



St Luke's Catholic Primary School
Science End Points



Substantive Knowledge - I know that...

Disciplinary Knowledge - I know how to...

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Diversity Across the Curriculum	The curriculum has been designed to include study a range of scientists both current and from the past, from a range of cultures and genders. Further opportunities could include different scientific topics are evident in other cultures and how they are used differently.					
British Values across the Curriculum	Opportunities to discuss fundamental British values of Democracy, The rule of law. Individual liberty, Mutual respect and Tolerance of those of different faiths and beliefs could include looking at the development of scientific concepts over time and how the challenges the scientists have faced.					
Possible SEND adaptations	Differentiated task – ie sorting pictures/matching pictures with words/practical experiments. Key vocabulary is supported by a picture and actions to help understand and remember. Use of appropriate mixed ability partners to support children. Complete tasks as a group and evidence in floor book. Access to resources i.e. materials throughout lesson to help with understanding. Simplified recording methods Adult support Small group support with vocabulary. Some activities completed as a group an recorded n floor books Sessions broken down into task and brain breaks (30 mins art 10 mins break 20 mins art etc.), clear plan of timings given before session, adult supports to start off task and regular adult check ins to encourage participation. Session time tabled in advance so aware of what activity is. Adult supports to start off task and regular adult check ins to encourage participation. My turn-your turn sometimes used when she feels she's not doing something correctly to help create what she perceives as correct. 1-1 support to investigate topic in own preferred style-through art, iPad, outdoors. Simplified diagrams. Printed tables rather than drawing. Group work inc working scientifically recorded in floor book for some lessons rather than in science books. Adult support. Pre teach of memory jogger with a focus on the use of topic specific vocab. Sometimes use facts to sort and glue rather than write. Word banks					
Reception disciplinary knowledge	<p style="text-align: center;"><u>Asking and Answering Questions:</u> Ask simple questions about why different materials are used for different things.</p> <p style="text-align: center;"><u>Make Observations:</u> Use senses to explore the natural world around them. Make observational drawings Sort into groups using observational skills: sort images and objects into groups.</p> <p style="text-align: center;"><u>Use Equipment and Measurements/Engage in Practical Enquiry:</u> Use age appropriate tools and equipment eg binoculars, magnifying glasses, magnets</p> <p style="text-align: center;"><u>Identifying and classifying:</u></p>					

Reception units	Sort items into groups based on their properties.		
	<u>Record and Reporting Findings:</u> Use age appropriate scientific vocabulary Use pictures to show their science learning.		
	<u>Drawing Conclusions</u> Explain why something happened		
	Everyday Materials	Animals and their Habitats	Plants and Changes
	Chemistry	Biology	Biology
Vocabulary	Materials, plastic, wood, metal, strong, weak, hard, soft	Animal, human, baby, body, hatch, warm, cold, arms, legs, eyes, mouth	Plant, flower, weeds, grow, water, sunlight, soil
	Objects can be made from different materials.	Animals have babies.	Plants need water to grow.
	Materials have different properties; e.g. hard, soft, strong, not strong.	Animals are living.	Plants are alive.
		Chicks need warmth to hatch.	
	<u>Seasonal Change</u> <u>Key Vocabulary</u> Season, winter, summer, autumn, spring, cold, warm, trees, leaves		
	<u>Seasonal Change</u> In winter, it is cold. In spring, leaves begin growing on the trees. In autumn, the leaves colour. In summer, it is warm.		
Year 1			
Year 1 disciplinary knowledge	<u>Asking and Answering Question:</u> Use everyday language/begin to use simple scientific words to ask or answer a scientific question.		
	<u>Making Predictions:</u> Begin to say what might happen in an investigation.		
	<u>Making Observations:</u>		

