Progression of Science

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum aims	The national curriculum for science aims to ensure that all • Develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them • Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future						
National Curriculum Programme of study	Science at Foundation Stage is covered in the 'Understanding the World' area of the EYFS Curriculum. It is introduced indirectly through activities that encourage every child to explore, problem solve, observe, predict, think, make decisions and talk about the world around them.	The principal focus of science teaching in **key stage 1** is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. They should be encouraged to be curious and ask questions about what they notice. They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. They should begin to use simple scientific language to talk about	The principal focus of science teaching in **lower key stage 2** is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about	The principal focus of science teaching in **upper key stage 2** is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. They should also begin to recognise that scientific ideas change and develop over time. They should 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	

		what they have found out and communicate their ideas to a range of audiences in a variety of ways. Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos		and, later, to write about what they have found out.		wide range of secondary sources of information. Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings.	
Biological units Plants		**Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. Identify and describe the basic structure of a variety of common flowering plants, including trees**. To observe and explore plants in the local environment. To observe changes in growth of flowers and vegetables they have planted	**To observe and describe how seeds and bulbs grow into mature plants.** **To observe plants over time. To find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.**	**Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.** **Investigate the way in which water is transported within plants.** **Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.**		**To describe the life process of reproduction in some plants (See below in animals)**	**To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro -organisms, plants. (Please see below)**
Animals including humans	Understanding the World Talk about members of their immediate family and community. Name and describe people who are familiar to them.	**Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Identify and name a variety of common**	**Notice that animals, including humans, have offspring which grow into adults. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). Describe the importance for humans of exercise, eating the right**	**To 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**	**To describe the simple functions of the basic parts of the digestive system in humans.** **To identify the different types of teeth in humans and their simple functions.**	**To describe the changes as humans develop to old age.** To draw a timeline to indicate stages in the growth and development of humans. To learn about the changes experienced in puberty.	**To identify and name the main parts of the human circulatory system. To describe the functions of the heart, blood vessels and blood. To recognise the impact of diet, exercise, drugs and lifestyle on the way**

		animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. To know how to take care of animals that are taken from the environment.	**amounts of different types of food, and hygiene.**	**To identify that humans and some animals have skeletons and muscles for support, protection and movement.**	**To construct and interpret a variety of food chains, identifying producers, predators and prey.**		**bodies function. To describe the ways in which nutrients and water are transported within animals, including humans.** To explore questions to understand how the circulatory system enables the body to function. To learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body. To explore the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.
Living Things and their habitats	Understanding the World Recognise that some environments that are different to the one in which they live. Explore the natural world around them. Describe what they see, hear, and feel whilst outside.		**Identify that most living things live in habitats to which they are suited and describe how different habitats provide for basic needs of different kinds of animals and plants and how they depend on each other. Identify and name a variety of plants and animals in their habitats, including micro - habitats. 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. Explore and compare the differences between things that are living, dead and**		**To recognise that living things (including those in the locality) can be grouped in a variety of ways.** **To explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.** **Recognise that environments can change and that this can sometimes pose dangers to living things.**	To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. To describe the life process of reproduction in some plants and animals. To raise questions about their local environment throughout the year. To find out about the work of naturalists and animal behaviourists, for example, David Attenborough and Jane Goodall. To find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals	**To 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.** **To give reasons for classifying plants and animals based on specific characteristics.** **To know that broad groupings, such as micro -organisms, plants and animals can be subdivided.**

			things that have never been alive				To classify animals into commonly found invertebrates (such as insects, spiders, snails, worms) and vertebrates (fish, amphibians, reptiles, birds and mammals). To find out about significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.
Seasonal Changes	Understanding the world Seasonal changes Explore the natural world around them. Describe what they see, hear and feel while outside. Understand the effect of the changing seasons of the natural world around them.	**Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies.** Pupils should observe and talk about changes in the weather and the seasons.					
Evolution and inheritance							**To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago*. To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents .** **Identify how animals and plants are adapted**

