

SCIENTIFIC ENQUIRY			
RECEPTION	KS1	LKS2	UKS2
<ul style="list-style-type: none"> Know more, so feel confident about coming up with their own ideas. Make more links within those ideas. 	<ul style="list-style-type: none"> Asks questions raised by their own exploration of the world around them.(1) Draws on their everyday experiences to help answer questions.(1) Begins to use simple features to compare objects, materials and living things.(1) Asks people questions to find answers.(1) Asks simple questions recognising that they can be answered in different ways.(2) Uses different types of scientific enquiry...Finding things out using secondary sources of information(2) Asks their own questions about what they notice(2) 	<ul style="list-style-type: none"> Responds to suggestions of how to answer questions about the world around them, and begins to raise their own relevant questions.(3) Is able to use suggested methods of enquiry.(3) With support recognises when and how secondary sources should be used.(3) Raises their own relevant questions about the world around them.(4) Uses different types of scientific enquiry to answer the questions they raise.(4) Recognises when and how secondary sources should be used.(4) 	<ul style="list-style-type: none"> Explores ideas and raises different kinds of relevant questions.(5) Recognises which secondary sources are most useful to research their ideas and begins to recognise that there are differences between fact and opinion.(5) TAF: WA Asks their own questions about the scientific phenomena that they are studying, and select the most appropriate ways to answer these questions, recognising and controlling variables where necessary (i.e. observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests, and finding things out using a wide range of secondary sources).(6)
PRACTICAL INVESTIGATIONS			
RECEPTION	KS1	LKS2	UKS2
<ul style="list-style-type: none"> Explore the natural world around them. Describe what they see, hear and feel. 	<ul style="list-style-type: none"> Uses their senses and simple equipment to make observations(1) Responds to prompts by making some suggestions about how to find an answer or make observations.(1) Uses different types of scientific enquiry, observing changes over time.(2) Uses different types of scientific enquiry, carrying out simple comparative tests.(2) 	<ul style="list-style-type: none"> With support, discusses the most appropriate type of scientific enquiry they might use to answer questions.(3) Understands what a simple fair test is, and with support helps to set it up.(3) With support helps to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used(3) Learns how to use new equipment, such as data loggers, appropriately.(3) 	<ul style="list-style-type: none"> With increasing confidence selects and plans the most appropriate type of scientific enquiry for answering a scientific question(5) Recognises when and how to set up comparative and fair tests and is beginning to explain which variables need to be controlled and why.(5) Makes their own decisions about what observations to make, what measurements to use and how long to make them for.(5)

		<ul style="list-style-type: none"> • With help collects data from their own observations and measurements, using notes, simple tables and standard units.(3) • Starts to make their own decisions about the most appropriate type of scientific enquiry they might use to answer questions.(4) • Recognises when a simple fair test is necessary and helps to decide how to set it up.(4) • Begins to look for patterns and decides what data to collect to identify them.(3/4) • Makes some decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.(4) • Uses a range of equipment, including thermometers and data loggers, appropriately. (4) • Collect data from their own observations and measurements, using notes, simple tables and standard units.(4) 	<ul style="list-style-type: none"> • Chooses appropriate equipment to make measurements.(5) • Selects and plans accurately the most appropriate type of scientific enquiry for answering a scientific question.(6) • Recognises when and how to set up comparative and fair tests and explains which variables need to be controlled and why(6) • Makes independent, well founded decisions about what observations to make, what measurements to use and how long to make them for.(6) • TAF: WA uses a range of scientific equipment to take accurate and precise measurements or readings, with repeat readings where appropriate.(6)
COMMUNICATING			
RECEPTION	KS1	LKS2	UKS2
<ul style="list-style-type: none"> • Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. • Describe some events in detail 	<ul style="list-style-type: none"> • Begins to record data in simple templates provided for them.(1) • Responds to prompts to talk about what they have found out.(1) • Communicates their ideas, what they do and what they find out in a variety of ways.(2) • Talks about what they have found out and how they found it out.(2) • Uses simple features to compare objects, materials and living things 	<ul style="list-style-type: none"> • Talks about how the data may be recorded.(3) • With support talks about criteria for grouping, sorting and classifying. Uses simple keys.(3) • Beginning to use scientific language to discuss their ideas and communicate their findings.(3) • Helps to make decisions about how to record and analyse the data. (4) 	<ul style="list-style-type: none"> • Decides how to record data from a choice of familiar approaches(5) • Uses relevant scientific language and illustrations to discuss and communicate their ideas. Is sometimes able to justify their scientific ideas (5). • Talks about how scientific ideas have developed over time.(5) • Uses and develops keys and other information records to identify, classify and describe living things and materials,