	<p>Observe objects, materials and living things and describe what they see.</p> <p>Equipment and Measurements: Use simple, nonstandard equipment and measurements in a practical task.eg lego/hands/feet</p> <p>Identifying and Classifying: Sort and group objects, materials and living things, with help, according to simple observational features and based on their obvious properties</p> <p>Engaging in Practical Enquiry (Investigating): Follow instructions to complete a simple test individually or in a group.</p> <p>Recording and Reporting Findings: Begin to record simple data. Talk about their findings and explain what they have found out. Use a predefined table to record results</p> <p>Drawing Conclusions: Explain, with help, what they think they have found out.</p>				
	Autumn	Spring		Summer 1	Summer 2
Year 1	Everyday Materials	Animals including Humans/ Living Things		Plants	Scientist and Scientific Investigation focus
	Chemistry	Biology		Biology	Charles Macintosh and Working Scientific focus (Review of years learning for consolidation through investigations)
Vocabulary	Absorbent, waterproof, material rough, smooth, flexible, dull, shiny soft, hard, elastic, fabric, metal, plastic, wood	Animal, human, sense, taste, touch, sight, sound, smell, healthy, feather, scales, skin, fur, hair,	Wings, beak, reptile, amphibian, mammal, carnivore, herbivore, plant, meat.	Bark, blossom, branch, bulb, flower, fruit, vegetable, leaf/leaves, dandelion, buttercup, daisy, deciduous, evergreen, petal, root, seed, stalk, stem, trunk.	Waterproof, invention, investigation, material, rubber
Year 1 Substantive knowledge	Objects can be made from different materials. Materials have different properties; e.g. hard, soft, strong, not strong.	The human body is made up of different parts; e.g. legs, head. Humans have five senses; e.g. mouth to	There are different types of animals. A fish has scales and lives in the sea.	There are wildflowers growing in our school grounds; e.g. daisies, buttercups, dandelions.	Charles Macintosh was a Scottish chemist. He invented waterproof fabric. He had to test lots of

	<p>The school building is made from bricks.</p> <p>The school fence is made from metal.</p> <p>Windows are made from glass.</p>	<p>taste, ears to hear, eyes to see, hands to touch and nose to smell.</p> <p>Humans need different types of food to keep them healthy.</p>	<p>A bird has wings and a beak.</p> <p>A reptile has dry, scaly skin.</p> <p>A frog is an amphibian and lives on land and in water.</p> <p>A mammal has hair or fur.</p> <p>Different animals have different diets; e.g. carnivores eat meat, herbivores eat plants.</p>	<p>All plants have roots, a stem, leaves and some plants also have petals.</p> <p>Trees have roots, a trunk, branches and leaves.</p> <p>Evergreen trees keep their leaves all year.</p> <p>Deciduous trees lose their leaves in Autumn.</p>	<p>different ways to make something waterproof.</p> <p>The Mackintosh raincoat is named after him.</p> <p>Example investigation: Which material is the most water proof?</p>
	<p style="text-align: center;">Seasonal Changes <u>Key Vocabulary</u> Season, autumn, winter, summer, spring, weather, rain, snow, sun, cloud, frost, fog, hail, rainbow, thunder, lightning, storm, leaves</p> <p style="text-align: center;">There are four seasons. In winter, it is colder than in summer. In spring, leaves begin growing on the trees. In autumn, the leaves change colour and fall off the trees. In summer, it is lighter for longer.</p>				
<p>Year 2 Disciplinary knowledge</p>	<p><u>Year 2</u></p>				
	<p style="text-align: center;"><u>Asking and Answering Question:</u> Ask simple questions and know that they can be answered/investigated in different ways. Use scientific language to ask simple questions and recognise they can be answered in simple ways. Research secondary sources, such as books and video clips.</p> <p style="text-align: center;"><u>Making Predictions:</u> Begin to make predictions about what might happen in an investigation linking to what they already know.</p> <p style="text-align: center;"><u>Making Observations:</u></p>				

Observe closely and describe changes over time using their senses
 Begin to describe how things have changed over time.
 Record the results through annotated drawings or simple observation tables.

Equipment and Measurements:

Use simple equipment, such as hand lenses or egg timers to take measurements, make observations and carry out tests
 Use a ruler and a sand timer to carry out simple tests

Identifying and Classifying:

Group materials, living things and objects, noticing changes over time and beginning to see patterns
 Sort into groups using observational skills, giving reasons why.

Engaging in Practical Enquiry (Investigating):

Perform simple tests (changing one variable and measuring its effect on another)
 Begin to understand that to complete a fair test only one variable can change.

Recording and Reporting Findings:

Recording and reporting findings - Gather data, record and talk about their findings, in a range of ways, using simple scientific vocabulary.

Gather data and record findings in a range of ways e.g. tally chart, Venn diagram, pictogram

Drawing Conclusions:

Use simple scientific language to explain what they have found out
 Talk about results using appropriate scientific vocabulary.

Analysing Results:

Identify simple patterns and/or relationships using simple comparative language.

