

Latchford St James Church of England Primary School
Science Progression of Skills and Knowledge



Year 1 Knowledge

Plants	Humans	Animals
<ul style="list-style-type: none"> I can identify and name a variety of common wild and garden plants, including deciduous and evergreen trees. I can identify and describe the basic structure of a variety of common flowering plants, including trees (flower, petal, root, leaf, stem, trunk, branch, seed). 	<ul style="list-style-type: none"> I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. I am able to recognise that humans are animals. I can describe and compare differences in my own physical features (eye, hair, skin colour...) <i>I am able to recognise that humans have many similarities (Non-Statutory).</i> 	<ul style="list-style-type: none"> I can name and identify a variety of common animals (including some fish, amphibians, reptiles, birds and mammals). I can name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (including some fish, amphibians, reptiles, birds and mammals including pets) – Find out how animals look different to one another. I can group together animals according to their different features. I am able to recognise that animals need to be treated with care to keep them alive and well. I know that animals are alive because they move, feed, grow, use their senses and can reproduce. <i>I know that animals have senses to explore the world and to help them to survive (Non-Statutory).</i> <i>I am able to recognise the similarities between animals (structure e.g. body, head, way of moving, senses, tail...) (Non-Statutory).</i>

Material Properties – Everyday Materials

- I am able to distinguish between an object and the material from which it is made.
- I can identify and name a variety of everyday materials (wood, plastic, metal, water, rock, glass, cardboard, paper and brick).
- I can describe the simple physical properties of different everyday materials.
- I can compare and group together a variety of different everyday materials based on their simple physical properties.

Seasonal Changes

- I am able to observe and describe the changes across the four different seasons.
- I can observe and describe the weather associated with the seasons, and can describe how day length and temperature varies.
- *I know that it is not safe to look directly at the sun, even when wearing dark glasses (Non-Statutory).*

Year 1 Working Scientifically Skills



Exploring and Observing	Grouping and Classifying	Questioning	Research	Modelling
<p>Observing closely, using observations and ideas to suggest answers to Scientific questions.</p> <ul style="list-style-type: none"> I can begin to use simple scientific language to talk about and record what I have observed. I can use observations to make suggestions and ask questions. I can observe closely and communicate changes over time. I can observe closely and describe the features/properties of objects in the real world. I can use my senses to help with my observations. 	<p>Compare and contrast.</p> <ul style="list-style-type: none"> I can name and identify common features. I can decide, with help, how to sort and group objects, materials and living things. I can name the basic features of objects, materials and living things. I can say how things are different or the same. I can compare and contrast simple features of objects, living things and materials. 	<p>Asking simple questions.</p> <ul style="list-style-type: none"> I can ask simple questions about what I notice about the world. I know I can answer questions in different ways. 	<p><i>(Non-Statutory)</i> Finding things out using secondary sources of information.</p> <ul style="list-style-type: none"> <i>I can ask other people questions (experts, hot-seating...)</i> <i>I can use simple primary and secondary sources (books, objects, photographs...) to find things out.</i> 	<p><i>(Non-Statutory) Using visual aids to represent Science in the real world.</i></p> <ul style="list-style-type: none"> <i>Through drama/dance, I can follow movements to act out Scientific processes.</i>

Collaborating	Planning and Testing	Using Equipment and Measures	Communicating	Describing, Explaining and Testing Results
<p>Performing simple tests.</p> <ul style="list-style-type: none"> • With help, I can make a simple prediction or suggestion about what could happen. • I can begin to suggest equipment to use, which materials to test... • I can discuss with my teacher and my peers different ways to set up a test. 	<p><i>(Non-Statutory) Interacting effectively as part of a group.</i></p> <ul style="list-style-type: none"> • <i>I can share ideas with a group and listen to my peers' ideas.</i> • <i>I can work sensibly and respectfully with others.</i> 	<p>Use simple equipment and gather data to help answer Scientific questions.</p> <ul style="list-style-type: none"> • <i>I can measure using non-standard units such as cubes (Non-Statutory)</i> • I can observe using simple equipment (<i>such as egg timers / sand timers</i>). • I can use my senses to compare different textures, smells and sounds. 	<p>Report findings and record data.</p> <ul style="list-style-type: none"> • I can communicate my ideas in a variety of different ways. • I can complete a table/chart using pictures or simple words. • I can use Year 1 Scientific vocabulary. • I can record simple diagrams of my observations. • <i>I can contribute to a class display (Non-Statutory)</i> • <i>I can make notes on drawings and photographs (Non-Statutory)</i> <p>Read, spell and pronounce Scientific vocabulary correctly.</p>	<p>Talk about what happened or what I have observed.</p> <ul style="list-style-type: none"> • I can use recordings to talk about my results / what I observed / what happened. • <i>I can put a series of photographs of an event or observation in the correct sequences (Non-Statutory).</i> <p>Talk about what they found out.</p> <ul style="list-style-type: none"> • I can begin to use simple Scientific language. • I can explain what I have found out or why it happened.

