



Fulbourn Primary School Science Content Areas and Progression

(Knowledge and Understanding, *Working Scientifically* and *Scientists Like Me* strands)

Content Areas	Working Scientifically	Plants	Animals, including humans	Materials and their Properties	Seasonal Change	Living Things and their Habitats	Rocks	Light	Sound	Forces and Magnets	States of Matter	Electricity	Earth and Space	Evolution and Inheritance
Symbol	 working scientifically	 plants	 animals, including humans	 materials and their properties	 seasonal change	 living things and their habitats	 rocks	 light	 sound	 forces and magnets	 states of matter	 electricity	 earth and space	 evolution and inheritance

Through practical exploration in play, children in EYFS develop their early science skills and are able to demonstrate that they can:	
EYFS	<ul style="list-style-type: none"> • identify and name a variety of animals • describe and compare a variety of body parts (head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth and teeth) • identify, name, draw and label the basic parts of a human body and say which part of the body is associated with each sense • notice that humans have offspring that grow into adults (baby, toddler, child, teenager adults) • plant seeds and care for growing plants • explore the natural world around them, making observations and drawing pictures of animals and plants • understand the key features of the life cycle of a plant and an animal • begin to understand the need to respect and care for the natural environment and all living things • explore collections of materials with similar and/or different properties • talk about the differences between materials and changes they notice • understand some important processes including changing states of matter • explore and talk about different forces they can feel • understand the effect of changing seasons on the natural world around them • identify some sources of light • notice it is light in the day and dark at night • know that scientists work to find out new things about the world • record an observation they have made • explain what they can see, hear, smell and taste • make statements about how living things have changed e.g. "I am bigger than when I was baby." • understand that properties can be measured • use time adverbs to explain observations over time • comment on patterns in nature e.g. what kinds of materials are used to make different objects • use comparatives (bigger, smaller) • group objects on the basis of similarity • use 'Why' and 'because' • ask and answer the question, 'How do you know?' • handle equipment carefully

Cycle A

		Autumn		Spring		Summer	
Year 1/2		<ul style="list-style-type: none"> 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. Chdn can use simple properties of living things to classify them, including identifying trees in the school grounds by their leaves. Use simple keys to identify tree species. 	<ul style="list-style-type: none"> observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies. Chdn should try to find patterns in which trees lose leaves and when. Chdn can see the pattern in day length throughout year. Chdn can describe seasonal changes, relating changes in the living world to changes in the physical world i.e. in the winter it is colder and darker so animals hibernate, plants are dormant and many trees lose their leaves. 	<ul style="list-style-type: none"> identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals [guidance: this should include pet animals, farm animals, safari animals, rabbit, deer, squirrel, hedgehog, bat, dolphin, whale, mouse, rat, pike, eel, shark, salmon, tuna, frog, toad, newt, crocodile, grass snake, swift, robin, pigeon, blackbird] identify and name a variety of common animals that are carnivores, herbivores and omnivores Chdn can spot patterns among animals in the same clade ie structure of fish Chdn can group animals according to simple categories e.g. four legs/six legs Group animals according to what they eat. 	<ul style="list-style-type: none"> observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies. Chdn should try to find patterns in which trees lose leaves and when. Chdn can see the pattern in day length throughout year. Chdn can describe seasonal changes, relating changes in the living world to changes in the physical world i.e. in the winter it is colder and darker so animals hibernate, plants are dormant and many trees lose their leaves. 	<ul style="list-style-type: none"> distinguish between an object and the material from which it is made identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock describe the simple physical properties of a variety of everyday materials compare and group together a variety of everyday materials on the basis of their simple physical properties. Chdn can make connections and predictions based on understanding how the material something is made of affects its properties. Chdn can group objects by intangible properties e.g. 'strong', 'flexible' Chdn can relate properties to a classification e.g. metals are silver and shiny. Chdn create questions they can answer using their senses e.g. which material will feel the roughest? 	<ul style="list-style-type: none"> observe changes across the four seasons observe and describe weather associated with the seasons and how day length varies. Chdn should try to find patterns in which trees lose leaves and when. Chdn can see the pattern in day length throughout year. Chdn compare items using their senses (e.g. which plant smells stronger). Chdn can describe seasonal changes, relating changes in the living world to changes in the physical world i.e. in the winter it is colder and darker so animals hibernate, plants are dormant and many trees lose their leaves.

