



Science – Progression in Knowledge, Scientific Enquiry and Vocabulary

Year Four	Autumn One Physics It's electric	Autumn Two Chemistry States of Matter Scientists	Spring One Physics Listen Up!	Spring Two Biology Name that Living Thing!	Summer One Biology Excuse me, are these your teeth?	Summer Two Biology Help our Habitats!
Key prior knowledge	See EYFS	See EYFS	See EYFS	Year 2	Year 3	Year 2
Unit objectives	i) identify common appliances that run on electricity ii) construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers iii) 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 iv) recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit v) recognise some common conductors and insulators, and associate metals with being good conductors	i) compare and group materials together, according to whether they are solids, liquids or gases ii) 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) iii) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	i. identify how sounds are made, associating some of them with something vibrating ii. recognise that vibrations from sounds travel through a medium to the ear iii. find patterns between the pitch of a sound and features of the object that produced it iv. find patterns between the volume of a sound and the strength of the vibrations that produced it v. recognise that sounds get fainter as the distance from the sound source increases	i. recognise that living things can be grouped in a variety of ways ii. explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	i. describe the simple functions of the basic parts of the digestive system in humans ii. identify the different types of teeth in humans and their simple functions iii. construct and interpret a variety of food chains, identifying producers, predators and prey	i. Recognise that environments can change and that this can sometimes pose dangers to living things.
Key enquiries	Session 1 Electrical Fun Session 2 Understanding Electrical Safety Session 3 Building a Circuit Session 4 Good Conductor, Bad Conductor? Session 5 Showing What You Know! Session 6 It's Electric!	Session 1 Solid or liquid? Session 2 It's a bit gassy! Session 3 Particle Party – Temperature Taker Session 4 Evaporation and Condensation Session 5 Make it Rain! Session 6 Welcome to the science fair!	Session 1 Sound Walk Session 2 Good Vibrations Session 3 Pitch and Volume Session 4 Pardon? Session 5 Sssshhhhhh! Session 6 The Rock Star Challenge	Session 1 A Living Thing? Session 2 Local Living Things – What are they? Session 3 How are living things classified? Session 4 Closer inspection Session 5 Enormous Insects Session 6 I'm thinking of a living thing....	Session 1 Excuse me, are these your teeth? Session 2 What happens to my food? Session 3 What does the small intestine do? Session 4 Who did this poo? Session 5 Who's the predator? Session 6 Did you know.....?	Session 1 Our environment Session 2 Other changes Session 3 Climate change Session 4 Impact of change Session 5 Help our Habitat Session 6 A positive impact



<p>Sticky Knowledge</p>	<p>Know that common appliances run on electricity Know that electricity can flow through the components of an electrical circuit and will only flow if the circuit is closed i.e. has no gaps. Know that the components of a circuit will usually include an energy source such as a battery, something that uses energy such as a bulb or buzzer, connecting wires, and switches to open and close the circuit. All components must be connected into and made part of the circuit. Know that electricity can flow more easily through some materials than others. Materials that electricity can pass through easily are called conductors and materials that electricity passes through poorly or not at all are called insulators. Know that all metals are good conductors and many plastics are insulators.</p>	<p>Know the main properties of solids, liquids or gases: Solids are fairly rigid and tend to keep their shape unless a force is applied Liquids will pour and flow into any shape Gases spread out to fill a space and will escape from an unsealed container Know that materials change state when they are heated or cooled and that different materials will respond differently depending on the temperature. Know that melting, evaporating, condensing and freezing are changes of state. Know that changes of state are crucial to our water cycle: Evaporation of water changes it to a gas (water vapour). Bodies of water on Earth evaporate and put water vapour into the air. Know that evaporation requires heat energy and is faster at higher temperatures. Condensation is the process by which water vapour in the air cools down and changes to drops of liquid. Water vapour</p>	<p>Know that there is an association between sound and vibrations – that sound is made when an object vibrates. Know that vibrations travel through air (or if we're under water, through water) to the ear and that we hear these as sound. Know that pitch and volume describe different characteristics of a sound, and that these are related to the characteristics of the vibrations: the volume of a sound varies with the size of the vibrations (amplitude), the pitch with the number of vibrations per second (frequency). Know that these characteristics depend upon the properties of the object making the sound, such as the material it is made from. Know that sounds get fainter as the distance from the sound source increases.</p>	<p>Know that living things can be grouped in a variety of ways that helps us to study and identify them. Know that classification keys can be used to help group, identify and name living things. Know that environments can change, often because of human activity, and that this can affect the survival of living things.</p>	<p>Know that humans have a digestive system made up of different parts that play a particular role in the digestive process. Know that the digestive system in humans is adapted to the food they eat. Know that humans have a mix of different types of teeth that are adapted to the food they eat Know that food chains show how living organisms depend on other living organisms for survival. Know that a food chain is made of a series of plants and animals that eat each other and shows how energy is transferred from one organism to another via food.</p>	<p>Know that living things can be grouped in a variety of ways that helps us to study and identify them. Know that classification keys can be used to help group, identify and name living things. Know that environments can change, often because of human activity, and that this can affect the survival of living things.</p>
<p>Scientific Enquiry</p>	<p>i) asking relevant questions and using different types of scientific enquiries to answer them ii) setting up simple practical enquiries, comparative and fair tests iii) making systematic and careful observations and,</p>	<p>i) asking relevant questions and using different types of scientific enquiries to answer them ii) setting up simple practical enquiries, comparative and fair tests iii) making systematic and careful observations and,</p>	<p>i. asking relevant questions and using different types of scientific enquiries to answer them ii. setting up simple practical enquiries, comparative and fair tests iii. making systematic and careful observations and,</p>	<p>i. asking relevant questions and using different types of scientific enquiries to answer them ii. making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of</p>	<p>i. asking relevant questions and using different types of scientific enquiries to answer them ii. setting up simple practical enquiries, comparative and fair tests iii. reporting on findings from enquiries, including oral and</p>	<p>i. Asking relevant questions and using different types of scientific enquiries to answer them. ii. Setting up simple practical enquiries, comparative and fair tests. iii. Making systematic and careful observations and,</p>