							to suit their environment in different ways and that adaptation may lead to evolution. Scientists looked at include Charles Darwin and Mary Anning.
Physical science Light	Understanding the world Describe what they seen hear and feel while outside looking at light and dark			**To recognise that they need light in order to see things and that dark is the absence of light To notice that light is reflected from surfaces To recognise that light from the sun can be dangerous and that there are ways to protect their eyes To recognise that shadows are formed when the light from a light source is blocked by an opaque object To find patterns in the way that the size of shadows change.**			**To recognise that light appears to travel in straight lines To 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 To 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 To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.** To work scientifically by: deciding where to place rear - view mirrors on cars; designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works. To look at a range of phenomena including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters.
Forces and magnets	Understanding the world Explore the natural world and describe what they can see, hear, and			**To compare how things move on different surfaces To notice that some forces need contact between two objects, but**		**To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object To identify the**	

	feel while outside looking at how a variety of objects move in different environments.			**magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others To 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 To describe magnets as having two poles predict whether two magnets will attract or repel each other, depending on which poles are facing**		**effects of air resistance, water resistance and friction, that act between moving surfaces To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. To explore the effects of air resistance by observing how different objects such as parachutes and sycamore seeds fall.** To explore the effects of friction on movement and find out how it slows or stops moving objects. To find out how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the understanding of physics.	
Sound	Understanding the world Explore the natural world and describe what they can see, hear, and feel while outside Looking at sound and allowing children to identify different sounds.				**To identify how sounds are made, associating some of them with something vibrating To recognise that vibrations from sounds travel through a medium to the ear To find patterns between the pitch of a sound and features of the object that produced it To find patterns between the volume of a sound and the strength of the vibrations that produced it To recognise that sounds get fainter as the distance from the sound source increases.**		
Electricity					**To identify common appliances that run on electricity To construct a simple series circuit, identifying/naming its basic parts, including cell, wire, bulb, switch and buzzer.. To identify whether or not a lamp will light in a simple series circuit To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit To recognise some common conductors and insulators, and**		**To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. To 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. To use recognised symbols**

					associate metals with being good conductors. To use their circuits to create simple devices. To draw the circuit as a pictorial representation (not necessarily using conventional circuit symbols) To discuss precautions for working safely with electricity		**when representing a simple circuit in a diagram.** To construct simple series and parallel circuits, to help them to answer questions about what happens when they try different components, for example, switches, bulbs, buzzers and motors. To learn how to represent a circuits in a diagram using recognised symbols
Space and the Solar System	Understanding the world Explore the natural world around them. Describe what they see, hear and feel while outside. Opportunities to learn about the Earth, Sun, Moon planets and stars.					**To describe the movement of the Earth, and other planets, relative to the Sun in the solar system To describe the movement of the Moon relative to the Earth. To describe the Sun, Earth and Moon as approximately spherical bodies To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.** To explore the solar system and how the Earth relates to the other celestial bodies.	
Chemistry units Materials (We are aware that elements of physics can be found in this unit of work)	Understanding the World Explore the natural world Describe what they see, hear and feel whilst outside.- Natural materials	**Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials. Compare and group together a**	**Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.** **Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.**		**To explore a variety of everyday materials and develop simple descriptions of the states of matter To compare and group materials together, according to whether they are solids, liquids or gases To 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) To identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.***	**To 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 To know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution To use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating To give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday**	

		variety of everyday materials on the basis of their simple physical properties. Become familiar with the names of materials and properties such as: hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy; waterproof/not waterproof; absorbent/not absorbent; opaque/transparent. To explore a wide range of materials e.g bricks, foil, elastic, paper, fabrics.			**The comes under the States of Matter in NC**	**materials, including metals, wood and plastic To demonstrate that dissolving, mixing and changes of state are reversible changes To 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.** To explore reversible and irreversible changes further through a variety of ways. * Link to DT	
Rocks and soils				**To compare and group together different kinds of rocks (including those in the locality) on the basis of appearance and simple physical properties To describe in simple terms how fossils are formed when things that have lived are trapped within rock. To recognise that soils are made from rocks and organic matter.**			**To recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago*. See above unit covered in evolution.**
Vocabulary							