	<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn can explain how they will use their senses to answer questions. Chdn ask and answer 'how many' questions using the world around them and find patterns in the answers. Chdn can use a magnifying glass to observe, understanding that they make objects appear larger. Chdn ask questions about the world around them.</p> <p>An understanding that someone who goes to compare, classify and name different types of plant is being a scientist. Chdn know that this is still going on, and people find new types of plant all the time.</p> <p>To meet the expected standard, Year 2s should demonstrate the following in this unit: Chdn know that sometimes as scientists have learned more, they realise that two species are actually different and not the same kind of plant.</p>	<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn begin to make and record numerical measurements using standard units. Chdn can explain how they will use their senses to answer questions. Chdn can describe seasonal changes. Chdn keep a record of a change over time. Chdn can use time vocabulary (seconds, minutes, hours, days, weeks) to describe changes. Chdn ask questions about the world around them. Chdn know that some scientists, called meteorologists study the weather. People being scientists discovered that weather follows complicated patterns and isn't at the whim of gods.</p> <p>To meet the expected standard, Year 2s should demonstrate the following in this unit: Chdn understand that our ability to predict the weather depends on collecting lots of information and has got better over time.</p>	<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn ask and answer 'how many' questions using the world around them and find patterns in the answers. Chdn ask questions about the world around them.</p> <p>An understanding that someone who goes to compare, classify and name different types of animal is being a scientist. Chdn know that observation led to people realising that dolphins and whales have to breathe air, but fish don't.</p> <p>To meet the expected standard, Year 2s should demonstrate the following in this unit: Chdn know that our understanding of what whales and dolphins are has changed over time to fit the available evidence.</p>	<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn begin to make and record numerical measurements using standard units. Chdn ask questions about the world around them. Chdn can explain how they will use their senses to answer questions. Chdn can describe seasonal changes. Chdn keep a record of a change over time. Chdn can use time vocabulary (seconds, minutes, hours, days, weeks) to describe changes. Chdn know that some scientists, called meteorology, study the weather. People being scientists discovered that weather follows complicated patterns and isn't at the whim of gods.</p> <p>To meet the expected standard, Year 2s should demonstrate the following in this unit: Chdn understand that our ability to predict the weather depends on collecting lots of information and has got better over time.</p>	<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn begin to make and record numerical measurements using standard units. Chdn ask questions about the world around them. Chdn can use a magnifying glass to observe, understanding that they make objects appear larger. Chdn explain phenomenon they study showing an understanding of causation.</p> <p>Chdn can name a material that had to be invented and describe its properties, knowing that a person deliberately worked at coming up with it (e.g. Bluetac, rubber, galvanised steel etc.)</p> <p>To meet the expected standard, Year 2s should demonstrate the following in this unit: Chdn know that materials have been improved over time and materials scientists work hard on making materials that we use better.</p>	<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn can explain how they will use their senses to answer questions. Chdn begin to make and record numerical measurements using standard units. Chdn can describe seasonal changes. Chdn keep a record of a change over time. Chdn can use time vocabulary (seconds, minutes, hours, days, weeks) to describe changes. Chdn ask questions about the world around them.</p> <p>Chdn know that some scientists, called meteorology, study the weather. People being scientists discovered that weather follows complicated patterns and isn't at the whim of gods.</p> <p>To meet the expected standard, Year 2s should demonstrate the following in this unit: Chdn understand that our ability to predict the weather depends on collecting lots of information and has got better over time.</p>