Year 2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Everyday Materials	Animals including humans	Living things and their habitats		Plants	Scientist and scientific investigation focus
	Chemistry	Biology	Biology		Biology	David Attenborough and Working Scientific focus (Review of years learning for consolidation through investigations)

Vocabulary	reflective, non-reflective property, rubber, squeeze/ stretch strong/weak twist squash	Adult, baby, offspring, survive, air, water, exercise, carbohydrate, protein, sugar, fat, hygiene, fibre, fruit, vegetable,	Living, breath, move, grow, dead, not alive, habitat, damp, dry,	Bulbs, damp/wet/dry, dark/light, earth, grow/growth, healthy, warmth, seedling, seeds, shoot, soil, water, wither/limp, breathe.	Scientist, prediction, measurements, patterns, grouping, observations
Year 2 Substantive Knowledge	<p>Objects can be made from different materials.</p> <p>The same material can be used for many things.</p> <p>Squashing, bending, twisting and stretching can change the shape of some materials.</p> <p>Recycling materials is important.</p>	<p>Animals have offspring; e.g. duck, duckling, sheep, lamb.</p> <p>Animals and humans need food, water and air to survive.</p> <p>Some foods are healthy, some are not so healthy.</p> <p>Humans need a range of healthy and not so healthy food.</p> <p>It is important for humans to exercise.</p> <p>To stay healthy, humans need to be clean.</p>	<p>If something is living, it means it breathes, moves and grows.</p> <p>If something is dead, it means it used to breathe, move and grow.</p> <p>If something has never been alive, it has never breathed, moved or grown.</p> <p>Most living things live in a habitat that provides its basic needs.</p> <p>Woodlice like dark, damp places.</p> <p>Most birds like dry, high up places.</p> <p>Animals get their food from plants and other animals.</p>	<p>Seeds and bulbs grow into mature plants.</p> <p>Plants need water, light and warmth to grow.</p> <p>Plants are living things because they breathe, move and grow.</p>	<p>David Attenborough is a scientist.</p> <p>David Attenborough is interested in looking after our planet.</p> <p>David Attenborough makes programmes about our world.</p> <p>David Attenborough has to use Scientific tests to find out information about the world.</p> <p>Example investigation: Which colour flower are insects most attracted to?</p>
Year 3/4					
Year 3 Disciplinary Knowledge	<p>Asking and Answering Question:</p> <p>Use ideas from what they know and what they have observed to pose questions independently about the world around them.</p> <p>Suggest ways to answer questions using scientific enquiries.</p>				

	<p><u>Making Predictions:</u> Make predictions and begin to give reasons for their thoughts linking them to the previous knowledge.</p> <p><u>Making Observations:</u> Make decisions about what to observe during an investigation so that they are answering an investigative question.</p> <p><u>Equipment and Measurements:</u> Take accurate measurements using standard units (in cm, kg,ml,degrees) using thermometers, rulers, scales and measuring cylinders.</p> <p><u>Identifying and Classifying:</u> Talk about criteria for grouping, sorting and categorising, beginning to see patterns and relationships between how objects are grouped and sorted. Identify criteria for grouping objects</p> <p><u>Engaging in Practical Enquiry (Investigating):</u> Identify variables that can be changed within an investigation Discuss enquiry methods and describe a fair test means that only one variable will change.</p> <p><u>Recording and Reporting Findings:</u> Record their findings using scientific language and present in note form, writing frames, diagrams, tables and charts - have support with the layout of these where necessary. Gather and record data, presenting in a variety of ways e.g. tables, bar charts, diagrams with increasing independence Gather and record data, presenting in a variety of ways e.g. tables, bar charts, diagrams.</p> <p><u>Drawing Conclusions:</u> Draw, with support, a simple conclusion based on an enquiry observation explaining how what they have found out answers the enquiry question</p> <p><u>Analysing Results:</u> Gather, record and use data in a variety of ways to answer a simple enquiry question</p>
Year 4 Disciplinary	<p><u>Asking and Answering Question:</u> Suggest relevant questions and know they can be answered in a variety of ways including investigations and using secondary sources such as ICT. Ask relevant questions and begin to explain the best way to answer them using scientific enquiries and secondary sources.</p> <p><u>Making Predictions:</u> Make predictions and give a reason using simple scientific vocabulary using what they have found out from previous tests.</p>

Making Observations:

Make systematic and careful observations ensuring that they are recording the data appropriately.