		Evergreen, Deciduous, root Stem, flower, seed, canopy, trunk, fish, amphibians, reptiles, birds, mammals, carnivores, herbivores, omnivores, nose, ear, mouth, hands, feet, torso, head, skull, wood, plastic, glass, metal, water, rock, flexible, hard, soft, absorbs, season, autumn, winter, spring, summer	Habitat, dead, alive, food chain, predator, prey, source, light, air, water, warmth, offspring, hygiene, states, shapes, suitability	Roots, stem, trunk, leaves, flowers, air, light, water, nutrients, transported, life cycle, pollination, seed formation, seed dispersal, nutrition, skeletons, muscles, protection, fossils, trapped, organic, absence, reflected, surfaces, opaque, transparent, translucent, magnetic, forces, attraction, attract, repel, poles	Classification, keys, stomach, acid, incis premolar, canine, f producer, prey, pre liquids, gases, state condensation, vibra volume, strength, a circuit, cells, wires, switches, buzzers, c insulator	Lifecycle, Amphibian, reptile, reproduction, properties, transparency, conductivity, thermal, magnetic, dissolve, solution, mixture, separated, evaporation, reversible, irreversible, axis, spherical, clockwise, anti-clockwise, rotation, gravity, resistance, air resistance, water resistance, frictions, mechanism, lever, pulley, gear, force	Characteristics, micro-organisms, circulatory system, blood vessels, capillaries, aorta, veins, nutrients, fossils, adaptation, environment, evolutions, reflect, reflection, reflecting, sources, shadows, circuits	
				Scientific Enquiry				
				Remember to refer to the **five** areas of scientific enquiry. You need to teach WS alongside your scientific enquiry and not as a standalone subject. • Pattern seeking • Observation over time • Comparative and fair testing • Identifying, classifying and grouping • Researching secondary sources				
		KS1 Statutory requirements from NC During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying • using their observations and ideas to suggest answers to questions • gathering and		Lower KS2 Statutory requirements from NC During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data		Upper KS2 Statutory requirements from NC During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • recording data and results of increasing complexity using scientific diagrams	

		recording data to help in answering questions.		loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings.		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.	
	EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Asking and answering questions		Use everyday language/begin to use simple scientific words to ask or answer a scientific question.	Suggest ideas, ask simple questions and know that they can be answered/investigated in different ways including simple secondary sources, such as books and video clips.	Use ideas to pose questions, independently, about the world around them.	Suggest relevant questions and know that they could be answered in a variety of ways, including using secondary sources such as ICT to answer questions that cannot be answered through practical investigations. Answer questions using straight forward scientific evidence.	Raise different types of scientific questions, and hypotheses.	Pose/select the most appropriate line of enquiry to investigate scientific questions. To recognise which secondary sources would be most useful to research their ideas and begin to separate opinion from fact.

Making predictions		Begin to say what might happen in an investigation.	Begin to say what might happen in an investigation.	Make predictions and begin to give a reason.	Make predictions and give a reason using simple scientific vocabulary.	Make predictions and give a reason using scientific vocabulary.	Make predictions and give a reason using scientific vocabulary. Base predictions on findings from previous investigations
Making observations		Observe objects, materials and living things and describe what they see.	Observe something closely and describe changes over time.	Make decisions about what to observe during an investigation.	Make systematic and careful observations.	Plan and carry out comparative and fair tests, making systematic and careful observations.	Make their own decisions about which observations to make, using test results and observations to make predictions or set up further comparative or fair tests.
Equipment and measurements.		Use simple, nonstandard equipment and measurements in a practical task.	Use simple equipment, such as hand lenses or egg timers to take measurements, make observations and carry out simple tests	Take accurate measurements using standard units.	Take accurate measurements using standard units and a range of equipment, including thermometers and data loggers.	Take measurements using a range of scientific equipment with increasing accuracy and precision.	Choose the most appropriate equipment in order to take measurements, explaining how to use it accurately. Decide how long to take measurements for, checking results with additional