Latchford St James Church of England Primary School
Science Progression of Skills and Knowledge



Year 2 Knowledge

Living things and their habitats	Humans – How we grow and stay healthy	Animal survival and growth
<ul style="list-style-type: none"> I can explore and compare the differences between the living, the dead and things that have never been alive. I can identify that most living things live in habitats which they are suited to and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other <i>I can compare different types of habitat near school which need to be cared for comparing local habitats and less familiar examples. (Non-statutory)</i> <i>I can observe living things in their habitats during different seasonal changes. (Non-statutory)</i> I can identify and name a variety of plants and animals including microhabitats. I can 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. 	<ul style="list-style-type: none"> I can explain how humans have offspring which grow into adults. I can describe the basic needs of humans for survival (water, food and air) I can describe the importance for humans of exercise, eating the right amount of different types of food and hygiene. <i>I can explain that medicines can be useful when we are ill but are harmful if not used properly. (Non-statutory)</i> 	<ul style="list-style-type: none"> I can explain that animals have offspring which grow into adults. I can describe the basic needs for animals for survival (water, food and air).
Plant Growth	Material Properties – Uses of materials	
<ul style="list-style-type: none"> I can observe and describe how seeds and bulbs grow into mature plants. I can investigate and describe how plants need water, light and a suitable temperature to grow and stay healthy and how changing these affects the plant. <i>I can explain that plants are living and eventually die (Non-statutory)</i> 	<ul style="list-style-type: none"> I can identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, water, rock, paper and cardboard for particular uses. I can find out how the shapes of solid objects made from some materials can be changed by applying a force i.e. squashing, bending, twisting, and stretching. <i>I can explain that some materials are natural and some are man-made. (Non-statutory)</i> 	

Year 2 Working Scientifically Skills



Exploring and Observing	Grouping and Classifying	Questioning	Research	Modelling
<p>Observing closely using their own observations and ideas to suggest answers to questions</p> <ul style="list-style-type: none"> I can use simple scientific language and record what I have noticed. I can use observations to make suggestions I can observe and describe simple processes/ cycles and changes with several steps I can observe closely and communicate with increasing accuracy the features or properties of things in the real world. 	<p>Compare and contrast</p> <ul style="list-style-type: none"> I can name and identify common examples, some common features or different uses. I can sort and group objects, materials or living things by observable and/ or behavioural features. I can compare and contrast a variety of things (objects, materials or living things) focusing on the similarities and differences. 	<p>Asking simple questions</p> <ul style="list-style-type: none"> I can raise their own logical questions based on or linked to things they have observed. I can, with help, begin to ask questions such as "what will happen if...?" 	<p>(Non-statutory) Finding things out using secondary sources of information.</p> <ul style="list-style-type: none"> <i>I can talk about how useful the information source was and express my opinion about the findings.</i> <i>I can make suggestions about who to ask or where to look for information.</i> <i>I can ask people questions to help answer questions</i> <i>I can use simple and appropriate secondary sources (e.g. books, photographs, videos and other technology) to find answers.</i> 	<p>(Non- statutory) Use visual aids to represent Science in the real world.</p> <ul style="list-style-type: none"> <i>I can act out something else about the world around us e.g. a life cycle using drama or dance.</i>

Collaborating	Planning and Testing	Using Equipment and Measures	Communicating	Describing, Explaining and Testing Results
<p>(Non-statutory) Interacting effectively as part of a group.</p> <ul style="list-style-type: none"> <i>I can share my ideas in a group and listen to the ideas of others</i> <i>I can work cooperatively with others on a science task making some choices.</i> 	<p>Performing simple tests</p> <ul style="list-style-type: none"> I can carry out simple comparative tests as part of a group, following a method with some independence. I can make simple predictions about what might happen and try to give a vague reason. With support, I can make suggestions on a method for setting up a simple comparative test. I can talk about a practical way to find answers to their questions. 	<p>Using simple equipment and gathering data to help in answering their questions</p> <ul style="list-style-type: none"> I can measure using non-standard and simple standard measures (e.g. cm, time) I can begin to make decisions about which equipment to use. I can correctly and safely use equipment provided to make observations and measurements. 	<p>Reporting findings, recording data and presenting findings. Read, spell and pronounce scientific vocabulary.</p> <ul style="list-style-type: none"> I can record and communicate my findings in a range of ways. I can use Year 2 scientific language I can record simple data with some accuracy to help in answering questions. I can complete a variety of tables including two column tables, Venn diagrams, pictograms and block graphs. I can produce an increasingly detailed drawing which is labelled and annotated. <p>Read, spell and pronounce Scientific vocabulary correctly.</p>	<p>Talk about what happened, what they found out and begin to spot when a method is not fair.</p> <ul style="list-style-type: none"> I can, with guidance, begin to notice patterns in my data <i>e.g. order their findings, sequence best to worst, say what happened over time</i> <i>I can recognise if my results matched my predictions (Non-statutory)</i> I can use my recordings to talk about and describe what happened. I can begin to use simple scientific language I can give a simple, logical reason why something happened I can begin to discuss if the test was unfair.