Make observations at time intervals over a set time period

Record observations clearly choosing the most appropriate method for doing so.

Equipment and Measurements:

Take accurate measurements using standard units and a range of equipment, including thermometers and data loggers.

Measure accurately in a variety of measures including smaller increments eg cm/mm, kg/g.

Read scales accurately

Identifying and Classifying:

Identify similarities/differences/changes when talking about scientific processes.

Identify links across scientific processes

Use and begin to create simple keys.

Engaging in Practical Enquiry (Investigating):

Make decisions about different enquiries, including recognising when a fair test is necessary

Identify variables that need to stay the same

Identify variables that need to change.

Identify what needs to be measured.

Recording and Reporting Findings:

Choose appropriate ways to record and present information, findings and conclusions (eg. tables, graphs, annotated diagrams)

Understand when fair testing is necessary and the effect of fair testing on an investigation

Suggest the most appropriate way to record and present data e.g. tables, bar charts, labelled diagrams.

Drawing Conclusions:

Use recorded data to make predictions, pose new questions and suggest improvements for further enquiries.

Talk about scientific processes when change occurs.

Analysing Results:

Use scientific evidence to support their findings.

Identify, with help, changes, patterns, similarities and differences in data to help form conclusions.

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Chemistry	Biology	Biology	Physics	Physics	Scientist
Year ¾ cycle 1	States of Matter	Animals including humans	Living things and their habitats	Sound	Electricity	Cai Lun and Working Scientific focus (Review of years learning for

						consolidation through investigations)
Vocabulary	Liquid, gas, solid, melt, evaporate, freeze, degree, Celsius, condense, cycle, condensation, state, boil, temperature, precipitation, vapour, transpiration	Teeth, molar, incisor, canines, saliva, intestines, stomach, waste, nutrients, energy, food chain, prey, predator herbivore producer, omnivore, consumer, carnivore,	Vertebrate, invertebrate, endanger, environment, amphibian, birds, fish, human, classification key, reptiles	Sound, vibration, absorb, pitch, high/low, muffle, insulation, noise, sound, travel, instrument,	Appliances/devices, battery, bright/dim, bulb, buzzer, cell, circuit, circuit symbol, components, conductor, connection, insulator, loose connection, mains, positive/negative, short circuit, switch, wire.	Invention, experimentation, variables, fair testing
Y3/4 cycle 1 Substantive knowledge	<p>Materials can be sorted into solids, liquids and gases.</p> <p>Heating causes solids to melt into liquids and liquids to evaporate into gasses.</p> <p>Cooling causes gasses to condense into liquids and liquids to freeze into solids.</p> <p>Temperature is measured in Degrees Celsius.</p> <p>Different substances have different melting and freezing points.</p> <p>Water evaporates and condenses as rain in The Water Cycle.</p>	<p>Animals and humans have different types of teeth to help them eat.</p> <p>Different teeth have different jobs.</p> <p>Food is broken down by the teeth and mixes with saliva and then travels to the stomach and intestines.</p> <p>Waste is removed by the body.</p> <p>Nutrients from plants move to the animals that eat them.</p>	<p>Living things can be divided into groups based on their characteristics; e.g. vertebrates and invertebrates.</p> <p>Changes to the environment could endanger living things.</p> <p>Human activity impacts the environment both positively and negatively.</p>	<p>Sound is produced when an object vibrates.</p> <p>Sound travels through all materials by making them vibrate.</p> <p>A stronger vibration makes a louder sound.</p> <p>A sound source is something that produces sound.</p> <p>Sounds get fainter the further away they are from the sound source.</p> <p>Some materials absorb sound better than others.</p> <p>Pitch is the measure of how high or low a sound is.</p>	<p>An electricity source is something that produces electricity.</p> <p>An electricity source sends electricity around a circuit.</p> <p>A circuit must be complete for electricity to flow.</p> <p>A circuit needs cells and wires, it can also be made with bulbs, switches and buzzers.</p> <p>Conductors allow electricity to travel through them.</p> <p>Insulators stop electricity from travelling through it.</p>	<p>Cai Lun invented paper.</p> <p>He used tree bark, bamboo fibres and water.</p> <p>This discovery has led to a big change for the whole world.</p> <p>Example investigation: Is there a pattern in how long it takes different sized ice lollies to melt?</p>

