Knowledge and Skills Progression Map : Science

EYFS		
Area	**End of Year Expectations**	**Greater Depth**
ELG The Natural World	• Explore the natural world around them, making observations and drawing pictures of animals and plants; • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class; • Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	
Working Scientifically		
Observing Closely	• Through provision, focus groups and with adult support, can children… • Discuss what they can see, touch, smell, hear or taste? • Use simple equipment to help them make observations?	• Can they find out by watching, listening, tasting, smelling and touching?
Performing Tests	• Through provision, focus groups and with adult support: • Can they perform a simple test? • Can they describe/ explain what they have done	• Can they give reasons for their answers?
Identifying and Classifying	• Through provision, focus groups and with adult support: • Can they identify and classify things they observe? • Can they think of some questions to ask? • Can they answer some scientific questions? • Can they give a simple reason for their answer? • Can they explain what they have found out?	• Can they discuss similarities and differences? • Can they explain what they have found out using scientific vocabulary?
Recording Findings	• Through provision, focus groups and with adult support: • Can they show their work using pictures, labels and captions? • Can they record their findings using standard units? • Can they record some information in a chart or table, or using ICT?	• Can they compare measurements?

Year 1			
Area	**Essential Knowledge (National Curriculum)**	**End of Year Expectations**	**Greater Depth**
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.	• Can they describe and name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant? • Can they identify and name a range of common plants and trees? • Can they name the trunk, branches and root of a tree? • Can they discuss what they can see, touch, smell, hear or taste?	• Can they begin to describe what each part of a plant does? (e.g. roots, stem, leaves, petals, pollen) on a range of plants
Animals Including Humans	• Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores. • Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	• Can they identify some of the differences between different animals? • Can they identify living and non-living things? • Can they identify and name a variety of common animals? • Can they describe how an animal is suited to its environment? • Can they explain what they have found out? • Can they identify and name a variety of common animals that are carnivores, herbivores and omnivores? • Can they identify and classify things they observe? • Can they give a simple reason for their answers? • Can they discuss what they can see, touch, smell, hear or taste? • Can they name the parts of the human body and link them to their senses? • Can they name the parts of an animal's body? • Can they name a range of domestic animals? • Can they compare the bodies of different animals?	• Can they begin to classify animals according to a number of given criteria? • Can they point out differences between living things and non-living things? • Can they name some parts of the human body that cannot be seen? • Can they say why certain animals have certain characteristics? • Can they name a range of wild animals?

		• Can they identify and classify things they observe? • Can they give a simple reason for their answers? • Can they talk about what they see, touch, smell, hear or taste?	
Everyday 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 variety of everyday materials on the basis of their simple physical properties	• Can they distinguish between an object and the material from which it is made? • Can they describe materials using their senses, using specific scientific words? • Can they explain what material objects are made from? • Can they explain why a material might be useful for a specific job? • Can they name some different everyday materials? e.g. wood, plastic, metal, water and rock • Can they sort materials into groups by a given criteria? • Can they explain how solid shapes can be changed by squashing, bending, twisting and stretching? • Can they perform a simple test? • Can they tell other people about what they have done? • Can they talk about what they see, touch, smell, hear or taste? • Can they use simple equipment to help them make observations? • Can they identify and classify things they observe?	• Can they describe things that are similar and different between materials? • Can they explain what happens to certain materials when they are heated, e.g. bread, ice, chocolate? • Can they explain what happens to certain materials when they are cooled, e.g. jelly, heated chocolate?
Seasonal Changes	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	• Can they observe changes across the four seasons? • Can they name the four seasons in order? • Can they observe and describe weather associated with the seasons? • Can they observe and describe how day length varies? • Can they talk about what they: see, touch, smell, hear or taste? Can they use simple equipment to help them make observations?	• Can they observe features in the environment and explain that these are related to a specific season? • Can they observe and talk about changes in the weather? • Can they talk about weather variation in different