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<p>Year 3/4</p>	<ul 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 • know that: carbohydrates and fats give us energy, fibre keeps our digestive system healthy, protein allows us to keep muscles healthy and a range of vitamins and minerals prevent disease. • identify that humans and some other animals have skeletons and muscles for support, protection and movement. • Find patterns in nutritional information in food e.g. look for a link between amount of sugar and amount of energy in food. • Find patterns between vitamins and the disease that is caused by a deficiency of this vitamin. • Compare in simple terms structures used by animals for support: hydrostatic skeletons, exoskeletons and internal skeletons. • Chdn know that skeletal muscles work in pairs and can demonstrate this by constructing a model. 	<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: incisors bite, canines • grip and tear, premolars tear and crush, molars chew and grind • construct and interpret a variety of food chains, identifying producers, predators and prey. • Chdn can find patterns related the form and function of parts of organisms: humans, other animals and plants. • Chdn should find patterns in the teeth of herbivores and carnivores. • Chdn should experience using their teeth to chew different foods. 	<ul style="list-style-type: none"> • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties: hardness, permeability, smoothness • 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. • know the definition of sedimentary, igneous and metamorphic rocks and link this to their properties. • Use maps to find patterns in geographical features and suggest explanations e.g. where volcanoes are found on Earth. • Classify rocks on the basis of their physical properties – hardness, appearance of crystals, permeability, smoothness by performing simple tests and using their senses • Chdn collect data using multiple pieces of simple scientific equipment, explaining the choice behind each. 	<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. • Chdn choose an appropriate size of measuring cylinder for an investigation. • Chdn use data loggers or electronic data collecting equipment. • Explain changes to materials over time and the effect of other variables e.g. does a smaller ice lolly melt faster or slower than a larger ice lolly. • Chdn group matter into solid, liquid or gas. 	<ul style="list-style-type: none"> • know that friction slows down objects that are touching as they move over each other; different surfaces have different [coefficient* of] friction • 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. • Observe patterns in magnetic field lines and how magnets attract or repel each other. • Compare movement on different surfaces. Chdn ask their own questions about the friction generated between different surfaces. <p>*this terminology not necessary and may be unhelpful</p>
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	<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn know that there are different ways of supporting an animal body and begin to understand some advantages and disadvantages of each way. Chdn know that our understanding of the human body has developed over time and continues to grow, based on the observations doctors and scientists make.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Chdn describe and begin to explain patterns in the types of animal that have different types of skeleton.</p> <p>Chdn can name a particular physiologist e.g. Galen and can explain how they proved something about human anatomy by taking an empirical view.</p>	<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn use diagrams and pre-drawn tables to present results.</p> <p>Chdn know that dentists use special tools which themselves had to be invented in order to fulfil their purpose.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Chdn draw their own tables and bar charts to present results.</p> <p>Chdn can name a scientist e.g. Pierre Fauchard who pioneered dentistry as a modern profession.</p>	<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn make a decision about appropriate equipment to use to assist when data collecting. Chdn should set up their own simple enquiries to answer a question they have asked. Chdn use the results of their investigation to make a design or solve a problem e.g. which rock to choose to build a structure with.</p> <p>Chdn can name a technique scientists use to investigate rocks e.g. radioactive dating or looking at the crystal structure or doing chemical tests, without going into full detail into how this works.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Describe the structure of the Earth in simple terms, knowing that scientists used to believe that the Earth had a wholly molten core, but Inge Lehmann persuaded people that the Earth must have a small solid core at the very middle of the planet because of measurements from seismology.</p> <p>Chdn make a decision about appropriate equipment to use to assist when data collecting and can comment on other equipment they might like to use. Chdn use complex keys to identify rocks and minerals from images and diagrams. Chdn use their knowledge to raise and answer questions e.g. how can we identify an unknown rock? Chdn can name a scientist e.g. Mary Anning.