

	Autumn Term		Spring Term	Summer Term	
Year 4	Classification Living things and their habitats	Electricity	Animals including humans (skeletons,)	States of matter including water cycle	Sound
Learning Objectives	<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 danger to living things. 	<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 a lamp will light in a simple series circuit, based on whether the lamp is part of a complete loop with a battery. Recognise that a switch opens and closes the circuit and associate this with whether a lamp lights in a simple series circuit. Recognise some common conductors and insulators, and associate metals with being good conductors. Know the difference between a conductor and an insulator, giving examples of each. Safety when using electricity. 	<ul style="list-style-type: none"> Identify that humans and some other animals have skeletons and muscles for support, protection and movement: Construct and interpret a variety of food chains, identifying producers, predators and prey 	<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 heated or cooled, and measure and research the temperature at which this happens in degrees Celsius. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	<ul style="list-style-type: none"> Know how sound is made associating some of them with vibrating. Know what happens to a sound as it travels from its source to our ears. Know the correlation between the volume of a sound and the strength of the vibrations that produced it. Know how sound travels from a source to our ears. Know the correlation between pitch and the object producing a sound.
Working Scientifically Skills	<ul style="list-style-type: none"> Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables 	<ul style="list-style-type: none"> Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables 	<ul style="list-style-type: none"> Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or 	<ul style="list-style-type: none"> Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions 	<ul style="list-style-type: none"> Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

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Enquiry	<ul style="list-style-type: none"> Research Classifying Pattern seeking 	<ul style="list-style-type: none"> Making predictions Asking questions Research 	<ul style="list-style-type: none"> Pattern seeking Research Observing and measuring 	<ul style="list-style-type: none"> Fair test Observation over time Pattern seeking Recording data Evaluating 	<ul style="list-style-type: none"> Research Pattern seeking Making predictions
Scientist	Cindy Looy (Environmental Change and Extinction)	Thomas Edison (First Working Lightbulb)	Marie Curie (Radiation / X-Rays)	Daniel Fahrenheit (Fahrenheit Temperature Scale / Invention of the Thermometer)	Alexander Graham Bell (Invented the Telephone)
Vocabulary	Environment, flowering, nonflowering, plants, animals, vertebrates, fish, amphibians, reptiles, mammals, invertebrate, human impact, nature reserves, deforestation.	Electricity, electric current, appliances, mains, crocodile clips, wires, bulb, battery cell, battery holder, motor, buzzer, switch, conductor, electrical insulator, component.	Herbivore, Carnivore, producer, consumer.	Solid, liquid, gas, particles, state, materials, properties, matter, melt, freeze, water, ice, temperature, process, condensation, evaporation, water vapour, energy, precipitation, collection,	Amplitude, volume, quiet, loud, ear, pitch, high, low, particles, instruments, wave
Sticky Knowledge	<ul style="list-style-type: none"> Living things can be divided into groups based upon their characteristics Environmental change affects different habitats differently Different organisms are affected differently by environmental change Different food chains occur in different habitats Human activity significantly affects the environment 	<ul style="list-style-type: none"> A source of electricity (mains of battery) is needed for electrical devices to work. Electricity sources push electricity round a circuit. More batteries will push the electricity round the circuit faster. Devices work harder when more electricity goes through them. A complete circuit is needed for electricity to flow and devices to work. Some materials allow electricity to flow easily and these are called conductors. Materials that don't allow electricity to flow easily are called insulators. 	<ul style="list-style-type: none"> Nutrients produced by plants move to primary consumers then to secondary consumers through food chains. 	<ul style="list-style-type: none"> Solids, liquids and gases are described by observable properties. Materials can be divided into solids, liquids and gases. Heating causes solids to melt into liquids and liquids evaporate into gases. Cooling causes gases to condense into liquids and liquids to freeze into solids. The temperature at which given substances change state are always the same. 	<ul style="list-style-type: none"> Sound travels from its source in all directions and we hear it when it travels to our ears. Sound travel can be blocked. Sound spreads out as it travels. Changing the shape, size and material of an object will change the sound it produces. Sound is produced when an object vibrates. Sound moves through all materials by making them vibrate. Changing the way an object vibrates changes its sound. Bigger vibrations produce louder sounds and smaller vibrations produce quieter sounds. Faster vibrations (higher frequencies) produce higher pitched sounds
Key questions	<ul style="list-style-type: none"> What food chains and webs are there in our local habitat? 	<ul style="list-style-type: none"> What would life be like without electricity? 	<ul style="list-style-type: none"> Why do we need a skeleton? What types of skeleton are there? Are all skeletons the same? 	<ul style="list-style-type: none"> How does the amount of water added to flour affect its state? 	<ul style="list-style-type: none"> How can you change the volume of a sound?