Working Scientifically			
Observing Closely	• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions	• Can they discuss what they can see, touch, smell, hear or taste? • Can they use simple equipment to help them make observations?	• Can they find out by watching, listening, tasting, smelling and touching?
Performing Tests		• Can they perform a simple test? • Can they describe/ explain what they have done?	• Can they give reasons for their answers?
Identifying and Classifying		• Can they identify and classify things they observe? • Can they think of some questions to ask? • Can they answer some scientific questions? • Can they give a simple reason for their answer? • Can they explain what they have found out?	• Can they discuss similarities and differences? • Can they explain what they have found out using scientific vocabulary?
Recording Findings		• Can they show their work using pictures, labels and captions? • Can they record their findings using standard units? • Can they record some information in a chart or table, or using ICT?	• Can they make accurate measurements using non-standard measurements i.e. unifix

Year 2			
Area	**Essential Knowledge (National Curriculum)**	**End of Year Expectations**	**Greater Depth**

Living Things and their Habitats	• Explore and compare the differences between things that are living, dead, and things that have never been alive • Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • Identify and name a variety of plants and animals in their habitats, including 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	• Can they match certain living things to the habitats they are found in? • Can they explain the differences between living and non-living things? • Can they describe some of the life processes common to plants and animals, including humans? • Can they describe how a habitat provides for the basic needs of things living there? • Can they describe how some animals get their food using basic food chains? • Can they describe how plants and animals are suited to their habitat? • Finding things out using secondary sources of information. • Can they use <see, touch, smell, hear or taste> to help them answer questions? • Can they organise things into groups?	• Can they name some characteristics of an animal that help it to live in a particular habitat? • Can they describe what animals need to survive and link this to their habitats?
Plants	• Observe and describe how seeds and bulbs grow into mature plants. • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	• Can they describe what plants need to survive? • Can they observe and describe how seeds and bulbs grow into mature plants? • Can they investigate and describe the impact of removing light, soil or water from a growing or germinating plant. • Observing changes over time. • Can they suggest how to find things out? • Can they use prompts to find things out?	• Can they describe what plants need to survive and link it to where they are found? • Can they explain that plants grow and reproduce in different ways?

Animals Including Humans	• Notice that animals, including humans, have offspring which grow into adults. • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air). • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	• Can they describe what animals need to survive? Can they explain that animals grow and reproduce? • Can they explain why animals have offspring which grow into adults? • Can they describe the life cycle of some living things? (e.g. egg, chick, chicken) • Can they explain the basic needs of animals, including humans for survival? (water, food, air) • Can they describe why exercise, balanced diet and hygiene are important for humans? Can they suggest how to find things out? • Can they use prompts to find things out? • Finding things out using secondary sources of information	• Can they explain that animals reproduce in different ways?
Materials			
Classifying and Grouping Materials	• Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.	• Can they describe the simple physical properties of a variety of everyday materials? • Can they compare and group together a variety of materials based on their simple physical properties? • Can they use see, touch, smell, hear or taste to help them answer questions? • Can they use some scientific words to describe what they have seen and measured?	• Can they describe the properties of different materials using words like, transparent or opaque, flexible, etc.? • Can they sort materials into groups and say why they have sorted them in that way? • Can they say which materials are natural and which are man-made?

