not waterproof, best, change, change back. Expose children to supplementary vocabulary such as: solid, liquid, gas, most suited	Object, material, wood, plastic, glass, metal, water, 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	Names of materials – wood, metal, plastic, glass, brick, rock, paper, cardboard Properties of materials – as for Year 1 plus opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape, push/pushing, pull/puling, twist/twisting, squash/squashing, bend/bending, stretch/stretching		Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle	Thermal/electrical insulator/conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/non-reversible change, burning, rusting, new material	

Plants (Biology)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge		I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. I can identify and describe the basic structure of a variety of common flowering plants, including trees.	I can observe and describe how seeds and bulbs grow into mature plants. I can find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	I can identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. I can 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. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal			
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically Red = must be done Amber = natural link Black – at the discretion		• Ask their own simple questions about what they notice 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		• 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 dataloggers. • 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			

of the investigator.				• 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.			
Enquiry types		• observing changes over time. • noticing patterns. • identifying, grouping and classifying. • carrying out comparative and fair tests. • finding things out using secondary sources.			• observing changes over time, • noticing patterns, • grouping and classifying things, • carrying out simple comparative and fair tests • and finding things out using secondary sources			
Why here/Why now?		Build on names / plants work from EYFS. Springtime things start growing	Laying foundation for plant life cycle work in Y3. Knowing what plants need to grow.		Bringing together KS1 work on plants with the plant life cycle and importance of water. Summarises all work on plants. (Food chain-producer)			
Key Vocabulary		Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud Names of trees in the local area Names of garden and wild flowering plants in the local area	As for Year 1 plus light, shade, sun, warm, cool, water, grow, healthy		Photosynthesis, pollen, insect/wind pollination, seed formation, seed dispersal (wind dispersal, animal dispersal, water dispersal)			

Seasonal Changes (Physics)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR SIX
Science knowledge	I play and explore outside in all seasons and in different weather. I observe living things throughout the year. I explore the natural world around me. I describe what I see, hear and feel whilst outside. I understand the effect of changing seasons on the natural world around me.	I can observe changes across the four seasons. I can observe and describe weather associated with the seasons and how day length varies.					
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically	Show curiosity and ask questions. Make observations using their senses and simple equipment. Make direct comparisons. Identify, sort and group. Record their observations by drawing, taking photographs, using sorting rings. or boxes and, in Reception, on simple tick sheets Talk about what they have done and found out. Use their observations to help them to answer their questions	• Ask their own simple questions about what they notice 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					

Enquiry types		• observing changes over time. • noticing patterns. • identifying, grouping and classifying. • carrying out comparative and fair tests. • finding things out using secondary sources.					
Why this/Why now?	Build on from work that is focussed on plants. What is different in the world now and what can be seen (compared to last season)	To use what they have already learnt from EYFS to explain the world around us in greater detail. Seasonal changes – what's different?					
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 Expose children to supplementary vocabulary such as: hibernate, migrate, snowflake	Weather (sunny, rainy, windy, snowy etc.) Seasons (winter, summer, spring, autumn) Sun, sunrise, sunset, day length					

Rocks and Soil (Chemistry)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge				I compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. I describe in simple terms how fossils are formed when things that have lived are trapped within rock. I recognise that soils are made from rocks and organic matter.			
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically				• 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 dataloggers. • 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.			
Enquiry types				• observing changes over time, • noticing patterns, • grouping and classifying things, • carrying out simple comparative and fair tests • and finding things out using secondary sources			

Why this/Why now?				Standalone unit – lays groundwork for Y6 evolution / inheritance with work on fossils. Classifying rocks – supports classification work in Y4.			
Key Vocabulary				Rock, stone, pebble, boulder, grain, crystals, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy/chalk/clay soil			

