

Objectives:	
Year 3	Year 4
<p>Working Scientifically</p> <ol style="list-style-type: none"> 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 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. 	
<p>Plants</p> <ol style="list-style-type: none"> 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. <p>Animals, including humans</p> <ol style="list-style-type: none"> 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 identify that humans and some other animals have skeletons and muscles for support, protection and movement. <p>Rocks</p> <ol style="list-style-type: none"> 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. <p>Light</p> <ol style="list-style-type: none"> 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. <p>Forces and magnets</p> <ol style="list-style-type: none"> 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. 	<p>Animals, including humans</p> <ol 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. <p>Living things and their habitats</p> <ol style="list-style-type: none"> 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. <p>States of matter</p> <ol 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. <p>Sound</p> <ol style="list-style-type: none"> 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 strength of the vibrations that produced it recognise that sounds get fainter as the distance from the sound source increases. <p>Electricity</p> <ol style="list-style-type: none"> 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 recognise some common conductors and insulators, and associate metals with being good conductors.

Enquiring and Planning		Testing and Presenting Evidence		Recording results/evidence		Drawing conclusions and explaining them.	
Year 3	Year 4	Year 3	Year 4	Year 3	Year 4	Year 3	Year 4
<p>Begin to raise their own questions</p> <p>Begin to make some decisions about which types of enquiry will be the best way of answering questions</p> <p>With help, plan how to carry out a simple investigation</p> <p>Begin to help decide which variables to keep the same and which to change.</p> <p>Begin to recognise and explain why it is a fair test</p> <p>Decide what to observe or measure</p> <p>Begin to make predictions</p> <p>Decide upon criteria for sorting and classifying</p>	<p>Raise their own questions</p> <p>Decide which different types of scientific enquiry to answer questions.</p> <p>Plan how to carry out a simple investigation</p> <p>Help decide which variables to keep the same and which to change.</p> <p>Explain what a fair test is.</p> <p>Think about what they can measure</p> <p>Predict what will happen with scientific reasoning</p> <p>Plan how they will record results</p> <p>Select information from a range of sources provided for them</p>	<p>Measure accurately using equipment with which they are familiar</p> <p>Carry out a fair test with support</p> <p>Begin to make systematic and careful observations</p> <p>Use simple keys</p>	<p>Measure accurately using new equipment</p> <p>Show in the way they perform their tasks how to vary one factor while keeping others the same</p> <p>Make systematic and careful observations over time</p>	<p>Record measurements with developing accuracy</p> <p>Begin to collect data in a variety of ways, including pictures, labelled diagrams, bar charts and tables and writing as directed by their teacher</p>	<p>Record observations, comparisons and measurements with accuracy</p> <p>Collect data in a variety of ways, using labelled diagrams, bar charts and tables.</p> <p>Begin to plot points to form a simple graph</p>	<p>Answer my questions using the results of my enquiry.</p> <p>Begin to draw simple conclusions based on the results of my enquiry.</p> <p>Begin to use my findings to make new predictions, suggest improvements and think of new questions.</p> <p>Begin to identify patterns in recorded measurements</p> <p>Begin to think of cause and effect in my explanations</p> <p>Begin to offer explanations for what they see and communicate in a scientific way what they have found out</p>	<p>Answer my questions using the results of my enquiry.</p> <p>Draw simple conclusions based on the results of my enquiry.</p> <p>Use my findings to make new predictions, suggest improvements and think of new questions.</p> <p>Use graphs to point out and interpret patterns in their data</p> <p>Consider cause and effect in my explanations.</p> <p>Begin to relate their conclusions to scientific knowledge and understanding</p>