	<ul style="list-style-type: none"> • How does energy move through the food chain? • How does removal of one species from an environment, affect others? (keystone species) • How does environmental change affect different organisms? • What are the most important things we could do to improve our outside area? (big hotels, pond, compost, wildflowers) • How does human activity affect our environment (ferries on the Solent? Sandown Airport? KFC?) 	<ul style="list-style-type: none"> • What sorts of things use/need electricity? • What electricity do I use? • In which ways can we 'get' electricity? (mains/plugs/batteries/wireless) • How do we make electricity? • How do batteries work? • How quickly can batteries run out? Does this make a difference depending on number of components? • How does the number of batteries added to the circuit affect a device? • What materials can carry electricity? (conductors/insulators) 	<ul style="list-style-type: none"> • Can something survive without a skeleton? • What happens if we break a bone? • How do we move? • Are bones that are bigger, stronger? • Why do we need joints? • Why do muscles get tired? • Can we 'break' muscles? • Do all organisms eat the same things? 	<ul style="list-style-type: none"> • How does the amount of detergent added to water affect how slippery it is? • How does the temperature affect how viscous a liquid is (use cooking oil)? • Place a peach in a glass of lemonade and watch it spin. Why does it behave that way, and can you prove it? • How does the material sprinkled on ice and snow affect how quickly it melts? • What chocolate would be best to smuggle? How does the type of chocolate affect its melting temperature? • What is the melting temperature of ice and how does it compare with the freezing temperature of water? • Is the melting temperature of wax the same as its freezing temperature? 	<ul style="list-style-type: none"> • How does the size of an ear trumpet affect the volume of sound detected? • How does the type of material affect how well it blocks a sound? • How does thickness of material affect how well it blocks a sound? • Which materials vibrate better and produce louder sounds? Can we identify any patterns? • Which materials make the best string telephone components? (tin cans, paper cups, plastic cups, wire, cable, string, plastic or elastic – predict and test) • How does length of the tube (when making a straw oboe) affect the pitch and volume? • Can you predict the relative pitch of tuning forks from the patterns of ripples they make in the water?
Prior Learning	<p>In Year 2, children should:</p> <ul style="list-style-type: none"> • Explore and compare the difference between things that are living, dead and things that have never been alive. • 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 micro habitats. • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name the different sources of food. 	<p>In Early Years children:</p> <ul style="list-style-type: none"> • May have some understanding that objects need electricity to work. • May understand that a switch will turn something on or off. 		<p>In KS1 children should:</p> <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 based on their simple physical properties. • 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. 	<p>In KS1 children:</p> <ul style="list-style-type: none"> • May have some understanding that objects make different sounds. • Some understanding that they use their ears to hear sounds. • Know about their different senses.
Future Learning	<p>In Year 6:</p> <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. 	<p>In Year 6 children will:</p> <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 buzzers and the on/off position of switches. 	<p>In Year 6 children will:</p> <ul style="list-style-type: none"> • Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird. • Know the differences between different life cycles. • Know the process of reproduction in plants. • Know the process of reproduction in animals 	<p>In Year 5 children will:</p> <ul style="list-style-type: none"> • Compare and group together everyday materials based on 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. 	<p>In KS3 children will learn about:</p> <ul style="list-style-type: none"> • frequencies of sound waves measured in hertz (Hz), echoes, reflection and absorption of sound • sound needs a medium to travel, the speed of sound in air, in water, in solids • sound produced by vibrations of objects, in loudspeakers, detected by their effects on microphone diaphragm and the ear drum; sound waves are longitudinal

		<ul style="list-style-type: none">• Use recognised symbols when representing a simple circuit in a diagram.		<ul style="list-style-type: none">• 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 uses of everyday materials, including wood, metals 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 this kind of change is usually not reversible, including changes associated with burning and the action of acid on bicarbonate of soda.	<ul style="list-style-type: none">• auditory range of humans and animals.
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