Animals including Humans (Biology)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge	**Excluding humans** I name and describe animals that live in different habitats. I describe different habitats. I recognise some environments that are different to the one in which I live. **Including humans** I describe people who are familiar to me. I learn about how to take care of myself. I talk about members of my immediate family and community.	Term 1 - I identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I identify and name a variety of common animals that are carnivores, herbivores and omnivores. I describe and compare the structure of a variety of	I notice that animals, including humans, have offspring which grow into adults. I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air) I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Term 1 – I can 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. Term 2 - I identify that humans and some other animals have skeletons and muscles for support, protection, and movement.	I describe the simple functions of the basic parts of the digestive system in humans. I can identify the different types of teeth in humans and their simple functions. I can construct and interpret a variety of food chains, identifying producers, predators and Prey.	I can describe the changes as humans develop to old age.	I can identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. I can describe the ways in which nutrients and water are

	I name and describe people who are familiar to me.	common animals (fish, amphibians, reptiles, birds and mammals, including pets) Term 2 - I identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.					transported within animals, including humans.
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically	Show curiosity and ask questions. Make observations using their senses and simple equipment. Make direct comparisons. Identify, sort and group. Record their observations by drawing, taking	• Ask their own simple questions about what they notice 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		• 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 dataloggers. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.		• Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. • planning different types of scientific enquiries to answer	

	photographs, using sorting rings. or boxes and, in Reception, on simple tick sheets Talk about what they have done and found out. Use their observations to help them to answer their 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.	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 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.
Enquiry types		• observing changes over time, • noticing patterns, • grouping and classifying things,	• observing changes over time, • noticing patterns, • grouping and classifying things,	• observing changes over time. • noticing patterns. • identifying, grouping and classifying.

		• carrying out simple comparative and fair tests • and finding things out using secondary sources		• carrying out simple comparative and fair tests • and finding things out using secondary sources		• carrying out comparative and fair tests. finding things out using secondary sources.	
Why this/Why now?	Introduction to the word habitat and understanding that that is where animals and humans live. Discussions of families and communities and living together.	Builds on basic idea / concepts on the human body from EYFS. Sets the scene for developing Y2 basic needs / reproduction / etc.	Developing the idea of exercise / hygiene / healthy living as part of basic needs builds on food / teeth from EYFS / Y1. Sets scene for skeletal system / nutrition / health in Y3	Develop the pupils' knowledge of the skeletal/ muscular system from Y2 and link this with exercise / health / nutrition. Concept of transport system (blood) for Y4 / Y6	Concept of nutrition from Y3 – now "what happens to the food we eat?" Function and role of teeth in nutrition / digestion Food chains further developed from Y2 work.	Builds on reproduction from Y2 and changes in lifestyle from Y3 / Y4	Builds on Y3 circulation work / balanced diet. As pupils are developing looks at negative impacts of lifestyle on human system
Key Vocabulary	names of animals, live, on land, in water, jungle, desert, North Pole, South Pole, sea, hot, cold, wet, dry, snow, ice Expose children to supplementary vocabulary such as: environment, polar regions, ocean, camouflage	Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves. Names of animals experienced first-hand from each vertebrate group Parts of	Offspring, reproduction, growth, child, young/old stages (examples - chick/hen, baby/child/adult, caterpillar/butterfly), exercise, heartbeat, breathing, hygiene, germs, disease, food types	Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, move, skull, ribs, spine, muscles, joints	Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore,	Puberty – the vocabulary to describe sexual characteristics	Heart, pulse, rate, pumps, blood, blood vessels, transported, lungs, oxygen, carbon dioxide, nutrients, water, muscles, cycle, circulatory system, diet, exercise, drugs, lifestyle

		the body including those linked to PSHE teaching. Senses – touch, see, smell, taste, hear, fingers (skin), eyes, nose, ear and tongue	(Examples – meat, fish, vegetables, bread, rice, pasta)		omnivore, producer, predator, prey, food chain		

Living Things and their Habitats (Biology)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge	I explore the plants in the surrounding natural environment. I explore the animals in the surrounding natural environment. I explore plants and animals in a contrasting natural environment.		I explore and compare the differences between things that are living, dead, and things that have never been alive. I can 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. I can identify and name a variety of plants and animals		I recognise that living things can be grouped in a variety of ways. I explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. I recognise that environments can change and that this can sometimes pose dangers to living things.	I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. I can describe the life process of reproduction in some plants and animals.	I can 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. I can give reasons for classifying plants and animals based on specific characteristics.