							readings and whether to repeat them.
Identifying and classifying		Sort and group objects, materials and living things, with help, according to simple observational features.	Decide, with help, how to group materials, living things and objects, noticing changes over time and beginning to see patterns.	Talk about criteria for grouping, sorting and categorising, beginning to see naturally occurring patterns and relationships.	Identify similarities/differences/changes when talking about scientific processes. Use and begin to create simple keys.	Use and develop keys to identify, classify and describe living things and materials.	Identify and explain patterns seen in the natural environment.
Engaging in practical enquiry (investigating)		Follow instructions to complete a simple test individually or in a group	Do things in the correct order when performing a simple test and begin to recognise when something is unfair.	Discuss enquiry methods and describe a fair test	Make decisions about different enquiries, including recognising when a fair test is necessary and begin to identify variables. To make decisions about what observations to make and for how long to make them for and what equipment to use.	Plan a range of science enquiries, including comparative and fair tests.	Select and plan the most suitable line of enquiry, explaining which variables need to be controlled and why, in a variety of comparative and fair tests
Recording and reporting findings		Begin to record simple data. Talk about their findings and explain what they have found out.	Gather data, record and talk about their findings, in a range of ways, using simple scientific vocabulary	Record their findings using scientific language and present in note form, writing frames, diagrams, tables and charts.	Choose appropriate ways to record and present information, findings and conclusions for different audiences (e.g. displays, oral or written explanations).	Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar and line graphs and models to identify, classify and describe loving things and materials and identify patterns that might be	Choose the most effective approach to record and report results, linking to mathematical knowledge. To take repeated readings when appropriate and

						seen in the natural environment.	begin to account for anomalies. Look for different causal relationships and identify evidence that refutes or supports their ideas. To use language and drawings to communicate to discuss and justify their scientific ideas.
Drawing conclusions		Explain, with help, what they think they have found out.	Use simple scientific language to explain what they have found out.	Draw, with help, a simple conclusion based on evidence from an enquiry or observation.	Use recorded data to make predictions, pose new questions and suggest improvements for further enquiries.	Use a simple mode of communication to justify their conclusions on a hypothesis. Begin to recognise how scientific ideas change over time.	Identify validity of conclusion and required improvement to methodology. Discuss how scientific ideas develop over time
Analysing data Evaluating and raising further questions and predictions		Use every day or simple scientific language to ask and/or answer a question on given data	Identify simple patterns and/or relationships using simple comparative language.	Gather, record and use data in a variety of ways to answer a simple question.	Identify, with help, changes, patterns, similarities and differences in data to help form conclusions. Use scientific evidence to support their findings.	Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.	Identify and explain causal relationships in data and identify evidence that supports or refutes their findings, selecting fact from opinion.

		Key Stage 1 Vocabulary for working scientifically		Lower Key Stage 2 Vocabulary for working scientifically		Upper key stages 2 Vocabulary for working scientifically	
		experience observe changes patterns grouping sorting classifying compare identify (name) data measure record equipment questions test investigate explore magnifying glass / hand lens same different		develop enquiry practical enquiry fair test comparative test relationships conclusion accurate thermometer data logger estimate data diagram key (identifying) table chart bar chart results predictions explanation reason similarity difference question evidence information findings criteria values properties characteristics		variables evidence justify accuracy precision scatter graphs bar graphs line graphs argument (science) causal relationship.	