Changing Materials	• Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	• Can they explore how the shapes of solid objects can be changed? (squashing, bending, twisting, stretching) • Can they find out about people who developed useful new materials? (John Dunlop, Charles Macintosh, John McAdam) • Can they identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses? • Can they organise things into groups? Can they find simple patterns (or associations)? • Can they say whether things happened as they expected?	• Can they explain how materials are changed by heating and cooling? • Can they explain how materials are changed by bending, twisting and stretching? • Can they tell which materials cannot be changed back after being heated, cooled, bent, stretched or twisted?
Working Scientifically			
Observing Closely	• asking simple questions and recognising that they can be answered in different ways • observing closely, using simple equipment • performing simple tests • identifying and classifying using their observations and ideas to suggest answers to questions • gathering and recording data to help in answering questions	• Can they use <see, touch, smell, hear or taste> to help them answer questions? • Can they use some scientific words to describe what they have seen and measured? • Can they compare several things?	• Can they suggest ways of finding out through listening, hearing, smelling, touching and tasting?
Performing Tests		• Can they carry out a simple fair test? • Can they explain why it might not be fair to compare two things? • Can they say whether things happened as they expected? • Can they suggest how to find things out? • Can they use prompts to find things out?	• Can they say whether things happened as they expected and if not why not
Identifying and Classifying		• Can they organise things into groups? • Can they find simple patterns (or associations)? • Can they identify animals and plants by a specific criteria, e.g. lay eggs or not; have feathers or not?	• Can they suggest more than one way of grouping animals and plants and explain their reasons?
Recording Findings		• Can they use text, diagrams, pictures, charts, tables to record their observations? • Can they measure using simple equipment?	• Can they use information from books and online

			information to find things out?
Types of Investigations		Children should have the opportunity to investigate: • Observing changes over time • Noticing similarities, differences and patterns. • Grouping and classifying. • Carrying our comparative tests. • Finding things out using secondary sources of information	• Can they begin to independently consider controlling variables to create a fair test?

Year 3			
Area	**Essential Knowledge (National Curriculum)**	**End of Year Expectations**	**Greater Depth**
Plants	• 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.	• Can they identify and describe the functions of different parts of flowering plants? (roots, stem/trunk, leaves and flowers)? Range of plants. • Can they explore the requirement of plants for life and growth (air, light, water, nutrients from soil, and room to grow)? • Can they investigate the way in which water is transported within plants? • Can they explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal? • Can they record their observations in different ways including labelled diagrams, charts etc. and use secondary sources? • Can they plan and set up a fair test and explain why it was fair? • Can they explain what they have found out and use their measurements to say whether it helps to answer their question? • Can they set up a simple test to make comparisons?	• Can they classify a range of common plants according to many criteria (environment found, size, climate required, etc.)?
Animals Including Humans	• 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.	• Can they explain the importance of a nutritionally balanced diet? • Can they describe how nutrients, water and oxygen are transported within animals and humans? • Can they identify that animals, including humans, cannot make their own food: they get nutrition from what they eat? • Can they describe and explain the skeletal system of a human?	• Can they explain how the muscular and skeletal systems work together to create movement? • Can they classify living things and non-living things by a number of characteristics that they have thought of? • Can they explain how people, weather and the

	• 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.	• Can they describe and explain the muscular system of a human? • Can they describe what they have found using scientific language? • Can they describe what they have found out using secondary sources.	environment can affect living things? • Can they explain how certain living things depend on one another to survive?
Rocks	• Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Describe in simple terms how fossils are formed when things that have lived are trapped within rock. • Recognise that soils are made from rocks and organic matter.	• Can they compare and group together different rocks on the basis of their appearance and simple physical properties? • Can they describe and explain how different rocks can be useful to us? • Can they describe in simple terms how fossils are formed when things that have lived are trapped within rock? • Can they describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed? • Can they recognise that soils are made from rocks and organic matter? • Can they describe what they have found using scientific language? • Can they classify objects in different ways? • Can they describe what they have found using scientific language? • Can they use different ideas and suggest how to find something out?	• Can they classify igneous and sedimentary rocks? • Can they begin to relate the properties of rocks with their uses?

Forces and Magnets	• Compare how things move on different surfaces. • Notice that some forces need contact between two objects, but magnetic forces can act at a distance. • Observe how magnets attract or repel each other and attract some materials and not others. • Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet and identify some magnetic materials. • Describe magnets as having two poles. • Predict whether two magnets will attract or repel each other, depending on which poles are facing.	• Can they compare how things move on different surfaces? • Can they observe that magnetic forces can be transmitted without direct contact? • Can they observe how some magnets attract or repel each other? • Can they identify and classify which everyday materials are attracted to magnets and which are not? • Can they notice that some forces need contact between two objects, but magnetic forces can act at a distance? • Can they describe magnets have having two poles (N & S)? and predict whether two magnets will attract or repel each other depending on which poles are facing? • Can they make and record a prediction before testing? • Can they take accurate measurements using different equipment and units of measure? • Can they set up a simple fair test to make comparisons? • Can they explain what they have found out and use their measurements to say whether it helps to answer their question? • Can they record their observations in different ways such as labelled diagrams, charts etc.?	• Can they investigate the strengths of different magnets and find fair ways to compare them?