Latchford St James Church of England Primary School
Science Progression of Skills and Knowledge



Year 3 Knowledge

Plants – functions of parts of a plant

- I can identify, locate and describe the functions of different parts of flowering plants: roots, stem, leaves and flowers.
- I can 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.
- I can investigate the way in which water is transported within plants.
- I can explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
- *I can explain that roots grow downwards and anchor the plant and that water and nutrients (not food) are taken by the roots, goes up the stem to the leaves, flowers and fruit. These nutrients are needed to keep the plant healthy. (Non- statutory)*
- *I can explain that stems provide support and enable the plant to grow towards the light. (Non- statutory)*
- *I can explain that plants make their own food in the leaves using energy from the sun. (Non- statutory)*
- *I can explain that flowers attract insects to aid pollination and that pollination is when pollen is transferred between plants by insects, birds, and other animals and the wind. (Non- statutory)*
- *I can explain that seeds are formed after the flowers are pollinated and that many flowers produce fruits which protect the seed and/or aid seed dispersal which ensures that new plants survive. (Non- statutory)*

Materials – Rocks

- I can compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
- I can describe in simple terms how fossils are formed when things that have lived are trapped within rock.
- I can recognise that soils are made from rocks and organic matter.
- *I can recognise that rocks and soils can feel and look different. (Non- statutory)*
- *I can recognise that rocks and soils can be different in different places/ environments. (Non- statutory)*

Light – Light, reflections and shadows

- I can recognise that they need light in order to see things and that dark is the absence of light.
- I can notice that light is reflected from surfaces.
- I can recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- I can recognise that shadows are formed when the light from a light source is blocked by a solid object.
- I can find patterns in the way that the size of shadows can change.

Animals including humans

- I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.
- *I can identify animals (vertebrates) which have a skeleton which supports their body, aids movement and protects vital organs (eg name and locate skull, backbone, ribs, bones for movement/limbs, pelvis and be able to name some of the vital organs protected). (Non-statutory)*
- *I can identify animals without internal skeletons/ backbones (invertebrates) and describe how they have adapted other ways to support themselves, move and protect their vital organs. (Non-statutory)*
- *I can explain that muscles, which are attached to the skeleton, help animals move parts of their body. (Non-statutory)*
- *I can explain how humans grow bigger as they reach maturity by making comparisons linked to body proportions and skeleton growth- eg do people with longer legs have longer arm spans? (Non-statutory)*
- I can 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.
- *I can explain that an adequate and varied diet is beneficial to health (along with a good supply of air and clean water). (Non-statutory)*
- *I can explain how a regular and varied exercise from a variety of different activities is beneficial to health (focus on energy in versus energy out. Include information on making informed choices). (Non-statutory)*

Forces and Magnets

- I can compare how some things move on different surfaces.
- I can notice that some forces need contact between two objects but magnetic forces can act as a distance.
- I can observe how magnets attract or repel each other and attract some materials and not others.
- I can 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.
- I can describe magnets as having two poles (like and unlike poles).
- I can predict whether two magnets will attract or repel each other, depending on which poles are facing.

Year 3 Working Scientifically Skills



Exploring and Observing	Grouping and Classifying	Questioning	Research	Modelling
<p>Developing their own ideas and their understanding of the world around them.</p> <ul style="list-style-type: none"> I can observe and record relationships between structure and function. <i>I can observe and record changes/stages over time. (Non- statutory)</i> <i>I can explore / observe things in the local environment/real contexts and record observations. (Non- statutory)</i> 	<p>Compare and contrast</p> <ul style="list-style-type: none"> I can decide ways and give reasons for sorting, grouping, classifying, identifying things/ objects, living things, processes or events based on specific characteristics. I can compare and contrast and begin to consider the relationships between different things eg structures of plants, functions of plant parts, diets, skeletons of humans and other animals, changes over time etc I can record similarities and well as differences eg what do all skeletons have? As well as the differences between skeletons. 	<p>Asking relevant questions</p> <ul style="list-style-type: none"> I can explore my own ideas about what if..? scenarios I can ask questions such as 'What if we tried...' or 'What if we changed...' <i>I can begin to understand that some questions can be tested in the classroom and some cannot. (Non- statutory)</i> <i>I can suggest questions, in a group, that can be explored, observed, tested or investigated further. (Non- statutory)</i> I can suggest relevant questions, in a group about what we can observe and about the world around us. 	<p>(Non- statutory) Finding things out using a wide range of secondary sources of information.</p> <ul style="list-style-type: none"> <i>I can find things out using a range of secondary sources of information eg books, photographs, videos and other technology. (Non- statutory)</i> 	<p>(Non- statutory) Use visual aids to represent Science in the real world.</p> <ul style="list-style-type: none"> <i>I can act out or make a model of something to represent something in the real world using appropriate scientific vocabulary verbally. (Non- statutory)</i>