How we achieve these

Year 3					
Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Theme: Inspirational People	Theme: Local history	Theme: The Stone Age	Theme: Changing places	Theme: Out of this world	Theme: Mighty Metals
NC Reference: Food and our bodies Animals inc humans 14 – 15 WS 1, 2, 3, 4, 5	NC Reference: Earth Rocks Rocks 19-21 WS 2, 3, 4, 5, 6, 7	NC Reference: Mirror, Mirror Light 22 – 26 WS 2, 3, 4, 5, 6, 7, 9	NC Reference: How does your garden grow? Plants 10 – 13 WS 1, 2, 3, 4, 5, 6, 7, 9	NC Reference: We are astronauts WS 1, 2, 3, 4, 5, 6, 7, 8, 9	NC Reference: Opposites Attract Forces and magnets 27 – 32 WS 1, 2, 3, 4, 5, 7, 9
<p>Skills: Movable joints connect bones. Muscles are connected to bones and move them when they contract. Many animals have skeletons to support their bodies and protect vital organs.</p> <p>Begin to raise their own questions</p> <p>With help, plan how to carry out a simple investigation</p> <p>Begin to help decide which variables to keep the same and which to change.</p> <p>Decide what to observe or measure</p> <p>Begin to make predictions</p> <p>Record measurements with developing accuracy</p>	<p>Skills: 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</p> <p>Decide upon criteria for sorting and classifying</p> <p>Begin to make systematic and careful observations</p> <p>Use simple keys</p> <p>Begin to collect data in a variety of ways, including pictures, labelled diagrams, bar charts and tables and writing as directed by their teacher</p> <p>Answer my questions using the results of my enquiry.</p>	<p>Skills: Light comes from a source. Transparent materials let light through them and opaque materials do not let light through. Beams of light bounce off some materials. Shiny materials reflect light beams better than non-shiny materials. There must be light for us to see. Without light it is dark. We need light to see things, even shiny things.</p> <p>Begin to raise their own questions</p> <p>With help, plan how to carry out a simple investigation</p> <p>Begin to help decide which variables to keep the same and which to change.</p> <p>Decide what to observe or measure</p>	<p>Skills: Plants have roots to provide support and to draw moisture from the soil, through stems to take water to the rest of the plant. Leaves absorb sunlight and carbon dioxide through leaves. Plants make their own food in their leaves to provide them with energy, grow, repair and reproduce The plant makes its food from water and carbon dioxide, using sunlight as energy, in the green parts of plants (mainly leaves). Flowering plants have evolved specific parts to carry out pollination, fertilisation and seed growth. Seed dispersal improves chances of enough seeds germinating and growing to mature plants. Seeds and bulbs need the right conditions to germinate. They contain</p> <p>Begin to raise their own questions</p> <p>With help, plan how to carry out a simple investigation</p> <p>Begin to help decide which variables to keep the same and which to change.</p> <p>Begin to recognise and explain why it is a fair test</p> <p>Decide what to observe or measure</p> <p>Begin to make predictions</p> <p>Carry out a fair test with support</p> <p>Begin to collect data in a variety of ways, including pictures, labelled diagrams, bar charts and</p>	<p>Skills: understand that UV rays exist and are harmful to living things</p> <p>Begin to raise their own questions</p> <p>With help, plan how to carry out a simple investigation</p> <p>Begin to help decide which variables to keep the same and which to change.</p> <p>Begin to recognise and explain why it is a fair test</p> <p>Decide what to observe or measure</p> <p>Begin to make predictions</p> <p>Carry out a fair test with support</p> <p>Begin to collect data in a variety of ways, including pictures, labelled diagrams, bar charts and</p>	<p>Skills: Magnets exert attractive and repulsive forces (including non-contact forces) on each other. Magnets exert non-contact forces, which work through some materials. Magnets exert attractive forces on some materials. Magnetic forces are affected by: magnet strength, object mass, distance from object and object material.</p> <p>Begin to make some decisions about which types of enquiry will be the best way of answering questions</p> <p>Begin to make systematic and careful observations Record measurements with developing accuracy</p> <p>Begin to draw simple conclusions based on the results of my enquiry</p>