Light	• Recognise that they need light in order to see things, and that dark is the absence of light. • Notice that light is reflected from surfaces. • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. • Recognise that shadows are formed when the light from a light source is blocked by an opaque object. • Find patterns in the way that the size of shadows change.	• Can they recognise that they need light in order to see things? • Can they recognise that dark is the absence of light? • Can they notice that light is reflected from surfaces? • Can they recognise that light from the sun can be dangerous and that there are ways to protect their eyes? • Can they recognise that shadows are formed when the light from a light source is blocked by a solid object? • Can they find patterns in the way that the size of shadows change? • Can they explain the difference between transparent, translucent and opaque? • Can they set up a simple fair test to make comparisons? • Can they describe what they have found using scientific language? • Can they record their observations in different ways including labelled diagrams, charts etc?	• Can they explain why lights need to be bright or dimmer according to need? • Can they say what happens to the electricity when more batteries are added? • Can they explain why their shadow changes when the light source is moved closer or further from the object?
Working Scientifically			
Planning	• 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	• Can they use different ideas and suggest how to find something out? • Can they make and record a prediction before testing? • Can they plan a fair test and explain why it was fair? • Can they set up a simple fair test to make comparisons? • Can they explain why they need to collect information to answer a question?	• Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?

Obtaining and Presenting Evidence	measurements using standard units, using a range of equipment, including thermometers and data loggers • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • Identifying differences, similarities or changes related to simple scientific ideas and processes • Using straightforward scientific evidence to answer questions or to support their findings.	• Can they take accurate measurements using different equipment and units of measure? • Can they record their observations in different ways such as labelled diagrams, charts etc.? • Can they describe what they have found using scientific language?	• Can they explain their findings in different ways (display, presentation, writing)? • Can they use their findings to draw a simple conclusion? • Can they suggest improvements and predictions for further tests?
Considering Evidence and Evaluating		• Can they explain what they have found out and use their measurements to say whether it helps to answer their question?	• Can they suggest how to improve their work if they did it again?
Types of Investigation		• Children should have the opportunity to investigate • Observing changes over different periods of time • Noticing patterns • Grouping and classifying	

	• Carrying out comparative and fair tests • Finding things out using secondary resources	

Year 4			
Area	**Essential Knowledge (National Curriculum)**	**End of Year Expectations**	**Greater Depth**
Living Things and their Habitats	• Recognise that living things can be grouped in a variety of ways. • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. • Recognise that environments can change and that this can sometimes pose dangers to living things.	• Can they recognise that living things can be grouped in a variety of ways? • Can they classify and identify into broad groups? • Can they explore and use a classification key to group, identify and name a variety of living things? (plants, vertebrates, invertebrates) • Do they recognise that environments can change and this can sometimes pose a danger to living things? • Can they explain how environmental changes have an impact on living things? • Can they record data using diagrams, labels, classification keys, tables, scatter graphs, bar graphs and line graphs? • Can they explain their findings in different ways (display, presentation, writing)?	• Can they give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment? • Can they explore the work of pioneers in classification? (e.g. Carl Linnaeus) • Can they name and group a variety of living things based on feeding patterns? (producer, consumer, predator, prey, herbivore, carnivore, omnivore?
Animals Including Humans	• Describe the simple functions of the basic parts of the digestive system in humans. • Identify the different types of teeth in humans and their simple functions. • Construct and interpret a variety of food chains, identifying producers, predators and prey.	• Can they identify, name and describe the functions of the basic parts of the digestive system in humans? • Can they identify the simple function of different types of teeth in humans? • Can they compare the teeth of herbivores and carnivores? • Can they identify, construct and interpret a variety of food chains, identifying producers, predators and prey?	• Can they classify living things and non-living things by a number of characteristics that they have thought of? • Can they explain how people, weather and the environment can affect living things? • Can they explain how certain living things depend on one another to survive?