Collaborating	Planning and Testing	Using Equipment and Measures	Communicating	Describing, Explaining and Testing Results
<p>(Non-statutory) Interacting effectively as part of a group.</p> <ul style="list-style-type: none"> <i>I can begin to make some decisions about an idea within a group from a list of choices eg let's put them all in a pile first or I think we should try.</i> <i>I can, with help, support, listen to and acknowledge others in the group.</i> <i>I can build on/add to someone else's idea eg we could use x as well as y.</i> <i>I can begin to understand that it is okay to disagree with my peers and offer a reason for my opinion.</i> 	<p>Making decisions about and setting up simple practical enquiries.</p> <ul style="list-style-type: none"> <i>I can help to decide how to set up a simple fair test and begin to recognise when a test is not fair.</i> <i>I can, with support, set up simple practical enquiries including comparative and fair tests eg make a choice from a list of things (variables) to change when conducting a fair test. Eg choose which magnets to compare and which method to use to test their strength.</i> <i>I can, work as a group to begin to make some decisions about the best way of answering questions. (Non-statutory)</i> <i>I can find/suggest a practical way to compare things eg rock, magnets. (Non-statutory)</i> 	<p>Making accurate measurements and gathering data.</p> <ul style="list-style-type: none"> <i>I can collect data from my own observations and measurements using notes / simple tables/ standard units.</i> <i>I can help to make some decisions about what observations to make, how long to make them for, the type of simple equipment that might be used and how to work safely. (Non-statutory)</i> <i>I can make simple, accurate measurements using whole number standard units, using a range of equipment.</i> <i>I can gather data in a variety of ways to help in answering questions.</i> <i>I can use equipment accurately to improve the detail of their measurements/ observations. Eg microscopes, measuring syringes, measuring cylinders, hand lenses.</i> 	<p>Reporting findings, recording data and presenting findings. Read, spell and pronounce scientific vocabulary.</p> <ul style="list-style-type: none"> <i>I can record and present findings using simple scientific language. Including discussions, oral and written explanations, notes, annotated drawings, pictorial representations, labelled diagrams simple tables, bar charts, displays or presentations. (Non-statutory)</i> <i>I can with support, record and present data in a variety of ways to help in answering questions.</i> <i>I can communicate my findings in ways that are appropriate.</i> <p>Read, spell and pronounce Scientific vocabulary correctly.</p>	<p>Describe their findings/ results reporting on why things happened and suggest improvements for further tests.</p> <ul style="list-style-type: none"> <i>I can, with help, look for changes and simple patterns in my observations, data, chart or graph.</i> <i>I can use my results to consider whether they met my predictions. (Non-statutory)</i> <i>I can draw a simple conclusion to answer my original question.</i> <i>I can write a simple explanation of why things happened. (Non-statutory)</i> <i>I can say whether what happened was what they expected and notice any results which seem odd. (Non-statutory)</i> <i>I can begin to recognise when a test is not fair and suggest improvements.</i>

Latchford St James Church of England Primary School
Science Progression of Skills and Knowledge



Year 4 Knowledge

Living things and their habitats	Humans- Teeth, Eating and digestion	States of Matter
<ul style="list-style-type: none"> I can recognise that living things can be grouped in a variety of ways. I can explore and use classification keys to help group, identify and name a variety of living things in my local and wider community. I can recognise that environments can change and that this can sometimes pose dangers to living things. <i>I can use and make identification keys for plants and animals. (Non-statutory)</i> 	<ul style="list-style-type: none"> I can describe the simple functions of the basic parts of the digestive systems in humans. I can identify the different types of teeth in humans and their simple functions. I can construct and interpret a variety of food chains, identifying producers, predators and prey- <i>link with types of teeth but could be linked with habitat topic too. (Non-statutory)</i> <i>I can describe how teeth and gum have to be cared for in order to keep them healthy. (Non-statutory)</i> 	<ul style="list-style-type: none"> I can compare and group materials together, according to whether they are solids, liquids or gases. I can 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 I can identify the part played by evaporation in the water cycle and associate the rate of evaporation with temperature. <i>I can explain that solids liquids and gases can be identified by observable properties.</i> <i>I can explain that solids have a fixed size and shape, liquids can pour and take the shape of the container and gases fill the container they are put in.</i> <i>I can identify that solids come in the form of powders which can pour as if liquids but pile rather than pool.</i> <i>I can explain that gases escape from an unsealed container.</i> <i>I can explain that gases can be made smaller by squeezing/ adding pressure</i> <i>I can explain that liquids and gases can flow.</i>

Sound

Vibrations

- I can identify how sounds are made, associating some of them with something vibrating.
- I can recognise that vibrations from sounds travel through a medium to the ear.
- I can find patterns between the volume of a sound and the strength of the vibrations that produced it.
- I can recognise that sounds get fainter as the distance from the sound source increases.
- *I can recognise that sounds can be made in a variety of ways (pluck, bang, shake, blow) using a variety of things (instruments, everyday materials, body) (Non- statutory)*
- *I can explain that sounds travel away from their source in all directions. (Non- statutory)*
- *I can explain that vibrations may not always be visible to the naked eye. (Non- statutory)*

Pitch

- I can find patterns between the pitch of a sound and features of the object that produced it.
- *I can explain that sounds can be high or low pitched. (Non- statutory)*
- *I can explain that the pitch of a sound can be altered by changing the material, tension, thickness or length of vibrating objects or changing the length of a vibrating air column. (Non- statutory)*

Muffling/blocking sounds

- *I can explain that sounds can travel through solids, liquids and air/gas by making the materials vibrate. (Non- statutory)*
- *I can explain that sound travel can be reduced by changing the material that the vibrations travel through. (Non- statutory)*
- *I can explain that sound travel can be blocked. (Non- statutory)*

Electricity

- I can identify common appliances that run on electricity
- I can construct a simple series electrical circuit, identifying cells, wires, bulbs, switches and buzzers.
- I can 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.
- I can recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
- I can recognise some common conductors and insulators and associate metals with being good conductors.
- *I can explain that electricity can be dangerous. (Non- statutory)*
- *I can explain that electricity sources can be mains or battery. (Non- statutory)*
- *I can explain that batteries 'push' electricity round a circuit and can make bulbs, buzzers and motors work. (Non- statutory)*
- *I can explain faults in circuits can be found by methodically testing connections. (Non- statutory)*

