SCIENCE CURRICULUM OVERVIEW LINKED TO NATIONAL CURRICULUM.

Year 4	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Living things and their Habitats	**Animals Including Humans**	**Animals Including Humans**	**States of matter**	**Sound**	**Electricity**
Working Scientifically **Iks2w1**: asking relevant questions and using different types of scientific enquiries to answer them **Iks2w2**: setting up simple practical enquiries, comparative and fair tests **Iks2w3**: making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers **Iks2w4**: gathering, recording, classifying and presenting data in a variety of ways to help in answering questions **Iks2w5**: recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables **Iks2w6**: reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions **Iks2w7**: using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions **Iks2w8**: identifying differences, similarities or changes related to simple scientific ideas and processes **Iks2w9**: using straightforward scientific evidence to answer questions	In this 2-player game, children cut out 24 images of animals and 12 challenge cards. They take turns challenging each other to group the images according to the challenge cards. Groups include tetrapods, herbivores, and mammals. When they have finished, children choose their favourite grouping method and use it to complete a 1-set Venn diagram.	Children learn about the role of the human digestive system. They learn about the functions of the mouth, oesophagus, stomach, small intestine and large intestine. Children cut out pictures of the individual organs and paste them in place to complete a diagram, which they then label.		Children learn that many materials other than water will melt if heated to a high enough temperature. They carry out a networking activity, where each child has an incomplete set of information, to find out the melting points of 6 different metals, They record their information in a table and transfer it to a bar chart.	Children learn that sounds are caused by vibrations. They learn that sounds travel from an object, through a medium (usually the air), travel into the ear where they are carried down the ear canal and processed by the brain. Children complete an explanation text explaining how we hear things, by cutting and pasting or writing their own descriptions.	Children learn what electrical conductors and insulators are. Using simple electrical apparatus, they investigate which materials are electrical conductors and which are insulators. If possible, they note the material each object is made from. Children transfer their results from their table to a Venn diagram containing 2 intersecting sets ('electrical conductors' and 'made of metal') and try to identify a relationship.
	Children learn about 5 different groups of animals - fish, amphibians, reptiles, bird, and mammals - and how we can identify them from their body features, behaviour, and life cycles. Children cut out 20 different images of these animals and place them in the correct group. They explain what the animals in each group have in common.	Children learn about the functions of the mouth, oesophagus, stomach, small intestine and large intestine. They use this information to complete an explanation text with accompanying diagram by either cutting and pasting text or writing their own explanation.		Children learn about the differences between solid, liquids and gases and how they can be identified. They cut out 14 different images of familiar substances and group them as solid, liquids or gases. They discuss which materials were most difficult to group and how temperature can affect whether it is a solid, liquid or a gas.	Children investigate how effective 5 different materials are at blocking sound. Recognising the difficulty of accurately measuring the loudness of a sound, they make each measurement 3 times and choose the median. Children use their results to create a bar chart and place the materials in order of effectiveness as sound insulators.	Children cut out pictures of 10 familiar household machines. They place them in 2 groups - those that need electricity to work, and those that do not. They think about non-electrical alternatives to electrical machines, and vice versa.
	Children learn that animals can be classified as vertebrates (having a spine) or invertebrates (lacking a spine). They cut out 15 different pictures of animals and place them in the correct group.	Children learn that humans have 2 sets of teeth, and that teeth can be classified into different groups. They learn about the number, location and function of the incisors, canines and molars. They create a colour-coded diagram explaining the role of each type of tooth.		Using the particle model, children learn about the different states of matter (solids, liquids, and gases). They learn how the amount of energy that the particles have affects the state of the material. Children use scientific vocabulary (melt, freeze, evaporate, condense) to create a diagram explaining how matter changes state.	Children learn about the difference between pitch and volume. They carry out an investigation where they place 5 different water containers in order, depending on the pitch made when air is gently blown across the top of each. They attempt to find a pattern and explain their results.	Children learn about 6 different electrical components - bulb, switch, cell, battery, switch, buzzer and bell. They match each component to its picture, description, and circuit diagram symbol.