	I draw information from a simple map. I explore the natural world around me. I describe what I see, hear and feel whilst outside. I recognise some environments that are different to the one in which they live.		in their habitats, including micro habitats. I can 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.				
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically	Show curiosity and ask questions. Make observations using their senses and simple equipment.	• Ask their own simple questions about what they notice and recognising that they can be answered in different ways • Observing closely, using simple equipment • Performing simple tests • Identifying and classifying	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 dataloggers.	• Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources.			

	Make direct comparisons. Identify, sort and group. Record their observations by drawing, taking photographs, using sorting rings. or boxes and, in Reception, on simple tick sheets Talk about what they have done and found out. Use their observations to help them to answer their questions	• Using their observations and ideas to suggest answers to questions • Gathering and recording data to help in answering questions	• 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	• 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 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.
Enquiry types		• observing changes over time, • noticing patterns, • grouping and classifying things, • carrying out simple comparative tests, •finding things out using secondary sources	• observing changes over time, • noticing patterns, • grouping and classifying things, • carrying out simple comparative and fair tests • and finding things out using secondary sources	• observing changes over different periods of time, • noticing patterns, • grouping and classifying things, • carrying out comparative and fair tests • and finding things out using a wide range of secondary sources.

Why this/Why now?	Build an understanding that the world is different in different places. Help pupils understand animals live in different places.		Why carnivores, herbivores & omnivores live where they do – features of different habitats. Beginning of energy transfer concept for Y4 (food chains)		Builds on grouping / classification from KS1 Introduces concept of adaptation for Y6 and damage to habitats	Uses human life cycle from term 1 to extend to plants / other animals. Reproduction / inheritance / adaptation work from Y4/Y5 sets scene for Y6 work	Pulling themes / work from last 6 years together to apply scientific method to evolution and inheritance.
Key Vocabulary	plant, tree, bush, flower, vegetable, herb, weed, animal, names of plants and animals they see, name of a contrasting environment e.g., beach, forest Expose children to supplementary vocabulary such as: environment		Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed. Names of local habitats e.g., pond, woodland etc. Names of micro-habitats e.g., under logs, in bushes etc.		Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate	Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings	Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering, non-flowering

Forces (Physics)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge	I explore how to change how things work. I explore how the wind can move objects. I explore how objects move in water. I explore the natural world around me. I describe what I see, hear and feel whilst outside			I can compare how things move on different surfaces. I notice that some forces need contact between two objects, but magnetic forces can act at a distance. I observe how magnets attract or repel each other and attract some materials and not others. I compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials. I describe magnets as having two poles. I predict whether two magnets will attract or repel each other, depending on which poles are facing.		I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces. I recognise that some mechanisms, including levers, pulleys, and gears, allow a smaller force to have a greater effect.	
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically	Show curiosity and ask questions. Make observations using their senses and simple equipment. Make direct comparisons.			• 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 dataloggers. • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.		• Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources.	

	Identify, sort and group. Record their observations by drawing, taking photographs, using sorting rings. or boxes and, in Reception, on simple tick sheets Talk about what they have done and found out. Use their observations to help them to answer their 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.	• 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 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.
Enquiry types				• observing changes over time, • noticing patterns, • grouping and classifying things, • carrying out simple comparative and fair tests • and finding things out using secondary sources	• observing changes over different periods of time, • noticing patterns, • grouping and classifying things, • carrying out comparative and fair tests • finding things out using a wide range of secondary sources.
Why here/Why now?	Children will be introduced to vocabulary and meanings of 'push' and 'pull' in air and water.			By understanding 'everyday' materials from year 2, children will then look at objects that are magnetic: what attracts / repels. How objects can be lifted and lowered.	Builds on prior knowledge from Year Three then moves on to the effects of water and air resistance.