</p>		<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn use a thermometer. Chdn can make predictions about what will happen based on what they have already seen happening. Chdn should set up their own simple enquiries to answer a question they have asked. Chdn use diagrams and pre-drawn tables to present results. Chdn have some understanding of the ancient idea of four elements: fire, earth, air and water and that over time, people realised that this was not a good theory to fit the observations we make of the way the world is.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Chdn use a thermometer to measure the temperature at which a solid melts and know what temperature is measured in. Chdn collect data using multiple pieces of simple scientific equipment, explaining the choice behind each. Chdn can make quantitative predictions about what will happen based on what they have already seen happening. Chdn draw their own tables and bar charts to present results. Chdn use a thermometer to compare the temperature at which solids melt – butter, chocolate, water.</p> <p>Chdn have some understanding of the ancient idea of four elements: fire, earth, air and water and that over time, people realised that this was not a good theory to fit the observations we make of the way the world is. They can name inventions like ice-cream and antifreeze that depend on scientists understanding state changes.</p>	<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn make a decision about appropriate equipment to use to assist when data collecting. Chdn use diagrams and pre-drawn tables to present results. Chdn can make predictions about what will happen based on what they have already seen happening. Chdn should set up their own simple enquiries to answer a question they have asked. Chdn use the results of their investigation to make a design or solve a problem.</p> <p>Chdn know something about the history of uses of magnetism – lodestones to modern magnets.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Chdn draw their own tables and bar charts to present results. Chdn use their knowledge to raise and answer questions e.g. how can be lower the melting point of chocolate? Chdn use results of questions they have asked to inform a solution to a problem e.g. materials to use for a toy car. Chdn can name a scientist involved in the understanding of magnetism, such as Mary Somerville.</p>
<p>Year 5/6</p>	<ul style="list-style-type: none"> recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye explain that we see things because light travels from light sources to our eyes 	<ul style="list-style-type: none"> associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of 	<ul style="list-style-type: none"> describe the movement of the Earth, and other planets, relative to the Sun in the solar system describe the movement of the Moon relative to the Earth describe the Sun, Earth and Moon as approximately 	<ul style="list-style-type: none"> explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object identify the effects of air resistance, water resistance and friction, that act between moving 	<ul style="list-style-type: none"> describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird describe the life process of reproduction in some plants and animals. Closely observe at least one specific animal's life cycle, making repeated qualitative and quantitative measurements in a consistent way relating it to those of others. Find patterns in life cycles and habitats, e.g. between marine and terrestrial environments. Pattern in gestation period of different 	

<ul style="list-style-type: none"> or from light sources to objects and then to our eyes use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them. 	<ul style="list-style-type: none"> buzzers and the on/off position of switches use recognised symbols when representing a simple circuit in a diagram. Chdn work systematically when investigating series circuits. 	<ul style="list-style-type: none"> spherical bodies use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. Pattern in length of day at different latitudes and throughout the year. Describe and explain patterns between different properties of planets, for example distance from the Sun and orbital period. Chdn ask questions about space that can be answered using secondary sources. 	<ul style="list-style-type: none"> surfaces recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Make observations of movement through water and air as well as on solid surfaces, making link between forces acting on an object and its movement. Set up a fair test to investigate air resistance. 	<ul style="list-style-type: none"> animals, relating it to other factors. Chdn should make direct observations of a wide range of living things, using keys and other tools to classify them on the basis of what they observe. Describe patterns in animal morphology e.g. does the shape of a bird's beak affect the food it eats. Chdn ask questions about evolution and adaptation e.g. why do different groups of plants have different life cycles?