Year 4 Working Scientifically Skills



Exploring and Observing	Grouping and Classifying	Questioning	Research	Modelling
<p>Developing their own ideas and their understanding of the world around them.</p> <ul style="list-style-type: none"> I can suggest my own ideas on a concept and compare these with what I observe I can use my observations to suggest what to do next. I can discuss ideas and develop descriptions from my observations using relevant scientific language. <i>I can observe and record relationships between structure and function or between different parts of a process. (Non-statutory)</i> I can observe and record changes/ stages over time. 	<p>Compare and contrast</p> <ul style="list-style-type: none"> <i>I can make a simple guide to local living things. (Non-statutory)</i> <i>I can use my guide or simple key to classify/ identify animals, flowering and non-flowering plants. (Non-statutory)</i> I can use my observations to identify and classify I can begin to give reasons for these similarities and differences. I can record similarities and differences and relate to simple scientific ideas/ processes or more complex groups of objects/ living things/ events <p><i>Eg evaporation and condensation, different food chains, different electrical circuits.</i></p>	<p>Asking relevant questions</p> <ul style="list-style-type: none"> I can ask/ raise my own relevant questions with increasing confidence and independence that can be explored, observe, tested or investigated further. I can ask questions such as 'What will happen if...?' or 'What if we changed...?' I can choose/ select a relevant question that can be answered (by research/ experiment). 	<p>(Non- statutory) Finding things out using a wide range of secondary sources of information.</p> <ul style="list-style-type: none"> <i>I can make decisions about which information to use from a wide range of sources and make decisions about how to present my research. (Non-statutory)</i> <i>I can recognise when and how secondary sources might help me to answer questions that cannot be answered through practical investigations. (Non-statutory)</i> 	<p>(Non- statutory) Use visual aids to represent Science in the real world.</p> <ul style="list-style-type: none"> <i>I can make a visual representation or a model of something to represent something I have seen or a process that is difficult to see. (Non-statutory)</i> <i>I can suggest my own ideas on a concept and compare these with models or images. (Non-statutory)</i>

Collaborating	Planning and Testing	Using Equipment and Measures	Communicating	Describing, Explaining and Testing Results
<p>(Non-statutory) Interacting effectively as part of a group.</p> <ul style="list-style-type: none"> <i>I can make some decisions about an idea within a group eg I think we should find out by testing... (Non-statutory)</i> <i>I can increasingly support, listen to and acknowledge others in the group. (Non-statutory)</i> <i>I can build on/ add to someone else's idea to improve a plan. (Non-statutory)</i> <i>I can understand that it is okay to disagree with my peers and offer reasons for my opinion. (Non-statutory)</i> 	<p>Making decisions about and setting up simple practical enquiries.</p> <ul style="list-style-type: none"> I can carry out simple fair tests with increasing confidence. I can start to make my own decisions about the most appropriate type of science enquiry I might use to answer a scientific question. I can make a prediction based on the knowledge acquired from previous explorations/ observations and apply it to a new situation <i>I can make some of the planning decisions about what to change and measure/observe. (Non-statutory)</i> I can begin to recognise when a fair test is necessary. 	<p>Making accurate measurements and gathering data.</p> <ul style="list-style-type: none"> <i>I can make more of the decisions about what observations to make, how long to make them and the type of equipment that might be used. (Non-statutory)</i> <i>I can recognise obvious risks and how to keep myself and others safe. (Non-statutory)</i> I can learn how to use new equipment, such as data loggers and measure temperature in degrees Celsius using a thermometer. I can collect data from my own observations and measurements using notes/ simple tables/ standard units. I can make accurate measurements using standard units using a range of equipment and scales. 	<p>Reporting findings, recording data and presenting findings.</p> <ul style="list-style-type: none"> I can record findings using relevant scientific vocabulary. Including discussions, oral and written explanations, notes, drawings (annotated), pictorial representations, labelled diagrams, tables and bar charts- where intervals and ranges agreed through discussion, displays or presentations. I can begin to select the most useful ways to collect, record, classify and present data from a range of choices. I can make decisions on how best to communicate my findings in ways that are appropriate. <p>Read, spell and pronounce Scientific vocabulary correctly.</p>	<p>Describe their findings/ results reporting on why things happened and suggest improvements for further tests.</p> <ul style="list-style-type: none"> I can notice/ find patterns in my observations. I can with some independence, analyse results/ observations by writing a sentence that matches the evidence. I can begin to develop my ideas about relationships and interactions between things and explain them. I can use relevant scientific language. I can use my results to suggest improvements, new questions and/ or predictions for setting up further tests. I can compare my results with others and give reasons why they might be different.