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Knowledge and Understanding Statutory requirement **4a1**: recognise that living things can be grouped in a variety of ways **4a2**: explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment **4a3**: recognise that environments can change and that this can sometimes pose dangers to living things. **4b1**: describe the simple functions of the basic parts of the digestive system in humans **4b2**: identify the different types of teeth in humans and their simple functions **4b3**: construct and interpret a variety of food chains, identifying producers, predators and prey. **4c1**: compare and group materials together, according to whether they are solids, liquids or gases **4c2**: 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) **4c3**: identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **4d1**: identify how sounds are made, associating some of them with something vibrating **4d2**: recognise that vibrations from sounds travel through a medium to the ear	Children learn that a dichotomous key (a branching classification key in which each question has exactly two answers) can be used to identify organisms. Children use the key provided to identify 12 different animals. They use a word bank to help them name the animals.	Children learn that teeth are made up of different materials (enamel, dentine, pulp) and are embedded in the gums and skull/jawbone. Children create their own labelled diagram showing these different parts and their functions, by cutting and pasting or writing their own descriptions.		Children investigate the melting point of 3 familiar materials - ice, chocolate and butter. They use a thermometer to measure temperature and record their results in a table. They discuss how accurate their predictions were and whether melting is a reversible change.	Children explore how a string instrument makes a sound. Using an ice cream tub, elastic bands, and Lego blocks, they create their own string instrument. They explore how adding more Lego blocks affects the pitch of each string (band).	Children learn what an electrical circuit is. Using simple apparatus, they look at illustrations of 5 different circuits and attempt to create them. They attempt to create the circuit diagram for each, and explain what happens when each circuit is completed.
	Children use a dichotomous classification key to identify 9 different types of invertebrate (centipede, slug, worm, snail, ant, beetle, woodlouse, spider and millipede). They cut and paste them in place and name them with the help of a word bank.	Children learn about the stages of tooth decay and how it can be caused. They learn how tooth decay can be prevented and treated. Children use a writing frame to complete an interview text, imagining themselves in the role of a dentist and explaining how we can look after our teeth.		Children investigate how effective 4 different materials are at insulating a cold drink and slowing its increase in temperature. They use thermometers to measure the temperature of each cup every 15 minutes over the course of 2 hours. Children record their information in a table and then create a line graph showing the temperature of all 4 cups over a 2-hour period.	Children learn that pitch and volume are two different properties of sounds. Children investigate the pitch and volume of the sound made when 5 different balls are dropped. Recognising the difficulty of measuring pitch and volume without equipment, children make 5 measurements and then choose the modal value. Children transfer their results to a scatter graph showing both pitch and volume.	Children look at 5 different circuit illustrations. In each circuit, the bulb will not light. Children explain how each circuit can be changed so that the bulb will light. If possible, they test their ideas with simple apparatus. They attempt to draw a circuit diagram for their improved circuits.
	Children investigate the local area and draw pictures of 8 different organisms. They create their own classification key by repeatedly asking dichotomous questions (with exactly two answers), splitting the group up until each group only has one member. They discuss the best sort of questions to ask when making a classification key.	Children lean what a food chain is and that the arrow shows energy flow within an ecosystem. Children use the pictures provided to create food chains with 2 and 3 organisms. They identify each organism using a word bank and whether they are a predator, prey, consumer or producer.		Children learn about the water cycle and that water is not created or lost, but simply moved around the Earth. They learn that heat from the Sun drives the water cycle. Children create their own water cycle diagram, explaining the processes of evaporation, condensation and precipitation by cutting and pasting or using their own words.	Children investigate how dropping a weight from different heights onto a drum affects the volume of the sound produced. Recognising the difficulty of measuring volume without equipment, children take each measurement 5 times and find the mean. Children create a line graph showing their results and attempt to explain the relationship between the height of the weight and the volume of the sound made.	Children learn what an electrical switch is and how it works, by opening and closing a break in a circuit. Children look at 4 different circuit diagrams. They predict and then observe whether the switch will function correctly when placed in different positions in the circuit. They attempt to find a general rule from their findings.
	Children select a habitat in the local environment. They draw a picture of how it appears now, and describe or measure the weather, temperature and hours of daylight. They predict what this habitat will look like in 6 months' time, and identify	Children learn that a food web is a way of showing the energy flow in an ecosystem in a more complex way. They create a food web containing 8 different organisms. They identify and label each organism as a consumer,		Children learn how to make their own solar still to recover water. They learn that solar heating of water-laden soil causes some water to evaporate, which can then be captured by a plastic sheet where it evaporates and is	Working on the yard or in the school hall, children investigate the maximum distance at which somebody can hear one of 5 body sounds (hand clap, sniff, cough, foot stamp and thigh slap). They place each sound in order of loudness	Children learn that mains electricity is more dangerous than the electricity used in Primary Science lessons. They learn that the human body, metal, and water all conduct electricity. Children look at illustrations of 8 different

4d3: find patterns between the pitch of a sound and features of the object that produced it **4d4**: find patterns between the volume of a sound and the strength of the vibrations that produced it **4d5**: recognise that sounds get fainter as the distance from the sound source increases. **4e1**: identify common appliances that run on electricity **4e2**: construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers **4e3**: 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 **4e4**: recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit **4e5**: recognise some common conductors and insulators, and associate metals with being good conductors.	any changes that might take place. If possible, children revisit the site in 6 months and investigate the habitat as it actually appears.	producer, predator, prey, and apex predator. They add their own arrows to show energy flow through the food web.		recovered by a bowl or mug. They explain how the solar still works.	and create a bar chart showing their results. They discuss the difficulty of getting accurate results without measuring equipment and ways of improving the investigation.	dangerous situations. They identify what the danger is and how it can be made safe.
	Children learn what deforestation is, and why humans deliberately choose to cut down trees and destroy forests. They learn about several negative effects of deforestation. Children use the writing frame provided to create their own information text on deforestation.			Children investigate how rapidly 100ml of water placed in locations with different temperatures will evaporate. Using a table, they record the capacity of 4 different measuring containers over the course of 14 days. They complete a line graph showing the capacity of all 4 containers over that period. They learn how a line graph can help us infer missing results (such as weekend measurements).	Working on the schoolyard, children investigate the height a ball needs to be dropped from in order to be heard at different distances. Children predict and then measure the minimum height required, recording their results in a table. They create a line graph and explore the link between the distance and the minimum height (and therefore volume) required.	

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