		• Can they identify differences, similarities or changes related to simple scientific ideas or processes?	
States of Matter	• Compare and group materials together, according to whether they are solids, liquids or gases. • Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C). • Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	• Can they compare and group materials together, according to whether they are solids, liquids or gases? • Can they explain what happens to materials when they are heated or cooled? • Can they measure or research the temperature at which different materials change state in degrees Celsius? • Can they describe how materials change state at different temperatures? • Can they use measurements to explain changes to the state of water? • Can they explain everyday phenomena including the water cycle? • Can they record data using diagrams, labels, classification keys, tables, scatter graphs, bar graphs and line graphs? • Can they evaluate and communicate their methods and findings? • Can they use a range scientific equipment to take accurate measurements or readings?	• Can they group and classify a variety of materials according to the impact of temperature on them? • Can they explain what happens over time to materials such as puddles on the playground or washing hanging on a line?
Sound	• Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear. • Find patterns between the pitch of a sound and features of the object that produced it. • Find patterns between the volume of a sound and the	• Can they describe a range of sounds and explain how they are made? • Can they associate some sounds with something vibrating? • Can they compare sources of sound and explain how the sounds differ? • Can they explain how to change a sound (louder/softer)? • Can they recognise how vibrations from sound travel through a medium to an ear?	• Can they explain why sound gets fainter or louder according to the distance? • Can they explain how pitch and volume can be changed in a variety of ways? • Can they work out which materials give the best insulation for sound?

	strength of the vibrations that produced it. • Recognise that sounds get fainter as the distance from the sound source increases.	• Can they describe the relationship between the pitch of the sound and the features of its source/object that produces it? • Can they find patterns between the volume of the sound and the strength of the vibrations that produced it, and the distance of the source? • Can they investigate how different materials can affect the pitch and volume of sounds? • Can they plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated? • Can they decide which information needs to be collected and decide the best way for collecting it? • Can they evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables?	
Electricity	• Identify common appliances that run on electricity. • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.	• Can they identify common appliances that run on electricity? • Can they construct a simple series electric circuit? • Can they identify and name the basic part in a series circuit, including cells, wires, bulbs, switches and buzzers? • Can they recogniser symbols to represent simple series circuit diagrams? • Can they 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? • Can they recognise that a switch opens and closes a circuit? • Can they associate a switch opening with whether or not a lamp lights n a simple series circuit? • Can they recognise some common conductors and insulators?	• Can they explain how a bulb might get lighter? • Can they recognise if all metals are conductors of electricity? • Can they work out which metals can be used to connect across a gap in a circuit? • Can they explain why cautions are necessary for working safely with electricity?

	• Recognise some common conductors and insulators, and associate metals with being good conductors.	• Can they associate metals with being good conductors? • Can they plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated? • Can they suggest improvements and predictions? • Can they ask their own questions? • Can they explain their findings in different ways (display, presentation, writing)?	
Working Scientifically			
Planning	• Asking relevant questions and using different types of scientific enquiries to answer them • Setting up simple practical enquiries, comparative and fair tests • Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • Reporting on findings from enquiries, including oral and	• Can they plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated? • Can they suggest improvements and predictions? • Can they ask their own questions? • Can they decide which information needs to be collected and decide which is the best way for collecting it? • Can they use their findings to draw a simple conclusion?	• Can they plan and carry out an investigation by controlling variables fairly and accurately? • Can they use test results to make further predictions and set up further comparative tests?
Obtaining and Presenting Evidence		• Can they take measurements using different equipment and units of measure and record what they have found in a range of ways? • Can they use a range scientific equipment's to take accurate measurements or readings? • Can they explain their findings in different ways (display, presentation, writing)? • Can they record data using diagrams, labels, classification keys, tables, scatter graphs, bar graphs and line graphs?	• Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?
Considering Evidence and Evaluating		• Can they find any patterns in their evidence or measurements? • Can they evaluate and communicate their methods and findings?	• Can they report findings from investigations through written explanations and conclusions?