<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: Chdn use scientific diagrams to present information. Chdn use an investigation to solve a practical problem, such as creating a periscope.</p> <p>Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. concept of magnification using telescopes, linking to learning from Autumn 1) Potential scientist: Galileo</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Chdn use scientific diagrams to present information, including results from their own enquiries. Chdn use an investigation to solve a practical problem independently, such as designing and creating a periscope.</p> <p>Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three (optics). Chdn can identify scientific evidence that has been used to support or refute ideas or arguments e.g. colours of light giving away composition of celestial bodies.</p>	<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: Chdn take repeated readings for accuracy.</p> <p>Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. the first measurements of the speed of electricity, which wasn't previously known, by Charles Wheatstone in 1834)</p> <p>Potential scientist: Esther Conwell</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Chdn independently present results clearly and effectively, including using scatter diagrams.</p> <p>Use their experimental skills to explain the degree of trust that can be placed in their results and ways to make their experiment more reliable. Chdn use scientific knowledge to ask sophisticated questions about application in the real world e.g. how buzzers, alarms and lights can be wired.</p> <p>Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three.</p>	<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: Chdn use scientific diagrams to present information. Chdn present results as bar and line graphs e.g. to show day length at different times of the year or different latitudes, or height of the sun in the sky during a day.</p> <p>Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. the development of a heliocentric model of the solar system)</p> <p>Potential scientist: Jocelyn Bell Burnell</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Chdn create classification keys for planets from information they are given (on the definition and properties of classes of planet, dwarf planet, comet, asteroid and meteoroid).</p> <p>Chdn use scientific diagrams to present information, including results from their own enquiries. Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three (e.g. astrophysics) Chdn can identify scientific evidence that has been used to support or refute ideas or arguments e.g. the</p>	<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: With support, collect multiple data sets and draw them as a scatter graph, describing any resultant pattern. Chdn can carry out an investigation with support that involves explicitly describing how the experiment is controlled, with reference to variables. Chdn use scientific diagrams to present information. Chdn take repeated readings for accuracy. Chdn choose appropriate measuring equipment for precision. Chdn are able to comment on the reliability of their own investigations.</p> <p>Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. the idea of whether heavier objects fall faster than lighter objects) Potential scientist: Newton</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Chdn independently present results clearly and effectively, including using scatter diagrams.</p> <p>Use their experimental skills to explain the degree of trust that can be placed in their results and ways</p>	<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: Classify animals into mammals, amphibians, insects and birds on the basis of their characteristics. Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. the understanding of metamorphosis which superseded concept of spontaneous generation)</p> <p>Potential scientist: Maria Merian</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Chdn can comment on the advantages and disadvantages of specific adaptations, showing a strong understanding of the concept of trade-off during evolution.</p> <p>Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three. Chdn can identify scientific evidence that has been used to support or refute ideas or arguments e.g. experiments inducing metamorphosis in axolotls.</p>

		Chdn can identify scientific evidence that has been used to support or refute ideas or arguments e.g. measurements of conductivity.	horizon as evidence of the non-flatness of the Earth.	to make their experiment more reliable. Chdn use scientific knowledge to ask sophisticated questions about application in the real world e.g. how levers are used in machinery. Chdn use scientific diagrams to present information, including results from their own enquiries. Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three. Chdn can identify scientific evidence that has been used to support or refute ideas or arguments e.g. experiments dropping objects in vacuum.	
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Cycle B

		Autumn		Spring		Summer	
Year 1/2		<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 Use given information that is relevant to their lives to find patterns e.g. number of Chdn walking to school in each age group. Match adults to offspring of different animal species and discuss patterns and observations. 	<ul style="list-style-type: none"> identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other identify and name a variety of plants and animals in their habitats, including microhabitats Chdn investigate a micro-habitat on the school grounds and collect data about what is found there (e.g. counting invertebrates). Chdn can describe patterns in where animals choose to live and explain them (because they are suited to their habitat) 	<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. Chdn can group objects by intangible properties e.g. 'strong', 'flexible' Chdn should test how different materials respond to the same action e.g. which are waterproof. Chdn can solve problems and answer practical queries by testing different materials, explaining the results of their test. Use simple timers. Chdn should test different materials to answer a question they have come up with. With guidance, carry out an investigation to test a possible pattern, for example: "Are materials with smoother surfaces also harder?" Classify materials according to whether they can be changed by being squashed, bent, twisted or stretched. 	<ul style="list-style-type: none"> 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. Chdn should plant plants and ask questions about what will happen to them. With guidance, carry out an investigation to test a possible pattern, for example: "Do bigger seeds grow into bigger plants?" Chdn set up a comparative test to show that plants need light and water to stay healthy. 	<ul style="list-style-type: none"> explore and compare the differences between things that are living, dead, and things that have never been alive 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. Chdn ask questions about the world around them. Chdn should ask questions to do with whether things are alive (is fire alive? Is a deciduous tree alive in winter?) 	