Latchford St James Church of England Primary School
Science Progression of Skills and Knowledge



Year 5 Knowledge

Living things and their habitats

- I can describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- I can describe the life processes of reproduction in some plants and animals.
- *I can name, locate and describe the functions of the main parts of reproductive system of plants (stigma, stamen, petal, sepal, pollen and ovary). (Non-statutory)*

Human life cycles

- I can describe the changes as humans develop to old age.
- *I can explain that animals are alive; they move, feed, grow, use their senses, reproduce, breathe/ respire and excrete. (Non-statutory)*

Earth and Space

- I can describe the movement of the Earth and other planets, relative to the Sun and each other in the solar system.
- I can describe the movement of the moon relative to the Earth.
- I can describe Sun/Earth/Moon as approximately spherical bodies.
- I can use the idea of the Earth's rotation to explain day and night.
- *I can explain the Earth spins once around its own axis in 24 hours, giving day and night. (Non-statutory)*
- *I can explain that the Earth orbits the Sun in one year. (Non- statutory)*
- *I can explain that we can see the Moon because the Sun's light reflects off it. (Non-statutory)*
- *I can explain that the Moon orbits the Earth in approximately 28 days and changes to the appearance of the moon are evidence of this. (Non-statutory)*
- I can use the Earth's movement in space to explain the apparent movement of the sun across the sky.
- *I can explain that the Sun appears to move across the sky from East to West and this causes shadows to change during the day. (Non-statutory)*
- *I can explain that changes to shadow length over a day or changes to sunrise and sunset times over a year are evidence supporting the movement of the Earth. (Non- statutory)*

Forces	Material Properties
<ul style="list-style-type: none"> • I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • I can identify the effects of air resistance, water resistance and friction that act between moving surfaces (<i>causing things to slow down</i>) • I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. • <i>I can explain that there are different types of forces (push, pull, friction, air resistance, water resistance, magnetic forces, gravity) which have different effects on objects. (Non- statutory)</i> • <i>I can explain that gravity can act without direct contact between the Earth and an object. (Non- statutory)</i> • <i>I can explain that friction, air resistance and water resistance can be useful or unwanted. (Non- statutory)</i> • <i>I can explain the effects of friction, air resistance and water resistance can be reduced or increased for a preferred effect. (Non- statutory)</i> • <i>I can explain that more than one force can act on an object simultaneously (either reinforcing or opposing each other.) (Non- statutory)</i> 	<ul style="list-style-type: none"> • I can 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. • I can give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic (<i>advantages and disadvantages</i>). <p>Temperature and Thermal Insulation</p> <ul style="list-style-type: none"> • <i>I can explain that heat always moved from hot to cold. (Non- statutory)</i> • <i>I can explain that some materials (insulators) are better at slowing down the movement of heat than others. (Non- statutory)</i> <p>Reversible and irreversible changes</p> <ul style="list-style-type: none"> • I can explain that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution • I can use knowledge of solids liquids and gases to decide how mixtures might be separated including through filtering, sieving and evaporation. • <i>I can demonstrate that dissolving, mixing and changes of state are reversible changes. (Non- statutory)</i> • <i>I can explain that some materials are reversible and some are not. (Non- statutory)</i> • I can recognise that dissolving is a reversible change and recognise everyday situations where dissolving occurs. • <i>I can distinguish between melting and dissolving. (Non- statutory)</i> • <i>I can explain that changes to materials can happen at different rates (factors affecting dissolving, factors affecting evaporation- amount of liquid, temperature, wind speed etc) (Non- statutory)</i> • I can 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.

Year 5 Working Scientifically Skills



Exploring and Observing	Grouping and Classifying	Questioning	Research	Modelling
<p>Developing a deeper understanding of a wide range of scientific ideas and encountering more abstract ideas.</p> <ul style="list-style-type: none"> <i>I can use my developing scientific knowledge and understanding and relevant scientific language to explain my observations eg friction, air resistance, forces, Earth and space, reversible and irreversible changes. (Non-statutory)</i> I can evaluate my observations and suggest a further test, offer another question or make a prediction. I can observe (including changes over time) and suggest a reason for what they notice. 	<p>Compare and contrast</p> <ul style="list-style-type: none"> I can suggest reasons for similarities and differences <i>I can compare and contrast things beyond my locality and use these similarities and differences to help to classify. Eg features of animals, life cycles of different living things, melting compared with dissolving.) (Non-statutory)</i> <i>I can use secondary sources of information (and equipment to help identify and classify. (Non-statutory)</i> I can decide which sources of information and equipment help to identify and classify. 	<p>Asking their own questions about scientific phenomena</p> <ul style="list-style-type: none"> <i>I can recognise scientific questions that do not yet have definitive answers (Non-statutory)</i> <i>I can refine a scientific question so that it can be tested eg what would happen to ... If we changed ... (Non-statutory)</i> <i>I can decide whether my questions can be answered by researching or by testing. (Non-statutory)</i> I can independently ask my own scientific questions, taking some ownership for finding the answers. 	<p>Summarise research from a wide variety of sources and recognising that scientific ideas change and develop over time.</p> <ul style="list-style-type: none"> I can find out how scientific ideas have changed/developed over time. I can articulate and explain findings from my research using scientific knowledge and understanding. <i>I can make decisions about which information to use from a wide range of sources. (Non-statutory)</i> 	<p>(Non-statutory) Use visual aids to represent Science in the real world.</p> <ul style="list-style-type: none"> <i>I can perform/create simple models to exemplify scientific ideas using scientific terminology where appropriate. (Non-statutory)</i> <i>Eg spheres to represent movements of the Sun and Earth, solar system models, shadow clocks, a simple lever or mechanism.</i>