	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.	• Can they make a prediction based on something they have found out? • Can they ask further questions based on their data and observations? • Can they evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? • Can they identify differences, similarities or changes related to simple scientific ideas or processes	• Can they use a graph or diagram to answer scientific questions?
Types of Investigation		Children should have the opportunity to investigate: • Observing changes over different periods of time • Noticing patterns • Grouping and classifying • Carrying out comparative and fair tests • Finding things out using secondary resources	• Can they use a range of variables to investigate?

Year 5			
Area	**Essential Knowledge (National Curriculum)**	**End of Year Expectations**	**Greater Depth**
Living Things and their Habitats	• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Describe the life process of reproduction in some plants and animals.	• Can they describe the differences in the life cycles of a mammal, amphibians, an insects and a bird? • Can they identify the reproductive processes of some animals? • Can they describe the life cycles of common plants? • Can they explore the work of well know naturalists and animal behaviourists? (David Attenborough and Jane Goodall) • Can they present a report of their findings through writing, display and presentation?	• Can they observe their local environment and draw conclusions about life-cycles, e.g. plants in the vegetable garden or flower border? • Can they compare the life cycles of plants and animals in their local environment with the life cycles of those around the world, e.g. rainforests?
Animals Including Humans	• Describe the changes as humans develop to old age.	• Can they describe the changes as humans develop to old age? • Can they use basic ideas of inheritance, variation and adaptation to describe how living things have changed over time? • Can they use a graph to answer scientific questions? • Can they present a report of their findings through writing, display and presentation?	• Can they create a timeline to indicate stages of growth in certain animals, such as frogs and butterflies? • Can they describe the changes experienced in puberty? • Can they draw a timeline to indicate stages in the growth and development of humans?
Properties and Changes to Materials	• Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. • Know that some materials will dissolve in liquid to form a	• Can they compare and group together everyday materials on the basis of their properties, including hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets? • Can they explain how some materials dissolve in liquid to form a solution? • Can they explain what happens when dissolving occurs? • Can they use their knowledge of solids, liquids and gases to decide and describe how mixtures might be	• Can they describe methods for separating mixtures? (filtration, distillation) • Can they work out which materials are most effective for keeping us warm or for keeping something cold? • Can they use their knowledge of materials to suggest ways to classify? (solids, liquids, gases)

	solution and describe how to recover a substance from a solution. • Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. • Demonstrate that dissolving, mixing and changes of state are reversible changes. • Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	separated, including through filtering, sieving, evaporating? • Can they give reasons, based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals wood and plastic? • Can they describe changes using scientific words? (evaporation, condensation) • Can they demonstrate that dissolving, mixing and changes of state are reversible changes? Can they explain that some changes result in the formation of new materials, and that this kid of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda? • Can they use the terms 'reversible' and 'irreversible'? • Can they plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary? • Can they make a prediction with reasons? • Can they use test results to make predictions to set up comparative and fair tests? • Can they take repeat readings when appropriate? • Can they record more complex data and results using scientific diagrams, labels, classification keys, table, scatter graphs, bar and line graphs?	• Cant they explore changes that are difficult to reverse, e.g. burning, rusting and reactions such as vinegar with bicarbonate of soda? • Can they explore the work of chemists who created new materials, e.g. Spencer Silver (glue on sticky notes) or Ruth Benerito (wrinkle free cotton)?