	<p>and with help, decides how to sort and group them. (2)</p>	<ul style="list-style-type: none"> • Gathers, records, classifies and presents data in a variety of ways to help in answering questions.(4) • Uses relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences.(4) • Records findings using a range of methods including drawings, labelled diagrams, keys, bar charts, and tables.(4) • Reports on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions(4) 	<p>and identify patterns that might be found in the natural environment.(5)</p> <ul style="list-style-type: none"> • Records data and results using scientific diagrams and labels, classification keys, tables, and bar and line graphs.(5) • Uses simple models to describe scientific ideas.(5) • Reports and presents findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations.(5) • Decides how to record data from a choice of familiar approaches(6) • TAF: WA Records data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs(6) • TAF: WA Describes and evaluates their own and others scientific ideas related to topics in the national curriculum (including ideas that have changed over time), using evidence from a range of sources.(6) • TAF: WA Draws conclusions, explains and evaluates their methods and findings, communicating these in a variety of ways(6) • TAF: WA Raises further questions that could be investigated, based on their data and observations(6)
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INTERPRETING EVIDENCE			
RECEPTION	KS1	LKS2	UKS2
Use talk to help work out problems and organise thinking and activities, and to explain how things work and how they might happen.	Says what has changed when observing objects, living things or events.(1) Says whether what happened was what they expected.(2) Uses different types of scientific enquiry, noticing patterns.(2) Uses different types of scientific enquiry...Grouping and classifying things(2)	With support is beginning to use some of the following methods to record their findings: drawings, labelled diagrams, keys, bar charts, and tables.(3) Beginning to report findings using basic oral and written explanations, displays or presentations of results.(3) Beginning to draw and express some conclusions.(3) With help, looks for straightforward changes, patterns, similarities and differences in their data in order to draw simple conclusions.(3) With support discusses the success of their working methods. (3) With support, begins to identify new questions arising from the data. With help makes predictions for new values within or beyond the data they have collected (3)	Looks for different causal relationships in their data and begins to identify evidence that refutes or supports their ideas.(5) Uses their results to identify when further tests and observations might be needed.(5) Looks for different causal relationships in their data and identifies evidence that refutes or supports their ideas.(6) Uses test results to make predictions to set up further comparative and fair tests.(6)
PLANTS			
REC	KS 1	LKS2	UKS2
Draw information from a simple map. (Reception – Living things and their habitats) • Explore the natural world around them. (Reception – Living things and their habitats) • Describe what they see, hear and feel whilst outside. (Reception – Living things and their habitats)	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. Year 2 • 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. • Identify and name a variety of 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. Year 4	Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) Year 5 • Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) Year 6 • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-

<ul style="list-style-type: none"> Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats) Understand the effect of changing seasons on the natural world around them. (Reception – Seasonal changes) 	<p>and animals in their habitats, including microhabitats. (Y2 - Living things and their habitats)</p>	<ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. (Y4 - Living things and their habitats) Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. (Y4 - Living things and their habitats) Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) 	<p>organisms, plants and animals. (Y6 - Living things and their habitats)</p> <ul style="list-style-type: none"> Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)
ANIMALS INCLUDING ANIMALS			
REC	KS1	LKS1	UKS2
<ul style="list-style-type: none"> Talk about members of their immediate family and community Name and describe people who are familiar to them. Recognise some environments that are different to the one in which they live. 	<p>Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.</p> <ul style="list-style-type: none"> 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. <p>Year 2</p> <ul style="list-style-type: none"> 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. 	<p>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.</p> <ul style="list-style-type: none"> Identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p>Year 4</p> <ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Describe the changes as humans develop to old age. Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. (Y5 - Living things and their habitats) Describe the life process of reproduction in some plants and animals. (Y5 - Living things and their habitats) <p>Year 6</p> <ul style="list-style-type: none"> 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 transported within animals, including humans. Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-

	<ul style="list-style-type: none"> 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. (Y2 - Living things and their habitats) 		<p>organisms, plants and animals. (Y6 - Living things and their habitats)</p> <ul style="list-style-type: none"> Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)
EVOLUTION AND INHERITANCE			
REC	KS1	LKS2	UKS2
<ul style="list-style-type: none"> Recognise some environments that are different to the one in which they live. (Reception – Living things and their habitats) 	<p>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. (Y2 - Living things and their habitats)</p> <ul style="list-style-type: none"> Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans) 	<p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks)</p> <ul style="list-style-type: none"> Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. (Y3 - Plants) Year 4 Recognise that environments can change and that this can sometimes pose dangers to living things. (Y4 - Living things and their habitats) 	<p>Describe the life process of reproduction in some plants and animals. (Living things and their habitats - Y5)</p> <p>Year 6</p> <ul style="list-style-type: none"> 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
SEASONS			
REC	KS1	LKS2	UKS2
<ul style="list-style-type: none"> Explore the natural world around them. Describe what they see, hear and feel whilst outside. Understand the effect of changing seasons on the natural world around them 	<p>Observe changes across the four seasons.</p> <ul style="list-style-type: none"> Observe and describe weather associated with the seasons and how day length varies 	<p>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. (Y3 - Light)</p>	<ul style="list-style-type: none"> Use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky. (Y5 - Earth and space)
MATERIALS			
REC	KS1	LKS2	UKS2