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. Expose children to supplementary vocabulary such as: force, rotate, solid, liquid, gravity			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		Force, gravity, Earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears	

Light (Physics)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge	I explore shadows. I explore rainbows. I describe what I see, hear and feel whilst outside.			I recognise that they need light in order to see things and that dark is the absence of light I notice that light is reflected from surfaces. I recognise that light from the sun can be dangerous and that there are ways to protect their eyes. I recognise that shadows are formed when the light from a light source is blocked by an opaque object. I can find patterns in the way that the size of shadows change.			I recognise that light appears to travel in straight lines. I 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. I can 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. I use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically	Show curiosity and ask questions. Make observations using their senses and simple equipment. Make direct comparisons. Identify, sort and group.			• 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 dataloggers. • 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		• Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. • 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	

	Record their observations by drawing, taking photographs, using sorting rings. or boxes and, in Reception, on simple tick sheets Talk about what they have done and found out. Use their observations to help them to answer their questions			• 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		• 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 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.	
Enquiry types				• observing changes over time, • noticing patterns, • grouping and classifying things, • carrying out simple comparative and fair tests • and finding things out using secondary sources.		• observing changes over time, • noticing patterns, • grouping and classifying things, • carrying out simple comparative and fair tests • and finding things out using secondary sources.	
Why this/Why now?	Children will be introduced to the vocabulary of light and dark throughout the year and how			First time light is met formally – but builds on EYFS / KS1 work on natural world, seasons plants. Lays the concepts for Y5 Night & day and Y6 light units.			Builds on Year Three light. Use knowledge to explain how periscopes, binoculars and mirrors work. Importance of search lights and periscopes used on boats – could be linked to WW2 learning in History.

	the sun creates a shadow.						
Key Vocabulary	Sun, sunny, light, shadow, shady, clouds, torch, see-through, non-see through, source, light source. Expose children to supplementary vocabulary such as: casting a shadow, pale, dark, transparent, opaque			Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous			As for Year 3 - Light, plus straight lines, light rays

Sound (Physics)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge	I listen to sounds outside and identify the source. I make sounds. I describe what I see, hear and feel whilst outside.				I can identify how sounds are made, associating some of them with something vibrating. I can recognise that vibrations from sounds travel through a medium to the ear. I can find patterns between the pitch of a sound and features of the object that produced it. I can find patterns between the volume of a sound and the strength of the vibrations that produced it. I recognise that sounds get fainter as the distance from the sound source increases.		
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically	Show curiosity and ask questions. Make observations using their senses and simple equipment. Make direct comparisons. Identify, sort and group. Record their observations by drawing, taking photographs, using sorting rings. or boxes and, in Reception, on simple tick sheets Talk about what they have done and found out. Use their observations to help them to answer their questions				• 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 dataloggers. • 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.		
Enquiry types of the investigator					• observing changes over time. • noticing patterns. • identifying, grouping and classifying. • carrying out comparative and fair tests. • finding things out using secondary sources.		
Why this/Why now?	Can take time to listen to and identify where sound comes from whilst outside. Understand that they can make different sounds.				Stand-alone unit sound is only done once. Children can learn key differences between light and sound.		
Key Vocabulary	sound, noise, listen, hear, music, voices, bird song, traffic, sirens, thunder, high, low, loud, quiet, soft, volume, crackle, thunder, hum, buzz, roar. Expose children to supplementary vocabulary such as: source, crescendo, vibration, pitch				Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation		