Earth and Space	• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth. • Describe the Sun, Earth and Moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	• Can they identify and explain the movement of the Earth and other plants relative to the sun in the solar system? • Can they explain how seasons and the associated weather is created? • Can they describe and explain the movement of the Moon relative to the Earth? • Can they describe the sun, earth and moon as approximately spherical bodies? • Can they use the idea of the earth's rotation to explain day and night and the apparent movement of the sun across the sky? • Can they present a report of their findings through writing, display and presentation using appropriate scientific vocabulary? • Can they use evidence from secondary sources to explore their own and other people's ideas?	• Can they compare the time of day at different places on the earth? • Can they create shadow clocks? • Can they begin to understand how older civilizations used the sun to create astronomical clocks, e.g. Stonehenge? • Can they explore the work of some scientists? (Ptolemy, Alhazen, Copernicus)
Forces	• Describe the movement of the Earth, and other planets, relative to the Sun in the solar system. • Describe the movement of the Moon relative to the Earth. • Describe the Sun, Earth and Moon as approximately spherical bodies. • Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.	• Can they explain that unsupported objects fall towards the earth because of the force of gravity acting between the earth and the falling object? • Can they identify the effects of air resistance, water resistance and friction that act between moving surfaces? • Can they recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect? • Can they present a report of their findings through writing, display and presentation using appropriate scientific vocabulary? • Can they use a graph to answer scientific questions? • Can they use test results to make predictions to set up comparative and fair tests	• Can they describe and explain how motion is affected by forces? (including gravitational attractions, magnetic attraction and friction) • Can they design very effective parachutes? • Can they work out how water can cause resistance to floating objects? • Can they explore how scientists, such as Galileo Galilei and Isaac Newton helped to develop the theory of gravitation?
Working Scientifically			

• **Planning**	• Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary • Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate • Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs • Using test results to make predictions to set up further comparative and fair tests • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • Identifying scientific evidence that has been used to support or refute ideas or arguments	• Can they plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary? • Can they make a prediction with reasons? • Can they use test results to make predictions to set up comparative and fair tests?	• Can they explore different ways to test an idea, choose the best way and give reasons? • Can they vary one factor whilst keeping the others the same in an experiment? • Can they use information to help make a prediction? • Can they explain, in simple terms, a scientific idea and what evidence supports it?
• **Obtaining and Presenting Evidence**		• Can they take measurements using a range of scientific equipment with increasing accuracy and precision? • Can they take repeat readings when appropriate? • Can they record more complex data and results using scientific diagrams, labels, classification keys, table, scatter graphs, bar and line graphs?	• Can they decide which units of measurement they need to use? • Can they explain why a measurement needs to be repeated?
• **Considering Evidence and Evaluating**		• Can they use a graph to answer scientific questions? • Can they present a report of their findings through writing, display and presentation?	• Can they find a pattern from their data and explain what it shows? • Can they link what they have found out to other science? • Can they suggest how to improve their work and say why they think this?

Year 6			
Area	**Essential Knowledge (National Curriculum)**	**End of Year Expectations**	**Greater Depth**
Living Things and their Habitats	• Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. • Give reasons for classifying plants and animals based on specific characteristics.	• Can they describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including microorganisms, plants and animals? • Can they give reasons for classifying plants and animals based on specific characteristics? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?	• Can they explain why classification is important? • Can they readily group animals into reptiles, fish, amphibians, birds and mammals? • Can they sub divide their original groupings and explain their divisions, such as vertebrates and invertebrates? • Can they find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification?
Animals Including Humans	• Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood. • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. • Describe the ways in which nutrients and water are	• Can they identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood? • Can they recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function? • Can they describe the ways in which nutrients and water are transported within animals and plants, including humans? • Can they explain, in simple terms, a scientific idea and the evidence which supports it?	• Can they explore the work of medical pioneers, for example, William Harvey and Galen and recognise how much we have learnt about our bodies? • Can they compare the organ systems of humans to other animals? • Can they make a diagram of the human body and explain how different parts work and depend on one another?