		<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn ask questions about the world around them. Chdn explain phenomenon they study showing an understanding of causation.</p> <p>To meet the expected standard, Year 2s should demonstrate the following in this unit: Chdn ask and answer simple</p>	<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn begin to make and record numerical measurements using standard units. Chdn ask and answer 'how many' questions using the world around them and find patterns in the answers. Chdn can use a magnifying glass to observe, understanding that they make objects appear larger.</p>	<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn begin to make and record numerical measurements using standard units. Chdn keep a record of a change over time, for example a sketch of a plant as it germinates and grows. Chdn can use a magnifying glass to observe, understanding that they</p>	<p>To meet the expected standard, Year 1s should demonstrate the following in this unit: Chdn can use a magnifying glass to observe, understanding that they make objects appear larger. Chdn ask questions about the world around them. Chdn explain phenomenon they study showing an understanding of causation.</p> <p>To meet the expected standard,</p>		

	<p>questions about the world around them. Chdn explain phenomenon they study showing an understanding of causation being specific about the consequences of events or actions.</p>	<p>Chdn ask questions about the world around them. To meet the expected standard, Year 2s should demonstrate the following in this unit: Chdn make and record numerical measurements using standard units independently. Chdn can use a magnifying glass to observe, understanding that they make objects appear larger, and that this phenomenon varies e.g. depending on distance between the object and the glass.</p>	<p>unit: Chdn make and record numerical measurements using standard units independently. Chdn ask and answer ‘how many’ questions using the world around them and find and begin to explain patterns in the answers. Chdn can use a magnifying glass to observe, understanding that they make objects appear larger, and that this phenomenon varies e.g. depending on distance between the object and the glass. Chdn explain phenomenon they study showing an understanding of causation being specific about the consequences of events or actions.</p>	<p>make objects appear larger. Chdn ask questions about the world around them. Chdn explain phenomenon they study showing an understanding of causation . To meet the expected standard, Year 2s should demonstrate the following in this unit: Chdn begin to make and record numerical measurements using standard units independently. Chdn keep a record of a change over time, for example a labelled sketch of a plant as it germinates and grows.</p>	<p>Year 2s should demonstrate the following in this unit: Chdn can use a magnifying glass to observe, understanding that they make objects appear larger, and that this phenomenon varies e.g. depending on distance between the object and the glass. Chdn explain phenomenon they study showing an understanding of causation being specific about the consequences of events or actions.</p>
<p>Year 3/4</p>	<ul 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. Use maps to find patterns in geographical features and suggest explanations e.g. where volcanoes are found on Earth. Chdn can find patterns related the form and function of parts of organisms: humans, other animals and plants. Relate properties of animals to one another e.g. (terrestrial) animals without skeletons tend to be small. Classify animals into those without skeletons and those with skeletons. Classify animals into mammals, amphibians, insects and birds on the basis of their characteristics. 	<ul style="list-style-type: none"> identify and describe the functions of different parts of flowering plants: roots absorb water and nutrients and anchor the plant in the ground, stem/trunk supports the plant and transports water and nutrients, leaves make food for the plant using energy from the sun and flowers know that plants need air, light, water, nutrients from soil, and room to grow in order to live know that plants vary in their requirements for life 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. Observe, describe and explain a plant’s life cycle, e.g. with peas. Chdn can find patterns related the form and function of parts of organisms: humans, other animals and plants. Chdn use data loggers or electronic data collecting equipment. Chdn make observations of water being transported through a plant. Chdn use comparative tests 	<ul 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 recognise that sounds get fainter as the distance from the sound source increases. Chdn find patterns between the pitch of a sound and features of the object that produced it. Chdn find patterns between the volume of a sound and the strength of the vibrations that produced it. Chdn compare the pitch of sounds made e.g. when elastic bands are stretched to different degrees. 	<ul 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. discover the pattern that metals are good conductors. choose a simple investigation to find a pattern between two elements of a circuit construct a device using a circuit. know that electricity is a natural phenomenon, but scientists about 200 years ago started to invent ways of controlling and generating it. They should recreate Volta’s experiments with batteries. 	<ul 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. Observe patterns in shadow formation. Compare the size, strength and colour of shadows made by different objects.

