Science Overview and Progression Grid

Communicators	Explorers	Readers	Believers
Children will communicate ideas and results both verbally and in writing. They will learn to use clear sentences and correct scientific words and symbols to describe ideas, predictions and observations. The use of the class Big Book also encourages discussion.	Children learn Science through trial and error. They need time to experiment, try things out, think on their own and wait before jumping in with "correct" answers. We will give our children the time and space to explore and discover Science, foster a positive attitude towards it and an awareness of its fascination.	We encourage children to read Science related information books, books about different Scientists as well as to read and use new vocabulary relating to their Science topics.	all children have the opportunity to develop their own scientific beliefs based on a collection of knowledge and diverse investigations. We will develop their ability to reason, predict, think logically and to work systematically and accurately.

EYFS	Topics to be covered over the year:
Vocabulary	seed, bulb, bud, leaf, shoot, roots, habitat, warm, cold, set, lodge, nest, insect, bird, mammal

Throughout Reception children will be exposed to Geographical Knowledge and skills	By the end of Reception children will be able to:
Life cycle of a bean, how to look after it Animals that live in different regions and habitats e.g. polar regions, woodland creatures Look at different features of animals – wings, body, legs, tail etc start to classify them – bird, insect, mammal Self portraits allow the children to look and discuss their own body parts Through their growing topic they learn about keeping teeth clean and healthy eating Explore a range of different materials through topics and discuss properties soft, hard, bendy e.g. Little Pigs – materials for houses, what would be the best material for a mermaid's tail, Concepts such as floating, sinking, melting discussed regularly through continuous provision	Plant a seed and help it grow Tell you what they would see in Spring, Autumn, Summer and Winter Name a large number of mammals and birds Know that animals come from different places Explain the word nocturnal Tell you the simple properties of a material (heavy, light, float, sink, bendy, strong, hard, soft) Recall their body parts Give you three ways to keep healthy **Explore the natural world around them, making observations and drawing pictures of animals and plants** **Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class** **Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.**

FOCUS FIVE					
	I can separate objects into groups by myself	I can tell you something that happens in Winter, Spring , Summer and Autumn	I can tell you if something is man-made or natural	I know how to wash my hands and face, blow my nose and clean my teeth.	I can tell you if something is a mammal, insect or bird

Year 1	**Topics to be covered over the year**: Everyday Materials, Seasonal Changes , Animals including Humans, Plants
Vocabulary	Birds, fish, amphibians, reptiles, mammals and invertebrates, Feathers, scales, gills, fins, hair, land, water, backbone, skeleton, Carnivores, herbivores, omnivores, Types of materials: wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil, Properties of materials: hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, transparent/not transparent, sticky/not sticky, Verbs associated with materials: crumble, squash, bend, stretch, twist. Senses: touch, see, hear, smell and taste, Trees - deciduous, evergreen, Parts of plants – roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs, Seasons; spring, summer, autumn, winter, Year, months, days, Hot, warm, mild, cold, Sunny,, Cloudy, Rain, sleet, snow, hail, thunder, lightning, rainbow, windy, Temperature, Degrees Celsius, Thermometer, Weather vane, Anemometer

Everyday Materials	Plants	Animals Including Humans	Working Scientifically
distinguish between an object and the material from which it is made	identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals	1. Answer simple questions stimulated by observations & exploration of their world e.g. Why a stone lying on the ground does not move? 'Why did that get hot?"
identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock	identify and describe the basic structure of a variety of common flowering plants, including trees.	identify and name a variety of common animals that are carnivores, herbivores and omnivores	2. Present evidence in templates provided for them and make simple observations e.g. use a simple tally of boy v girls in class. Which is the majority gender?
describe the simple physical properties of a variety of everyday materials		describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	3. Use evidence to ask questions & recognize that they can be answered in different ways
compare and group together a variety of everyday materials on the basis of their simple physical properties		identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	4. Draw on their everyday experience to help answer questionse.g. explains that rain makes them wet

FOCUS FIVE

Scientific Knowledge	Scientific Skill
I can identify a bird, a fish, an amphibians, a reptile and a mammal	I can put information I am given into a Venn diagram
I can tell you two animals that are omnivores, herbivores and carnivores	With guidance, I can put information into a simple table I am given
I can identify and describe roots, stem/trunk, leaves and flowers.	I can use a magnifying glass to look at something closely and describe what I see
I can use these words to describe different materials Hard/ soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, transparent/not transparent, sticky/not sticky	I can sort and group animals into different groups
I know the five senses and which body part links to them e.g. sight and eyes, taste and tongue	I can use a ruler to take measurements
Vocabulary	Vocabulary
Sense Reptile Amphibian Omnivore Herbivore Carnivore	Sort Group Information Magnifying glass Measure