	transported within animals, including humans.		• Can they name and locate the major organs in the human body?
Evolution and Inheritance	• Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. • Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. • Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	• Can they recognise that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago? • Can they recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents? • Can they give reasons why offspring are not identical to each other or to their parents? • Can they explain the process of evolution and describe the evidence for this? • Can they identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? Can they explain, in simple terms, a scientific idea and what evidence supports it?	• Can they research and discuss the work of famous scientists, such as Charles Darwin, Mary Anning and Alfred Wallace? • Can they explain how some living things adapt to survive in extreme conditions? • Can they analyse the advantages and disadvantages of specific adaptations, such as being on two rather than four feet?
Electricity	• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.	• Can they identify and name the basic parts of a simple electric series circuit? (cells, wires, bulbs, switches, buzzers) • Can they compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers, the on/off position of switches? • Can they use recognised symbols when representing a simple circuit in a diagram? • Can they explore different ways to test an idea, choose the best way, and give reasons? • Can they identify the key factors when planning a fair test?	• Can they make their own traffic light system or something similar? • Can they explain the danger of short circuits? • Can they explain what a fuse is? • Can they explain how to make changes in a circuit? • Can they explain the impact of changes in a circuit? • Can they explain the effect of changing the voltage ?

	• Use recognised symbols when representing a simple circuit in a diagram.	• Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? • Can they use information to make a prediction and give reasons for it? • Can they use test results to make further predictions and set up further comparative tests? • Can they find a pattern from their data and explain what it shows? • Can they use a graph to answer scientific questions? • Can they link what they have found out to other science? • Can they suggest how to improve their work and say why they think this?	
Light	• Recognise that light appears to travel in straight lines. • Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye. • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	• Can they recognise that light appears to travel in straight lines? • Can they 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? • Can they 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? • Can they use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them? • Can they find a pattern from their data and explain what it shows? • Can they use a graph to answer scientific questions? • Can they link what they have found out to other science? • Can they suggest how to improve their work and say why they think this? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models?	• Can they explain how different colours of light can be created? • Can they use and explain how simple optical instruments work? (periscope, telescope, binoculars, mirror, magnifying glass, Newton's first reflecting telescope) • Can they explore a range of phenomena, including rainbows, colours on soap bubbles, objects looking bent in water and coloured filters.

		• Can they draw conclusions from their work? • Can they report findings from investigations through written explanations and conclusions using appropriate scientific language?	
Working Scientifically			
Planning	• 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	• Can they explore different ways to test an idea, choose the best way, and give reasons? • Can they identify the key factors when planning a fair test? • Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? • Can they use information to make a prediction and give reasons for it? • Can they use test results to make further predictions and set up further comparative tests? • Can they explain, in simple terms, a scientific idea and what evidence supports it?	• Can they choose the best way to answer a question and use information from different sources to plan an investigation? • Can they make a prediction which links with other scientific knowledge?
Obtaining and Presenting Evidence		• Can they explain why they have chosen specific equipment? (incl ICT based equipment) • Can they decide which units of measurement they need to use? • Can they make precise measurements? • Can they explain why a measurement needs to be repeated? • Can they record their measurements in different ways? (incl bar charts, tables and line graphs)	• Can they plan which equipment they will need and use it effectively? • Can they explain qualitative and quantitative data?

	• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations • Identifying scientific evidence that has been used to support or refute ideas or arguments	• Can they read and record measurements systematically using a range of scientific equipment with increasing accuracy and precision? • Can they present a report of their findings through writing, display and presentation?	
Considering Evidence and Evaluating		• Can they find a pattern from their data and explain what it shows? • Can they use a graph to answer scientific questions? • Can they link what they have found out to other science? • Can they suggest how to improve their work and say why they think this? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? • Can they draw conclusions from their work? • Can they report findings from investigations through written explanations and conclusions using appropriate scientific language?	• Can they identify scientific evidence that has been used to support or to refute ideas or arguments and link their conclusions to it? • Can they explain how they could improve their way of working? • Can they report and present 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?
Types of Investigations		• Children should have the opportunity to investigate through: • Recognising and controlling variables accurately and fairly, including changes over different periods of time • Noticing patterns, groupings and classifying • Carrying out comparative and fair tests • Finding things out using a wide range of secondary sources.	