	<p>where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>iv) gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>v) recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>vi) reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>vii) using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>viii) identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>ix) using straightforward scientific evidence to answer questions or to support their findings</p>	<p>where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>v) recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>vi) reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>vii) using straightforward scientific evidence to answer questions or to support their findings</p>	<p>where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers</p> <p>iv. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>v. recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>vi. reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions</p> <p>vii. using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions</p> <p>viii. identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>ix. using straightforward scientific evidence to answer questions or to support their findings</p>	<p>equipment, including thermometers and data loggers</p> <p>iii. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions</p> <p>iv. recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables</p> <p>v. identifying differences, similarities or changes related to simple scientific ideas and processes</p>	<p>written explanations, displays or presentations of results and conclusions</p> <p>iv. identifying differences, similarities or changes related to simple scientific ideas and processes</p> <p>v. using straightforward scientific evidence to answer questions or to support their findings</p>	<p>where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>iv. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>v. Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>vi. Identifying differences, similarities or changes related to simple scientific ideas and processes.</p> <p>vii. Using straightforward scientific evidence to answer questions or to support their findings.</p>
Vocabulary	<p>electricity, circuit, switch, battery, plug, mains, appliance, device, wire, crocodile clip, bulb, buzzer, connection, power, cell, electricity, danger, power, electrocute, plug, socket, safety, electricity, circuit, switch, battery, plug, mains, appliance, device, wire, crocodile clip, bulb, buzzer, connection, energy, flow, current power, cell, energy, flow, current, conductor, insulator</p>	<p>solid, liquid, state, matter, particle, grain, category, classify, group, evidence, question, discuss gas, state, particles, evidence, proof, explain solidifying, freezing, melting, condensing, evaporating, particles, thermometer, temperature, Celsius, Fahrenheit, degrees, evaporation, condensation, precipitation, particle, state, liquid, gas, solid, ice, rain, clouds, vapour, evaporation, condensation, precipitation,</p>	<p>sound, listen, hear, ears, noise, loud, quiet, silent, vibrations sound, transmit, medium, air, water, solid, vibrations, source, sound waves, particles, travel sound, volume, loudness, amplitude, pitch, soundwave, frequency vibrations, sound waves, sign language investigation, fair-test, factor (variable), prediction, results, resources, planning, muffle fair-test, evidence, results, conclusion, evaluate</p>	<p>alive, dead, never been alive, movement, reproduction, sensitivity, nutrition, excretion, respiration, growth, habitat, local habitat, living thing, alive, dead, never been alive, plant, animal, insect, local, natural, man-made, observation, record, vertebrate, invertebrate, arachnid, question classify, sort, group, similar, different, branching database, identify, variety, question, explore, key observation, details, identify,</p>	<p>teeth, incisors, molars, canines, jaw, evidence, digestion, chew, saliva, question, digestive system, nutrition, mouth, teeth, saliva, oesophagus (gullet), stomach, small intestine, large intestine, rectum, anus, faeces (poo), teeth, incisor, canine, molar, herbivore, carnivore, omnivore, digestion, diet, faeces food chain, producer, predator, prey, consumer, faeces, present, display, explain, predator, prey</p>	



		transpiration, cycle, particle, temperature, change, evidence		classify, observation, detail group, teach		
Where Next?	Year 6 Understand how changing the components in a circuit can affect how the components function. For example, adding more batteries in a circuit will increase the brightness of the bulb and the volume of the buzzer; lengthening the wires in a circuit will decrease both.			Year 6 Recognise that classification across all living things is based upon observable characteristics, with organisms in the same group sharing a common set of characteristics that are unique to that group. Recognise that classification based on specific characteristics is done for many reasons: To help identify and organise the vast number of different living organisms To help understand how living organisms are related to each other and how they have changed over time To help scientists in their conservation efforts.		Year 6 Recognise that classification across all living things is based upon observable characteristics, with organisms in the same group sharing a common set of characteristics that are unique to that group. Recognise that classification based on specific characteristics is done for many reasons: To help identify and organise the vast number of different living organisms To help understand how living organisms are related to each other and how they have changed over time To help scientists in their conservation efforts.