		Energy moves through the food chain.			Metal is a good conductor.	
Year ¾ cycle 2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Rocks	Animals including Humans	Forces and Magnets	Light	Plants	Scientist and scientific investigation focus
	Chemistry	Biology	Physics	Physics	Biology	Mary Anning and Working Scientific focus (Review of years learning for consolidation through investigations)
Vocabulary	fossils, sedimentary, organic, boulder, chalk, crystals, grains, granite, marble, peat, pebble, sandstone, slate, soil, stone, texture.	Skeleton, organs, muscle, bone, balanced diet, nutrition, vitamins, minerals	Force, push, pull, friction, magnet, north pole, south pole, repel, attract, magnetic, non-magnetic,	Light, dark, reflect, source, opaque, shadow, sun, mirror, torch, reflection	Bulb, flower, healthy, temperature, conditions for growth, nutrients, petal, pollination, root, seed dispersal, soil, stem, transported, trunk, water, comparatives eg. hotter, colder etc.	Palaeontology, palaeontologist, Plesiosaurus, observe, classify
Year ¾ Cycle 2 Substantive knowledge	<p>Rocks can be classified in different ways; e.g. by the way they look and their physical properties.</p> <p>Fossils are formed over thousands of years.</p> <p>Fossils are found within sedimentary rocks.</p> <p>Fossils were living things that became trapped in a rock.</p>	<p>Skeletons are there for movement, support and protection of some organs.</p> <p>Muscles are connected to the bones.</p> <p>Muscles help us to move.</p> <p>A balanced diet is important for humans.</p>	<p>A force is a push or a pull.</p> <p>Objects move at different speeds on different surfaces depending on the amount of friction.</p> <p>Magnets attract and repel.</p> <p>Magnets have 2 poles: north and south.</p>	<p>We need light in order to see things: without light, it would be dark.</p> <p>Light is reflected from surfaces.</p> <p>A light source is something that produces light.</p> <p>An opaque object does not let light through.</p> <p>Opaque objects get darker shadows.</p>	<p>Plants make their own food.</p> <p>Water and nutrients are transported from the roots and up the stem/trunk.</p> <p>The flowers attract insects.</p> <p>Insects pollinate the flowers to help it produce seeds.</p> <p>Seeds are dispersed in different ways.</p>	<p>Palaeontology is the study of the history of life on Earth through fossils.</p> <p>Fossils are formed over thousands of years.</p> <p>Mary Anning was an English palaeontologist.</p> <p>In 1823 Mary was the first to discover the complete skeleton of a Plesiosaurus.</p>

	Soil is made from rocks and organic matter.	Humans and animals get nutrition from the food they eat.	<p>Magnets can attract and repel at a distance.</p> <p>Materials can be magnetic or non-magnetic.</p>	<p>The closer an opaque object is to a light source, the larger the shadow.</p> <p>The sun can damage our eyes, but there are ways to protect them; e.g. sunglasses.</p>	<p>Seeds make new plants.</p> <p>Seeds and bulbs require the right conditions to grow.</p>	<p>Example investigation: Do plants need soil to grow? Observe and classify different soil structures.</p>
--	---	--	---	--	--	---

Year 5/6

Asking and Answering Question:

Raise different types of scientific questions, and hypotheses ensuring that the question is something that can be tested.
Identify how the question is finding out the information that is needed

Making Predictions:

Make predictions and give a reason using scientific vocabulary use prior learning and understanding to back up the prediction
Use findings to make new predictions for further comparative and fair tests.

Making Observations:

Plan and carry out comparative and fair tests, making systematic and careful observations.
Record and analyse the observations
Begin to identify any anomalies

Equipment and Measurements:

Take measurements using a range of scientific equipment with increasing accuracy and precision.
Decide on what has to be measured and identify the best unit for measuring.

Identifying and Classifying:

Use and develop keys to identify, classify and describe living things and materials.
Identify patterns in results
Begin to identify anomalies in results where results aren't following the normal pattern.

Engaging in Practical Enquiry (Investigating):

Plan a range of science enquiries, including comparative and fair tests.
Begin to plan independent investigations to answer an enquiry question
Identify and begin to control variables, giving reasons why some variables need to be controlled.

Recording and Reporting Findings:

Record data and results of increasing complexity using scientific diagrams, labels, classification keys, tables, bar and line graphs and models
Discuss the most appropriate way to record and present data, giving reasons why.