<p>Begin to think of cause and effect in my explanations</p> <p>Begin to offer explanations for what they see and communicate in a scientific way what they have found out</p>	<p>Begin to draw simple conclusions based on the results of my enquiry</p>	<p>Begin to make predictions</p> <p>Begin to draw simple conclusions based on the results of my enquiry.</p>	<p>a food store for the first stages of growth.</p> <p>Begin to raise their own questions</p> <p>With help, plan how to carry out a simple investigation</p> <p>Begin to help decide which variables to keep the same and which to change.</p> <p>Begin to recognise and explain why it is a fair test</p> <p>Decide what to observe or measure</p> <p>Begin to make predictions</p> <p>Carry out a fair test with support</p> <p>Begin to collect data in a variety of ways, including pictures, labelled diagrams, bar charts and tables and writing as directed by their teacher</p> <p>Begin to use my findings to make new predictions, suggest improvements and think of new questions.</p> <p>Begin to think of cause and effect in my explanations</p>	<p>tables and writing as directed by their teacher</p> <p>Begin to use my findings to make new predictions, suggest improvements and think of new questions.</p> <p>Begin to identify patterns in recorded measurements</p> <p>Begin to offer explanations for what they see and communicate in a scientific way what they have found out</p>	<p>Begin to use my findings to make new predictions, suggest improvements and think of new questions.</p>
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<p>Vocabulary: As KSI plus: nutrition, nutrients, protein, fats, balanced diet, dietary fibre, carbohydrates, sugary or starchy foods, energy, vitamins, skeleton, exoskeleton, support, protection, movement, brain blood vessels, skull, ribs, heart, spine, backbone, collarbone, humerus, femur, pelvis, contract, relax, muscles, joints, sockets, bones, tendons</p>	<p>Vocabulary: crust, core, mineral, rock, properties, permeable, impermeable, crystals, ore, sedimentary, igneous, metamorphic, lava, molten rock, magma, intrusive, extrusive, humus, basalt, granite, pumice, gypsum, limestone, iron, zinc, slate, marble, sand, clay, fossil, extinct, palaeontologist, soil, sandy, stone, pebble, boulder, absorb water, grains, layers, texture, name properties of such as hard, soft</p>	<p>Vocabulary: dull, shiny, reflect, mirror, observation, explanation, light, light source, shadow, transparent, translucent, opaque, mirror, kaleidoscope, source, object, names of light sources, torch dark / darkness, reflective, block / absorb, direction of light, bright, dim, light beam, sunlight</p>	<p>Vocabulary: As KSI plus: Part, role, root, anchor, nutrients, stem, roots flower: seeds, leaves, veins, germinate, sepal, stamen, stigma: pollen pollination, style, carpel, ovary, ovule, eggs, petal, water transportation, anther, filament, seed dispersal, part role, temperature, absorb, soil, well-drained, fertiliser, plant, life cycle, seed formation</p>	<p>Vocabulary: Moon, orbits, planet, rocket, space, thrust, crater, meteorite, asteroid, sphere, cosmonaut, astronaut, ultra-violet, surface, mission.</p>	<p>Vocabulary: force, push, pull, twist, turn magnet, attract, repel, iron, cobalt, nickel, steel, alloy, aluminium, tin, pole, non-magnetic, North pole, South pole, compass, gravity, direction of force, air resistance streamlined, float / sink, friction, force-meter, magnetic strength, bar magnet, ring magnet, button magnet, horse-shoe magnet, name common magnetic and non-magnetic materials</p>
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Working Scientifically
Vocabulary:
As ksl plus:
 scientific enquiry, similarities, differences, observations, keys, bar charts, thermometer, data logger, changes over time, identify, classify, evidence, conclusion, prediction, magnifying glass, microscope, comparative tests, fair test, careful, present, data, results, support, not support