Collaborating	Planning and Testing	Using Equipment and Measures	Communicating	Describing, Explaining and Testing Results
<p>(Non-statutory) Interacting effectively as part of a group.</p> <ul style="list-style-type: none"> <i>I can propose my own ideas and make decisions with agreement in a group. (Non- statutory)</i> <i>I can support, listen to and acknowledge others in the group. (Non- statutory)</i> <i>I can check the clarity of each other's suggestions (Non- statutory)</i> <i>I can build on/ add to someone else's idea to improve a plan or suggestion (Non- statutory)</i> <i>I can understand that it is okay to disagree with my peers and offer a reason for my opinion. (Non- statutory)</i> 	<p>Using different types of scientific enquiry, making decisions about and explaining choices for testing.</p> <ul style="list-style-type: none"> <i>I can carry out fair tests and other investigations with increasing independence.</i> <i>I can suggest more than one possible prediction and begin to suggest which is the most likely. Justifying my reasons. (Non- statutory)</i> <i>I can make decisions about which variables to change, measure and keep the same.</i> <i>I can make most of the planning decisions for an investigation (Non- statutory)</i> <i>I can recognise when it is appropriate to carry out fair tests. (Non- statutory)</i> 	<p>Increasing complexity and increasing accuracy and precision. Make their own decisions about the data to collect.</p> <ul style="list-style-type: none"> <i>I can make my own decision about what observations to make or measurements to use and how long to take them form (recognising the need to repeat readings no some occasions).</i> <i>I can take measurements using a range of scientific equipment with increasing accuracy and using more complex scales/ units.</i> <i>I can identify possible risks to myself and others and suggest ways of reducing these. (Non- statutory)</i> <i>I can choose them most appropriate equipment to make accurate measurements. (Non- statutory)</i> 	<p>Reporting findings, recording data and presenting findings.</p> <ul style="list-style-type: none"> <i>I can use my developing scientific knowledge and understanding and relevant scientific language to communicate more abstract concepts.</i> <i>I can present and explain my findings through talk, in written forms or in other ways for a range of audiences.</i> <i>I can record data and results of increasing complexity using different formats eg tables, annotates scientific diagrams, classification keys, graphs and models.</i> <i>I can make decisions about the most appropriate way of recording data. (Non- statutory)</i> <p>Read, spell and pronounce Scientific vocabulary correctly.</p>	<p>Analyse results and functions systematically, draw conclusions based on evidence and comment on its reliability.</p> <ul style="list-style-type: none"> <i>I can I can describe straightforward patterns in linking cause and effect. eg the longer, thinner, shapes move through the water more quickly.</i> <i>I can comment on the results and whether they support the initial prediction.</i> <i>I can use my scientific knowledge and understanding to explain my findings and answer the initial question.</i> <i>I can draw a valid conclusion based on my data and observations.</i> <i>I can begin to recognise how repeated readings improve the reliability of results.</i> <i>I can compare results with others and comment on how reliable they are.</i>

Latchford St James Church of England Primary School
Science Progression of Skills and Knowledge



Year 6 Knowledge

Living Things and their Habitats – Classification

- I can describe how living things are classified into broad group according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals.
- I can give reasons for classifying plants and animals based on specific characteristics.
- *I can explain that living things can be grouped into micro-organisms, plants and animals. (Non-statutory)*
- *I can explain that vertebrates can be grouped as fish, amphibians, reptiles, birds and mammals. (Non-statutory)*
- *I can explain that invertebrates can be grouped as snails, and slugs, worms, spiders and insects. (Non-statutory)*
- *I can explain that plants can be grouped as flowering plants including trees and grasses and non-flowering plants such as ferns and mosses. (Non-statutory)*

Living Things and their Habitats – Evolution and Inheritance

- I can recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
- I can recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
- I can identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

Light

- I can recognise that light appears to travel in straight lines.
- I can use the idea that light travels in straight line to explain that objects are seen because they give out or reflect light into the eye.
- I can explain that we can see things because the light that travels from light sources to our eyes or from light sources to objects and then to our eyes (and represent this in simple diagrammatic form).
- I can use the idea that light travels in straight lines to explain why shadows have the same shape and the objects that cast them.

Electricity

- I can associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
- I can 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.
- I can use the recognised symbols (at least: cells, wires, switches, bulbs, buzzers and motors) when representing a simple circuit in a diagram.
- I can use/interpret circuit diagrams to construct a variety of more complex circuits predicting whether they will 'work'. (Non-statutory)

Exercise, health and the circulatory system

- I can identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood.
- I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function (in the long term and short term).
- I can describe the ways in which nutrients and water are transported within animals, including humans.
- *I can explain that the heart is a major organ and is made of muscle. (Non-statutory)*
- *I can explain that the heart pumps blood around the body through vessels and this can be felt as a pulse. (Non-statutory)*
- *I can explain that the heart pumps blood through the lungs in order to obtain a supply of oxygen. (Non-statutory)*
- *I can explain that blood carries oxygen/essential materials to different parts of the body. (Non-statutory)*
- *I can explain that during exercise, muscles need more oxygen so the heart beats faster and/or breathing and pulse rates increase. (Non-statutory)*
- *I can explain that animals are alive; they move, feed, grow, use their senses, reproduce, breathe/respire and excrete. (Non-statutory)*
- *I can explain that an adequate, varied and balanced diet is needed to help us grow and repair our bodies (proteins), provide us with energy (fats and carbohydrates) and maintain good health (vitamins and minerals). (Non-statutory)*
- *I can explain that tobacco, alcohol and other 'drugs' can be harmful and that all medicines are drugs, not all drugs are medicines. (Non-statutory)*