			<p>to explore the requirements of plants for life and growth, reporting on their findings.</p> <ul style="list-style-type: none"> Chdn compare more than one type of plant, relating its requirements to its habitat 			
	<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn use diagrams and pre-drawn tables to present results.</p> <p>Chdn learn about the importance of making records that are accurate in order to positively identify a species and know that it is not a new one.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Chdn draw their own tables and bar charts to present results. Chdn use complex keys to identify animals and plants from images and diagrams. Chdn learn about Linnaeus and why his system is so important.</p>	<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn make a decision about appropriate equipment to use to assist when data collecting. Chdn can make predictions about what will happen based on what they have already seen happening.</p> <p>Chdn able to explain that we didn't used to know how plants could get bigger and heavier but it was discovered that plants extra mass as they grow mostly is extracted from the air. They can describe in simple terms how this can be proven.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Chdn can evaluate the appropriate of their own use of scientific equipment. Chdn can make quantitative predictions about what will happen based on what they have already seen happening.</p> <p>Chdn able to explain the role of collectors in our understanding of plant needs, life cycles and variety e.g. Elizabeth Britton.</p>	<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn use diagrams and pre-drawn tables to present results. Chdn should set up their own simple enquiries to answer a question they have asked.</p> <p>Chdn can make predictions about what will happen based on what they have already seen happening. Chdn able to make link between visible vibrations and hearing sounds, so they can explain how someone would prove that sounds are caused by vibrations.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Chdn collect data using multiple pieces of simple scientific equipment, explaining the choice behind each.</p> <p>Chdn use their knowledge to raise and answer questions e.g. how can we create effective earmuffs? Chdn learn that Pythagoras experimented with string length and pitch in order to prove the relationship between them.</p>	<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn make a decision about appropriate equipment to use to assist when data collecting. Chdn can make predictions about what will happen based on what they have already seen happening. Chdn use the results of their investigation to make a design or solve a problem.</p> <p>Chdn can explain in simple terms the iterative process of the invention of batteries – that the technology was gradually improved not discovered in one flash of inspiration.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Chdn collect data using multiple pieces of simple scientific equipment, explaining the choice behind each. Chdn able to explain who Alessandro Volta was and why his experiments were important.</p>	<p>To meet the expected standard, Year 3s should demonstrate the following in this unit: Chdn should set up their own simple enquiries to answer a question they have asked.</p> <p>Chdn know that our understanding of how we see things has changed over time – people used to think that our eyes had to reach out and grab a picture but now we know they simply detect light.</p> <p>To meet the expected standard, Year 4s should demonstrate the following in this unit: Chdn use their knowledge to raise and answer questions e.g. how can be lower the melting point of chocolate? Chdn learn that lasers are powerful lights that can be used as tools – Donna Strickland won the Nobel Prize for working on lasers that are used in eye surgery.</p>	
Year 5/6	<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. Use results from their own experiment to set up further enquiry. Carry out a comparative test 	<ul style="list-style-type: none"> describe the changes as humans develop to old age 	<ul style="list-style-type: none"> compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets know that some materials will dissolve in liquid to form a 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. Chdn should observe changes and describe them in detail relating to how materials change, both reversibly and irreversibly. Chdn can group materials according to their properties of hardness, 	<ul style="list-style-type: none"> describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals give reasons for classifying plants and animals based on specific characteristics. Chdn should make direct observations of a wide range of living things, using keys and other tools to classify them on the basis of what they observe. Describe patterns in animal morphology e.g. does the shape of a 	<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. Use given information to set up further enquiry, which may involve research using secondary sources e.g. have 	

<p>on themselves to do with their heart rate.</p>		<p>solubility, transparency, conductivity and ferromagnetism, carrying out simple tests to do so.</p> <ul style="list-style-type: none"> • Chdn use an investigation to solve a practical problem, such as creating a jacket to keep ice cream cool. • Use their knowledge to decide whether an irreversible or reversible change has taken place based on whether it can be reversed. • Chdn can ask questions about mixtures of materials and how they can be separated. 	<p>bird's beak affect the food it eats.</p> <ul style="list-style-type: none"> • Chdn are able to describe the broad classification of all living things, including micro-organisms, plants and animals. • Describe how living things are classified, referencing their specific characteristics. 	<p>different lineages of animals evolved the same solution to a problem.</p> <ul style="list-style-type: none"> • Describe patterns in animal morphology • e.g. does the shape of a bird's beak affect the food it eats. • Describe patterns in how and why animal and plant species have changed over time. • Chdn ask questions about evolution and adaptation e.g. why has gigantism evolved among the cetaceans?