Year 2	Topics to be covered over the year: All Living things and their habitats, Use of everyday materials, Animals and Humans, Plants			
Vocabulary	Birds, fish, amphibians, reptiles, mammals and invertebrates, Carnivores, herbivores, omnivores, egg, larva, pupa, adult, Stages of life –baby, toddler, child, teenager, adult, growth, nutrition, respiration, Hygiene – clean, wash, germs, Habitat, micro habitat, deciduous, evergreen, roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs and twigs, temperature, wood, plastic, glass, metal, water, rock, brick, fabric, sand, paper, flour, butter, milk, soil, **Properties of materials**: hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, transparent/not transparent, sticky/not sticky, **Senses**: touch, see, hear, smell and taste			
Animals Inc Humans	Everyday Materials	All Living Things	Plants	Working Scientifically
notice that animals, including humans, have offspring which grow into adults	identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	explore and compare the differences between things that are living, dead, and things that have never been alive	observe and describe how seeds and bulbs grow into mature plants	1. Make some suggestions about how to find things out or how to collect data to answer a question e.g. "You could see which one stretches more"
find out about and describe the basic needs of animals, including humans, for survival (water, food and air)	find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	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	find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	2. Compare objects, materials and living things e.g. compare the limbs of different animals; texture/hardness of different materials
describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.		identify and name a variety of plants and animals in their habitats, including micro-habitats		3. Decide how to sort and group them & observe changes over time
		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.		4. Use and interpret simple tables where appropriate e.g. blocks graphs, pictograms
				5. Use what they see and their own ideas to suggest answers to questions e.g. says that a plant will die without water

FOCUS FIVE

Scientific Knowledge	Scientific Skill
I know that humans need water, food and air to survive	I can put simple data in a tally chart
I can tell you what a plant needs (water, light and a suitable temperature) to grow and stay healthy	I can use a microscope to look at things closely
I can tell you about three different habitats and know how they provide for the animals and plants that live there	I can record my findings in a bar chart.
I can put four items in the correct order on a food chain	I can put information into a table
I can tell if a solid material can change by squashing, bending, twisting and stretching.	I can perform simple tests
Vocabulary	Vocabulary
Survive Habitat Food chain Solid nutrients	Microscope Test Tally Bar chart Record

Year 3	**Topics to be covered over the year:** Animals and Humans, Lights and Magnets, Rocks, Plants			
Vocabulary	Nutrition, Diet, Vitamins, minerals, fats, proteins, carbohydrates, Functions of skeletons – protect, support and aid, movement, Attract, repel, North and south poles, Magnetic, Magnetic field, dark, dull, bright, very bright, Opaque, translucent, transparent, deciduous, evergreen, roots, branch, trunk, stalk, leaf, flower, petal, seeds, bulbs, pollination, fertilisation, germination, Chalk, limestone, granite, basalt, sandstone, flint, slate, shale, marble, Sedimentary, metamorphic, igneous, permeable/impermeable			
Rocks	**Forces and Magnets**	**Light**	**Animals and Plants**	**Working Scientifically**
compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	compare how things move on different surfaces	recognise that they need light in order to see things and that dark is the absence of light find patterns in the way that the size of shadows change.	identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers	1. Use straightforward scientific evidence to answer questions, or to support findings eg "How do you think changing the amount of light will affect the plant"?
recognise that soils are made from rocks and organic matter.	predict whether two magnets will attract or repel each other, depending on which poles are facing.	notice that light is reflected from surfaces	explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	2. Suggest answers or solutions to questions/problems given to them Answer questions such as: "How could we keep it hotter for longer?"
describe in simple terms how fossils are formed when things that have lived are trapped within rock	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	recognise that light from the sun can be dangerous and that there are ways to protect their eyes	investigate the way in which water is transported within plants	3. Present simple data in a variety of ways, using that data to identify findings
	describe magnets as having two poles	recognise that shadows are formed when the light from a light source is blocked by a solid object	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	4. Choose, from a list, at least one variable that needs to be kept the same in an investigation to make it a fair test eg same distance when timing cars down a ramp.
	observe how magnets attract or repel each other and attract some materials and not others		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	5.Identify straightforward patterns in observations or in data presented in tables, pie and bar charts eg Identify which food was the best source of energy from a bar chart
	notice that some forces need contact between two objects, but magnetic forces can act at a distance		identify that humans and some other animals have skeletons and muscles for support, protection and movement.	6. Choose correct equipment from a given list, or content from information provided, to investigate a question/idea eg. beaker to heat water, thermometer to measure temp.