Year 4

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p>Theme: Amazon Rainforest</p>	<p>Theme: Mythical Creatures</p>	<p>Theme: Egyptians</p>	<p>Theme: Charlie and the chocolate factory</p>	<p>Theme: Twisted Fairytale</p>	<p>Theme: Romans</p>
<p>NC Reference: Living things Habitats 33 – 35 WS 1, 2, 3, 4, 5, 6, 7, 8, 9</p>	<p>NC Reference: Power it up! Electricity 44- 48 WS 1, 2, 3, 4, 5, 6, 7, 8, 9</p>	<p>NC Reference: Teeth and eating Animals inc Humans food, digestive system 16 – 18 WS 1, 2, 3, 4, 5, 6, 7, 8, 9</p>	<p>NC Reference: Looking at States States of matter 36 – 38 WS 1, 2, 3, 4, 5, 6, 7, 8, 9</p>	<p>NC Reference: Brilliant Bubbles Working scientifically 1 - 9</p>	<p>NC Reference: What's that sound? Sound 39 – 43 WS 1, 2, 3, 4, 5, 6, 7, 8, 9</p>
<p>Skills: Living things can be divided into groups based upon their characteristics. Different food chains occur in different habitats. Different organisms and habitats are affected by environmental change. Environmental change affects different habitats differently. Human activity significantly affects the environment.</p> <p>Raise their own questions</p> <p>Decide which different types of scientific enquiry to answer questions.</p> <p>Plan how they will record results</p>	<p>Skills: Electricity powers many common appliances. A source of electricity (mains or battery) is needed for electrical devices to work. Electricity sources push electricity round a circuit. More batteries will push the electricity round the circuit faster. Devices work harder when more electricity goes through them. Conductors allow electricity to flow easily and insulators don't. A complete circuit is needed for electricity to flow and devices to work.</p> <p>Select information from a range of sources provided for them</p>	<p>Skills: Different animals are adapted to eat different foods. Animals have teeth to help them eat. Different types of teeth do different jobs. Nutrients produced by plants move to primary consumers then to secondary consumers through food chains. Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood. The blood takes nutrients around the body.</p> <p>Decide which different types of scientific enquiry to answer questions.</p>	<p>Skills: Materials change state by heating and cooling. Some changes can be reversed and some cannot. When two or more substances are mixed and remain present the mixture can be separated. Heating causes changes of state. The temperature at which given substances change state are always the same. Materials can be divided into solids, liquids and gases. Solids, liquids and gases are described by observable properties.</p>	<p>Skills: plan a fair test to find out about the effect of changing bubble mixtures raise questions as a result of observations or tests share scientific findings evaluate an experiment, comment on the design and data carry out a survey present survey results and consider further questions identify similarities, differences and changes in results from experiments make and record detailed observations suggest how to investigate the effect of changing bubble mixtures. identify new questions as a result of observations or tests. suggest ways of improving an experiment</p>	<p>Skills: name a variety of sources of sound Identify different sounds in the environment notice that we hear with our ears. understand how sound travels sounds are made when objects vibrate vibrations require a medium to travel through the ear know the difference between pitch and loudness explain how the vibration changes when pitch changes understand how sounds become quieter with distance</p> <p>Raise their own questions</p>

LKS2 Science Progression



<p>Collect data in a variety of ways, using labelled diagrams, bar charts and tables.</p> <p>Answer my questions using the results of my enquiry.</p> <p>Draw simple conclusions based on the results of my enquiry.</p>	<p>Decide which different types of scientific enquiry to answer questions.</p> <p>Show in the way they perform their tasks how to vary one factor while keeping others the same</p> <p>Measure accurately using new equipment</p> <p>Collect data in a variety of ways, using labelled diagrams, bar charts and tables.</p> <p>Consider cause and effect in my explanations.</p>	<p>Select information from a range of sources provided for them</p> <p>Predict what will happen with scientific reasoning</p> <p>Make systematic and careful observations over time</p> <p>Collect data in a variety of ways, using labelled diagrams, bar charts and tables.</p> <p>Consider cause and effect in my explanations.</p> <p>Begin to relate their conclusions to scientific knowledge and understanding</p>	<p>Raise their own questions scientific reasoning</p> <p>Plan how they will record results</p> <p>Predict what will happen with scientific reasoning</p> <p>Make systematic and careful observations over time</p> <p>Collect data in a variety of ways, using labelled diagrams, bar charts and tables.</p> <p>Use my findings to make new predictions, suggest improvements and think of new questions.</p>	<p>Raise their own questions</p> <p>Plan how to carry out a simple investigation</p> <p>Help decide which variables to keep the same and which to change.</p> <p>Explain what a fair test is.</p> <p>Think about what they can measure</p> <p>Make systematic and careful observations over time</p> <p>Begin to plot points to form a simple graph</p> <p>Use graphs to point out and interpret patterns in their data</p>	<p>Explain what a fair test is.</p> <p>Think about what they can measure</p> <p>Predict what will happen with scientific reasoning</p> <p>Show in the way they perform their tasks how to vary one factor while keeping others the same</p> <p>Record observations, comparisons and measurements with accuracy</p> <p>Consider cause and effect in my explanations.</p> <p>Begin to relate their conclusions to scientific knowledge and understanding</p>
<p>Vocabulary: habitat environment vertebrate biome ecosystem mammal amphibian deforestation flowering reserve</p>	<p>Vocabulary: component conductor generate electricity battery insulator circuit current device</p>	<p>Vocabulary: absorb canine carnivore decay digestion enamel excretion herbivore ingested</p>	<p>Vocabulary: condensation cooling evaporation freezing liquid gas heating temperature precipitation particles</p>	<p>Vocabulary: experiment investigation measurement observation prediction conclusion data criteria diagram equipment</p>	<p>Vocabulary: sound vibrations volume pitch frequency decibel transmit amplitude waves source</p>
<p>Working Scientifically Vocabulary: As previous plus: increase, decrease, accurate, appearance</p>					