States of Matter (Chemistry)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Content					**Covered in Materials.**		
Why this/Why now?							
Key Vocabulary							

Earth and Space

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge	I learn about the Earth, Sun, Moon, planets and stars. I learn about space travel. I explore the natural world around me. I describe what I see, hear and feel whilst outside.					I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system. I can describe the movement of the Moon relative to the Earth. I can describe the Sun, Earth, and Moon as approximately spherical bodies. I can use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically	Show curiosity and ask questions.					• Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things,	

	Make observations using their senses and simple equipment. Make direct comparisons. Identify, sort and group. Record their observations by drawing, taking photographs, using sorting rings. or boxes and, in Reception, on simple tick sheets Talk about what they have done and found out. Use their observations to help them to answer their questions					carrying out comparative and fair tests and finding things out using a wide range of secondary sources. • 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 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.	
Enquiry types						• observing changes over different periods of time, • noticing patterns, • grouping and classifying things, • carrying out comparative and fair tests • and finding things out using a wide range of secondary sources.	
Why this/Why now?	Introduction that the Earth where we live					Use knowledge of light for day / night from Year 3 and introduce light as a source of the Sun and reflection of light from the Moon.	

	is a planet and that there are other planets. The sun gives us light, and the moon is a reflection of light from the sun.						
Key Vocabulary	Sun, Moon, Earth, star, planet, sky, day, night, space, round, bounce, float Expose children to supplementary vocabulary such as: sunrise, sunset, astronaut, astronomer, constellation, orbit, nocturnal, slow-motion, magnify					Earth, Sun, Moon, (Mercury, Jupiter, Saturn, Venus, Mars, Uranus, Neptune), spherical, solar system, rotates, star, orbit, planets	

Electricity (Physics)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge					I can identify common appliances that run on electricity. I can construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. I can identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. I recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. I recognise some common conductors and insulators, and associate metals with being good conductors		I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. I can compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches. I can use recognised symbols when representing a simple circuit in a diagram.
For substantive and disciplinary knowledge, please see detailed MTPs.							
Working scientifically					• 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 dataloggers. • 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		• Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. • planning different types of scientific enquiries to answer

					• identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.		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 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.
Enquiry types					• observing changes over time. • noticing patterns. • identifying, grouping and classifying. • carrying out comparative and fair tests.		• observing changes over time. • noticing patterns. • identifying, grouping and classifying.

					• finding things out using secondary sources.		• carrying out comparative and fair tests. • finding things out using secondary sources.
Why this/Why now?					Use knowledge of forces to create simple circuits. Know key elements of a circuit.		Reinforce learning from year Four. Use knowledge to accurately draw circuits. Look at voltage / cells and come up with reasons why components won't work.
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. N.B. Children in Year 4 do not need to use standard symbols for electrical components, as this is taught in Year 6		Circuit, complete circuit, circuit diagram, circuit symbol, cell, battery, bulb, buzzer, motor, switch, voltage N.B. Children do not need to understand what voltage is but will use volts and voltage to describe different batteries. The words "cells" and "batteries" are now used. interchangeably.

Evolution and Inheritance (Biology)

Concept	EYFS	YEAR ONE	YEAR TWO	YEAR THREE	YEAR FOUR	YEAR FIVE	YEAR 6
Science knowledge							I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
							For substantive and disciplinary knowledge, please see detailed MTPs.
Working scientifically							• Select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources. • 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 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.
Enquiry types							• observing changes over time. • noticing patterns.

							• identifying, grouping and classifying. • carrying out comparative and fair tests. • finding things out using secondary sources.
Why this/Why now?							Pulling themes / work from last 6 years together to apply scientific method to evolution and inheritance.
Key Vocabulary							Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils

Chemistry subjects – materials, rocks and soils, states of matter

Physics – seasonal changes, forces and magnets, light, sound, electricity, earth and space

Biology – animals including humans, plants, living things and their habitats, evolution and inheritance.