FOCUS FIVE

Scientific Knowledge	Scientific Skill
I know the role of our skeleton and muscles	I can present information in a branching key.
I can explain the functions of the roots, stem, leaves and flowers.	I can follow instructions to set up a fair test
I know that fossils are formed when things that have lived are trapped within rock	I can use drawings to represent what I know
I know that magnetic forces can act at a distance but other forces need contact	I can predict what is going to happen in a test
I know that I need light in order to see things and that dark is the absence of light	I can measure to the nearest cm.
Vocabulary	Vocabulary
Skeleton Muscles Fossil Function Magnetic force	Fair test Predict Branching key

Year 4	**Topics to be covered over the year:** Electricity, Sound, Animals and Humans, States of Matter, All Living Things			
Vocabulary	Digestive system –, oesophagus, stomach, acid, small intestine, Protein, vitamin, mineral, carbohydrate, fats, energy, growth, repair. Saliva, Incisors, canines, premolars, molars, Foodchain – producer, consumer, predator, prey, battery, bulb (lamp), bulb (lamp) holder, buzzer, crocodile clip, leads, wires, switch, brighter, duller, Conductor, insulator, deciduous, evergreen, Loudness, Pitch, Vibrations Melting, condensation, evaporation, solidifying, freezing, Water cycle , Water vapour, Steam, Heating, Cooling			
Sound	**Electricity**	**States of Matter**	**All Living Things**	**Working Scientifically**
identify how sounds are made, associating some of them with something vibrating	identify common appliances that run on electricity	compare and group materials together, according to whether they are solids, liquids or gases	recognise that living things can be grouped in a variety of ways	1. Recognise scientific evidence that is for or against an argument, or supports a scientific idea or not e.g. evidence for how sound travels through different materials
recognise that vibrations from sounds travel through a medium to the ear	construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers	observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)	recognise that environments can change and that this can sometimes pose dangers to living things.	2. Use results to draw simple conclusions, make predictions for new values, suggest Improvements and raise further questions
find patterns between the pitch of a sound and features of the object that produced it	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	identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	3. Identifying differences, similarities or changes related to simple scientific ideas and processes
find patterns between the volume of a sound and the strength of the vibrations that produced it	recognise some common conductors and insulators, and associate metals with being good conductors.		describe the simple functions of the basic parts of the digestive system in humans	4. Draw tables & bar charts to present simple data
recognise that sounds get fainter as the distance from the sound source increases.	recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit		identify the different types of teeth in humans and their simple functions	
			construct and interpret a variety of food chains, identifying producers, predators and prey.	

FOCUS FIVE

Scientific Knowledge	Scientific Skill
I can identify producers, predators and prey in a food chain.	I can use a data logger app to record accurate measurements.
I can name 4 different electrical conductors and insulators.	To be able to use a thermometer to take accurate measurements.
I can name 4 different solids, liquids and gases	I can use beakers and syringes to measure liquids
I can use classification keys to identify and name a variety of living things.	I can plan my own fair test
I can identify and name cells, wires, bulbs, switches and buzzers in an electrical circuit.	I can record my findings in labelled diagrams
Vocabulary	Vocabulary
Conductor Insulator Gas Classification Circuit	Data logger Beaker Accurate findings syringe