Year 5 Disciplinary
Knowledge

	<p style="text-align: center;"><u>Drawing Conclusions:</u></p> <p style="text-align: center;">Use a simple mode of communication to justify their conclusions on a hypothesis. Begin to recognise how scientific ideas change over time. Make links between current learning and prior learning and use this to support them in writing a conclusion</p> <p style="text-align: center;"><u>Analysing Results:</u></p> <p style="text-align: center;">Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas. Begin to identify where anomalies have occurred and talk about why these have occurred.</p>
<p>Year 6 Disciplinary Knowledge</p>	<p style="text-align: center;"><u>Asking and Answering Question:</u></p> <p style="text-align: center;">Pose/select the most appropriate line of enquiry to investigate scientific questions. Identify how to create an investigation from developing an enquiry question and a hypothesis.</p> <p style="text-align: center;"><u>Making Predictions:</u></p> <p style="text-align: center;">Make predictions and give a reason using scientific vocabulary. Base predictions on findings from previous investigation. Use mini-investigation to back up the prediction.</p> <p style="text-align: center;"><u>Making Observations:</u></p> <p style="text-align: center;">Make their own decisions about which observations to make. Use test results and observations to make predictions or set up further comparative or fair tests. Record and analyse the observations Identify any anomalies and explain why they have occurred.</p> <p style="text-align: center;"><u>Equipment and Measurements:</u></p> <p style="text-align: center;">Decide on what to measure in an investigation to answer an enquiry question. Choose the most appropriate equipment in order to take measurements, explaining how to use it accurately. Decide how long to take measurements for, checking results with additional readings.</p> <p style="text-align: center;"><u>Identifying and Classifying:</u></p> <p style="text-align: center;">Identify and explain patterns seen in data, in scientific processes and between investigations.</p> <p style="text-align: center;"><u>Engaging in Practical Enquiry (Investigating):</u></p> <p style="text-align: center;">Select and plan the most suitable line of enquiry, explaining which variables need to be controlled and why, in a variety of comparative and fair tests. Set up and plan independent investigations to test hypotheses and answering a clear enquiry question to answer Identify the dependent and independent variables and how this can support with developing an investigation</p> <p style="text-align: center;"><u>Recording and Reporting Findings:</u></p>

	<p>Choose the most effective approach to record and report results Present the results in a clear organised way that explains the results of the investigations.</p> <p>Drawing Conclusions: Explain what the investigation has found out and explain the results linking the investigation with the theoretical knowledge of Science. Use a range of secondary sources to support or refute ideas. Identify validity of conclusion and required improvement to methodology. Explain any anomalies and why these may have occurred.</p> <p>Analysing Results: Identify and explain causal relationships in data and identify evidence that supports or refutes their findings, selecting fact from opinion.</p>					
Year 5/6 Cycle 1	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Evolution and Inheritance	Animals including humans	Living things and their habitats	Light	Electricity	Scientist and scientific investigation focus
	Biology	Biology	Biology	Physics	Physics	Marie M. Daly and Working Scientific focus (Review of years learning for consolidation through investigations)
Vocabulary	Fossil, inhabit, natural selection, adapt, evolution, inherit, genetic, trait,	circulatory system, heart, lungs, blood, oxygen, blood cells, platelets, plasma, carbon dioxide,	Organisms, microorganisms, virus, fungi, bacteria, arachnid crustacean mollusc mushrooms	Travel, prism, transparent, translucent, shadow, cornea, iris, pupil, lens, optic nerve	Appliances/devices, bright/dim, cell, circuit symbol, complete circuit, components, conductor, connection, fast/slow, loose connection, motor, short circuit, switch, terminal, voltage, volume, wire.	Chemistry, circulatory system, independent and dependant variables.
Y 5/6 Cycle 1 Substantive end points	Fossils are found in sedimentary rock. Fossils provide information about where and when living	The main parts of the human circulatory system are: heart, lungs, blood.	A key can be used to classify organisms. Micro-organisms are viruses, bacteria and fungi.	Light travels in a straight line. Light travels from light sources to an object and	Voltage is a measure of how strong a current is in a circuit. Voltage is what pushes the	Marie was the first African American in America to achieve a PhD in Chemistry.