<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: Chdn use scientific diagrams to present information. Chdn present results as bar and line graphs e.g. heart rate after different types of exercise. Chdn take repeated readings for accuracy. Chdn choose appropriate measuring equipment for precision. Chdn can carry out an investigation with support that involves explicitly describing how the experiment is controlled, with reference to variables. Chdn are able to comment on the reliability of their own investigations. Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. the idea that the heart is the seat of cognition and intelligence replaced by our current understanding of what the heart does). Potential scientist: Anna Morandi</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Chdn independently present results clearly and effectively, including using scatter diagrams. Chdn have planned a fair test to answer a question they have posed, recognising the relevant variables</p>	<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: Make a comment about the strength of a pattern, such as the relationship between height and age. Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. the idea that a baby is tabula rasa being superseded by idea of instinct) Potential scientist: Konrad Lorenz</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Chdn independently present results clearly and effectively, including using scatter diagrams. Independently choose numerical data to collect and draw a clear and accurate graph to represent it, describing and explaining the resultant pattern. Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three. Chdn can identify scientific evidence that has been used to support or refute ideas or arguments e.g. some understanding of how cells age and die (telomerase discovered by Elizabeth Blackburn and Carol</p>	<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: Chdn present results as bar and line graphs. Chdn take repeated readings for accuracy. Chdn choose appropriate measuring equipment for precision. Chdn can carry out an investigation with support that involves explicitly describing how the experiment is controlled, with reference to variables. Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. development of the periodic table) Potential scientist: Mendeleev.</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Independently choose numerical data to collect and draw a clear and accurate graph to represent it, describing and explaining the resultant pattern. Chdn have planned a fair test to answer a question they have posed, recognising the relevant variables and controlling them appropriately. Use their experimental skills to explain the degree of trust that can be placed in their results and ways to make their experiment more reliable. Chdn use scientific knowledge to ask sophisticated questions about application in the real world e.g. how materials are chosen for particular uses according to their properties. Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three. Chdn can identify scientific evidence that has been used to support or refute ideas or arguments e.g. measurements of the longevity of different ions in the oceans.</p>	<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: Chdn create classification keys from information they are given. Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. the idea that all living things were created separately being superseded by the idea that all living things are related) Potential scientist: Jeanne Baret</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Chdn create classification keys from information they are given and can comment in simple terms on the benefits and drawbacks of such keys. Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three. Chdn can identify scientific evidence that has been used to support or refute ideas or arguments e.g. use of morphological similarity to group plants and genetic techniques to refine these classifications.</p>	<p>To meet the expected standard, Year 5s should demonstrate the following in this unit: Chdn can explain how a change in scientific understanding came about, knowing who and how a discovery was made, including what was believed before and how a prior belief was superseded (e.g. the idea that changes made to an individual's body are directly inherited – Lamarckism – being superseded by inheritance of information). Go into epigenetics if you dare. Potential scientist: Darwin and Mendel</p> <p>To meet the expected standard, Year 6s should demonstrate the following in this unit: Chdn should make direct observations of a range of once-living things, using keys and other tools to identify fossils on the basis of what they observe. Chdn can comment on the advantages and disadvantages of specific adaptations, showing a strong understanding of the concept of trade-off during evolution. Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three. Chdn can identify scientific evidence that has been used</p>

	<p>and controlling them appropriately. Independently choose numerical data to collect and draw a clear and accurate graph to represent it, describing and explaining the resultant pattern.</p> <p>Use their experimental skills to explain the degree of trust that can be placed in their results and ways to make their experiment more reliable.</p> <p>Chdn use scientific diagrams to present information, including results from their own enquiries.</p> <p>Chdn can define physics, chemistry and biology and know that there are other scientific disciplines that fit within and around these big three – e.g. combination of chemistry and biology needed for pharmacology and biophysics of muscular movement.</p> <p>Chdn can identify scientific evidence that has been used to support or refute ideas or arguments e.g. some understanding of the process of drug discovery.</p>	Greider)			to support or refute ideas or arguments e.g. how the rocks that fossils are found in helps to date them.
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