Year 6 Working Scientifically Skills



Exploring and Observing	Grouping and Classifying	Questioning	Research	Modelling
<p>Developing a deeper understanding of a wide range of scientific ideas and encountering more abstract ideas.</p> <ul style="list-style-type: none"> I can use correct scientific knowledge and understanding and relevant scientific language to discuss my observations. I can identify changes that have occurred over a very long period of time (evolution) and discuss how changes have impacted the world. <i>I can explore more abstract systems/ functions. Changes. Behaviours and record my understanding of these eg relationship between diet, exercise, drugs, lifestyle and health. (Non- statutory)</i> 	<p>Compare and contrast</p> <ul style="list-style-type: none"> <i>I can recognise the importance of classification to the scientific world and form a conclusion from my sorting and classifying. (Non- statutory)</i> <i>I can compare and contrast more complex processes, systems, functions eg sexual and asexual reproduction (Non- statutory)</i> I can construct a classification key/ branching database using more than two items. (Non- statutory) <i>I can use research to identify and classify things. (Non- statutory)</i> 	<p>Asking their own questions about scientific phenomena</p> <ul style="list-style-type: none"> I can recognise scientific questions that do not yet have definitive answers <i>I can refine a scientific question to make it testable. Ie ask a testable question which includes the change and measure variables eg what would happen to...if we changed ...?</i> <i>I can use observations to suggest a further question.</i> I can independently ask a variety of scientific questions and decide the type of enquiry needed to answer them. 	<p>Summarise research from a wide variety of sources and recognising that scientific ideas change and develop over time.</p> <ul style="list-style-type: none"> <i>I can research how scientific ideas have developed over time and had an impact on our lives. (Non- statutory)</i> <i>I can use evidence from a variety of sources to justify my ideas. (Non- statutory)</i> <i>I can recognise which secondary sources will be most useful to research my ideas and begin to separate opinion from fact. (Non- statutory)</i> <i>I can interview people to find out information. (Non- statutory)</i> 	<p>(Non- statutory) Use visual aids to represent Science in the real world.</p> <ul style="list-style-type: none"> <i>I can make/ perform and use my own versions of simple models to describe and explain scientific ideas eg the circulatory system drama, periscopes to explain how light travels, burglar alarm to explain components in a circuit. (Non- statutory)</i>

Collaborating	Planning and Testing	Using Equipment and Measures	Communicating	Describing, Explaining and Testing Results
<p>(Non-statutory) Interacting effectively as part of a group.</p> <ul style="list-style-type: none"> <i>I can propose my own ideas and make decisions with agreement in a group. (Non- statutory)</i> <i>I can support, listen to and acknowledge others in the group. (Non- statutory)</i> <i>I can check the clarity of each other's suggestions. (Non- statutory)</i> <i>I can build on/ add to someone else's idea to improve a plan or suggestion (Non- statutory)</i> <i>I can understand that it is okay to disagree with my peers and offer reasons for my opinion. (Non- statutory)</i> 	<p>Using different types of scientific enquiry, making decisions about and explaining choices for testing.</p> <ul style="list-style-type: none"> <i>I can predict what a graph might look like before collecting results. (Non- statutory)</i> <i>I can make a hypothesis where I say how one thing will affect another and give a reason for this suggestion. (Non- statutory)</i> <i>I can identify variables to change, measure and keep the same in order for a test to be fair.</i> <i>I can independently plan investigations and explain planning decisions.</i> <i>I can decide when it is appropriate to carry out a fair test investigation, comparative test or alternative. (Non- statutory)</i> 	<p>Increasing complexity and increasing accuracy and precision. Make their own decisions about the data to collect.</p> <ul style="list-style-type: none"> <i>I can decide whether to repeat any readings and justify the reason for doing so.</i> <i>I can make my own decision about what measurements to take and begin to identify ranges used.</i> <i>I can make, and act on, suggestions to control/ reduce risks to myself and others (Non- statutory)</i> <i>I can use equipment fit for purpose to take measurements which are increasingly accurate and precise.</i> <i>I can decide the most appropriate equipment to use to collect data. (Non- statutory)</i> 	<p>Reporting findings, recording data and presenting findings.</p> <ul style="list-style-type: none"> <i>I can articulate understanding of the concept using scientific language and terminology.</i> <i>I can record data and results of increasing complexity using scientific diagrams and labels, recognised symbols, classification keys, tables, bar and line graphs and models.</i> <i>I can make decisions about how to present and explain my findings through talk, in written forms and in other ways. (Non- statutory)</i> <p>Read, spell and pronounce Scientific vocabulary correctly.</p>	<p>Analyse results and functions systematically, draw conclusions based on evidence and comment on its reliability.</p> <ul style="list-style-type: none"> <i>I can spot anomalies and suggest reasons for them. (Non- statutory)</i> <i>I can identify patterns in results and describe them using the change and measure variables eg as we increased the number of batteries, the brightness of the bulb increased.</i> <i>I can identify evidence that refutes or supports my ideas</i> <i>I can independently form a conclusion based on the evidence</i> <i>I can use scientific language and terminology</i> <i>I can describe how to improve planning to produce more reliable results.</i> <i>I can express my ideas of reliability of my results with a reason.</i>