	<p>things inhabited the Earth.</p> <p>Charles Darwin helped us understand more about natural selection.</p> <p>Living things can change over time to adapt to their environment.</p> <p>Evidence has shown that natural selection is how human evolution has occurred.</p> <p>Inherited traits are passed genetically by a parent.</p> <p>Offspring inherits traits from parents and grandparents.</p>	<p>The heart pumps blood around the body and delivers oxygen and nutrients to cells and collects waste.</p> <p>Exercise increases the heart rate because the muscles need more oxygen.</p> <p>Our blood is made up of four parts: red blood cells, white blood cells, platelets and plasma.</p> <p>Our diet impacts our bodies.</p> <p>Alcohol, drugs and cigarettes impact negatively on our bodies.</p>	<p>Carl Linnaeus developed a classification key to show how closely related organisms are to one another.</p>	<p>then to our eyes, allowing us to see.</p> <p>A transparent object lets all light through.</p> <p>A translucent object lets some light through.</p> <p>Prisms allow us to see the colours that make white light.</p> <p>Light reflects off opaque and translucent objects.</p> <p>Shadows cast the same shape as their object.</p> <p>Opaque objects block more light than translucent objects.</p> <p>The Human Eye is made up of the cornea, iris, pupil, lens, retina and optic nerve.</p>	<p>current through the circuit.</p> <p>Connecting cells in a series is what increases the voltage.</p> <p>The higher the voltage, the brighter the bulb or the louder the buzzer.</p> <p>Circuits that are broken don't work.</p>	<p>Marie was one of the first who investigated the effect of smoking on the lungs</p> <p>Her work led to an understanding of how diet can affect the circulatory system.</p> <p>Example investigation: Is there a pattern between what we eat for breakfast and how fast we can run?</p>
Year ¾ Cycle 2	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Physics	Biology	Biology	Physics	Physics	Scientist and scientific investigation focus
	Properties and changes of materials	Animals including humans	Living things and their habitats	Forces	Earth and Space	<p>Isaac Newton and Working Scientific focus</p> <p>(Review of years learning for consolidation through investigations)</p>

Vocabulary	Filter, soluble, insoluble, sieve, evaporate, reversible, dissolve, particle, residue, solution, irreversible, states of matter, thermal conductivity	Womb, gestation, foetus, infant, adolescent, baby, toddler, adult, old age, puberty, lifespan, offspring, life-cycle.	Give birth, milk, eggs, insects, reproduce, germination, life cycle, live young pollination pollen, seed dispersal	Gravity, air resistance, water resistance, lever, pulley, gear, force,	Planets, earth, moon, sun, spherical, orbit, rotate, axis, hours, revolve, solar system	Gravity, spectrum, colour theory, control variables
Y5/6 Cycle 2 Substantive knowledge	<p>Materials have different properties which make them suitable for different jobs.</p> <p>A solution is made up of a liquid and a solid that has been dissolved.</p> <p>If a solid can be recovered through filtering, it was not a solution.</p> <p>Some materials are soluble and some are insoluble.</p> <p>The process of separation can be done through sieving, filtering and evaporating.</p> <p>Changes in state are reversible.</p>	<p>Different animals have different gestation periods.</p> <p>In humans, the baby takes 40 weeks to develop in the womb.</p> <p>The main changes that occur in adult life are puberty and old age.</p> <p>As adults enter into old age, their bodies and minds become more frail and they must look after themselves more.</p>	<p>Mammals give birth to live babies and feed their young with their milk.</p> <p>Amphibians are invertebrates and lay eggs.</p> <p>Insects are invertebrates and lay eggs.</p> <p>Birds are vertebrates and lay eggs.</p> <p>Plants reproduce in different ways.</p>	<p>Gravity causes objects to fall towards the Earth.</p> <p>There are always two forces acting upon an object.</p> <p>Air resistance is the friction between the air and another material.</p> <p>Water resistance is the friction between water and another material.</p> <p>Changing the shape and size of an object affects the amount of air or water resistance acting upon it.</p> <p>Levers, pulleys and gears mean that it allows a smaller force to have a greater effect.</p>	<p>Earth, Sun and Moon are spherical.</p> <p>All planets, including the Earth, orbit the Sun.</p> <p>The Moon orbits the Earth and it takes 28 days.</p> <p>The Earth rotates on its axis- it takes 24 hours and this creates night and day.</p> <p>There are 8 planets in the Solar System: Mercury, Venus, Earth, Mars, Saturn, Uranus, Jupiter, Neptune.</p>	<p>Issac Newton discovered Gravity.</p> <p>Issac also proved that light moves in a straight line.</p> <p>Examples of investigations: Investigate how light moves using Isaac Newton's spectrum of colour theory using prisms and controlling the direction of the light.</p>