<p>Explore the natural world around them.</p> <ul style="list-style-type: none"> Describe what they see, hear and feel whilst outside 	<p>Distinguish between an object and the material from which it is made.</p> <ul style="list-style-type: none"> 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. <p>Year 2</p> <ul style="list-style-type: none"> 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 	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks)</p> <ul style="list-style-type: none"> Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (Y3 - Rocks) 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. (Y3 - Forces and magnets) <p>Year 4</p> <ul style="list-style-type: none"> 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. Recognise some common conductors and insulators, and associate metals with being good conductors. (Y4 - Electricity) 	<p>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.</p> <ul style="list-style-type: none"> Know that some materials will dissolve in liquid to form a 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.
ROCKS			
REC	KS1	LKS2	UKS2
<p>Explore the natural world around them. (Reception – Living things and their habitats)</p> <ul style="list-style-type: none"> Describe what they see, hear and feel whilst 	<p>Distinguish between an object and the material from which it is made. (Y1 - Everyday materials)</p> <ul style="list-style-type: none"> Identify and name a variety of everyday materials, including wood, 	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.</p> <ul style="list-style-type: none"> Describe in simple terms how fossils are formed when things that have lived are trapped within rock 	<ul style="list-style-type: none"> Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6 - Evolution and inheritance)

<p>outside. (Reception – Living things and their habitats)</p>	<p>plastic, glass, metal, water, and rock. (Y1 - Everyday materials)</p> <ul style="list-style-type: none"> Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials) Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials) <p>Year 2</p> <ul style="list-style-type: none"> Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials) 	<ul style="list-style-type: none"> Recognise that soils are made from rocks and organic matter. 	
FORCES			
REC	KS1	LKS2	UKS2
		<ul style="list-style-type: none"> Compares how things move on different surfaces.(3) Notices that some forces need contact between 2 objects, but magnetic forces can act at a distance.(3) Observes how magnets attract or repel each other and attract some materials and not others.(3) Compares and groups together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identifies some magnetic materials.(3) Describes magnets as having 2 poles.(3) Predicts whether 2 magnets will attract or repel each other, depending on which poles are facing(3) 	<ul style="list-style-type: none"> Explains that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling objects (5) Identifies the effects of air resistance, water resistance and friction that act between moving surfaces.(5) Recognises that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.(5) TAF: WA describe the effects of simple forces that involve contact (air and water resistance, friction), and others that act at a distance (magnetic forces, including those between like and unlike magnetic poles; and gravity).(6) TAF: WA Identifies simple mechanisms, including levers, gears and pulleys that increase the effect of a force.(6)

LIGHT			
REC	KS1	LKS2	UKS2
		<ul style="list-style-type: none"> Recognises that they need light in order to see things and that dark is the absence of light.(3) Notices that light is reflected from surfaces.(3) Recognises that light from the sun can be dangerous and that there are ways to protect their eyes.(3) Recognises that shadows are formed when the light from a light source is blocked by a solid object.(3) Could work scientifically by: finding patterns in the way that the size of shadows change.(3) 	<ul style="list-style-type: none"> Uses the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye.(6) Explains that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes.(6) TAF: WA Uses the idea that light from light sources, or reflected light, travels in straight lines and enters our eyes to explain how we see objects, and the formation, shape and size of shadows.(6) Could work scientifically by: designing and making a periscope and using the idea that light appears to travel in straight lines to explain how it works.(6)
SOUND			
REC	KS1	LKS2	UKS2
		<ul style="list-style-type: none"> Identifies how sounds are made, associating some of them with something vibrating.(4) Recognises that vibrations from sounds travel through a medium to the ear. (4) Finds patterns between the pitch of a sound and features of the object that produced it. (4) Finds patterns between the volume of a sound and the strength of the vibrations that produced it. 	<ul style="list-style-type: none"> TAF: WA uses the idea that sounds are associated with vibrations, and that they require a medium to travel through, to explain how sounds are made and heard.(6) TAF: WA Describes the relationship between the pitch of a sound and the features of its source; and between the volume of a sound, the strength of the vibrations and the distance from its source.(6)

		<ul style="list-style-type: none"> Recognises that sounds get fainter as the distance from the sound source increases. (4) Could work scientifically by: finding patterns in the sounds that are made by different objects such as saucepan lids of different sizes(4) 	
ELECTRICITY			
REC	KS1	LKS2	UKS2
		<ul style="list-style-type: none"> Identifies common appliances that run on electricity. (4) Constructs a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. (4) Identifies 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. (4) Recognises that a switch opens and closes a circuit and associates this with whether or not a lamp lights in a simple series circuit. (4) Recognises some common conductors and insulators, and associate metals with being good conductors. (4) Could work scientifically by: observing patterns, for example, that bulbs get brighter if more cells are added, that metals tend to be conductors of electricity, and that some materials can and some cannot be used to connect across a gap in a circuit. (4) 	<ul style="list-style-type: none"> Associates the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.(6) Compares and gives reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.(6) TAF: WA Uses use simple apparatus to construct and control a series circuit, and describe how the circuit may be affected when changes are made to it; and use recognised symbols to represent simple series circuit diagrams.(6) Could work scientifically by: systematically identifying the effect of changing one component at a time in a circuit; designing and making a set of traffic lights, a burglar alarm or some other useful circuit.(6)