Year 5	**Topics to be covered over the year**: Forces, Properties of materials, Earth and Space, Living Things and their habitats			
Vocabulary	Gestation, Fetus, Baby, Toddler, Adolescent, Adult, Elderly person, Puberty, Day and night - Earth, axis, rotate, Solar system – Star = Sun, Planets = Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Phases of the Moon - full moon, gibbous moon, half moon, crescent moon, new moon, waxing ,waning, gravity, Orbit, planets, revolve, sphere, friction, air resistance, upthrust, weight, Newton meter, Newtons (N),Particles, Push, pull, Mass – grams and kilograms, amphibians, reptiles, birds, mammals, insects, fish, egg, larva, pupa, nymph, adult, metamorphosis, petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule), pollination, fertilisation, germination, thermal conductor, thermal insulator, electrical conductor, electrical insulator, Solvent, solution, solute, soluble, insoluble, solid, liquid, particles, Sieve, filter, evaporate, condense			
Animals and All Living Things	**Earth and Space**	**Forces**	**States of Matter**	**Working Scientifically**
describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	describe the movement of the Earth, and other planets, relative to the Sun in the solar system	explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	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	1. Recognise that scientific ideas change and develop over time sometimes refuting or supporting previous understanding e.g. evidence for or against global warming
describe the life process of reproduction in some plants and animals.	use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution	2. Give examples of where science cannot answer all our questions. eg Is there life on other planets?
describe the changes as humans develop to old age.	describe the Sun, Earth and Moon as approximately spherical bodies	identify the effects of air resistance, water resistance and friction, that act between moving surfaces	use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating	3. Identify the main variables that may affect investigative results and select which ones to change or keep the same e.g. how forces affect elastic materials
	describe the movement of the Moon relative to the Earth		give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic demonstrate that dissolving, mixing and changes of state are reversible changes	4. Suggest different possible conclusions from the same range of evidence (pri or sec) Come up with alternative conclusions "What could this show? What else could it show?"
			explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	5. Identify the evidence used in making a conclusion eg UK diet is the least healthy

FOCUS FIVE

Scientific Knowledge	Scientific Skill
I can demonstrate that dissolving is a reversible change.	I can identify the control variable when planning a fair test
I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird	I can record my results in a line graph
I can explain that the Earth orbits the sun once every 365 days and rotates about its axis once every 24 hours to create day and night.	I can repeat my measurements to improve my results
I can describe the life process of reproduction in a flowering plant.	I can draw and label diagrams to explain my ideas
I can explain that objects fall towards the Earth because of the force of gravity.	I can write a conclusion for an experiment
Vocabulary	Vocabulary
Gravity Orbit Reproduction Reversible Dissolving	Conclusion Line graph Variable Control Variable

Year 6	**Topics to be covered over the year:** Evolution, Animals inc Humans, Light, Electricity, Living Things and their habitats			
Vocabulary	Electricity, Volts, Series circuit, Components: battery, bulb (lamp), bulb (lamp) holder, buzzer, crocodile clip, leads, wires, switch, Conductor, insulator, Resistance, Circulatory system – heart, blood, veins, arteries, pulse, clotting, Diet – balanced, vitamins, minerals, proteins, carbohydrates, sugars, fats, Drugs – caffeine, nicotine, alcohol, cannabis, cocaine, heroine, Evolution, evolve, Natural selection, Survival, Reproduction, Offspring, parents, siblings, Environment, Variation, Fossils; ammonites, belemnites etc Opaque, translucent, transparent, Reflect – bounce, mirror, reflection, light source, classification, Vertebrate, invertebrate, Kingdoms: animal, plant, 'micro-organism', Classes: amphibian, reptile, bird, mammal, Scales, feathers, Flowering plant, non-flowering plant			
Evolution, Inheritance	**Living Things and Humans**	**Electricity**	**Light**	**Working Scientifically**
recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago	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	associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit	recognise that light appears to travel in straight lines	1. Interpret data from tables, bar & line graphs etcâ€¦to draw conclusions consistent with the evidence e.g. Use graphs & charts to describe the effects of diet on health.
identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	give reasons for classifying plants and animals based on specific characteristics.	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	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	2. Evaluate practical investigation methods and suggest improvements. eg Describe some strengths and weaknesses of the plan/method. Make a comment on reliability.
recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents	identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	use recognised symbols when representing a simple circuit in a diagram.	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	3. Use clear sentences and correct scientific words and symbols to describe ideas and observations eg Describe heat transfer using correct wording
	describe the ways in which nutrients and water are transported within animals, including humans.		use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	4. Make sets of observations or measurements and say what the range and intervals are eg record a set of results and state the highest, lowest measurement
	recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function			

FOCUS FIVE

Scientific Knowledge	Scientific Skill
I can describe the functions of the heart, blood vessels and blood.	I can recognise what the independent and dependent variables are in a fair test
I can use symbols to create circuit diagrams.	I can interpret and draw conclusions from tables and bar and line graphs
I can classify plants into different groups.	I can make a key to classify plants
I can describe how 3 animals and 3 plants have adapted to their environments.	I can choose a suitable secondary source to research ideas
I can explain that we see things because light travels from light sources to objects and then to our eyes.	I can choose my own way to present my findings from an enquiry
Vocabulary	Vocabulary
Adapted Light source Environment Cardio vascular Blood vessels	Enquiry Independent variable Dependent variable Classify Secondary Source