Year 4 Science

Science Unit	Substantive Knowledge Objectives	Vocabulary	Disciplinary Knowledge: Working scientifically
Animals including humans Dr Marie Daly: First black woman to earn a PHD in chemistry. She researched high cholesterol diets.	• 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 • construct and interpret a variety of food chains, identifying producers, predators and prey https://www.pbs.org/education/blog/ten-black-scientists-that-science-teachers-should-know-about-and-free-resources	Digestive system, nutrition, mouth, teeth, canine, incisor, molar, pre-molar, saliva, tongue, rip, tear, chew, grind, cut, oesophagus (gullet), stomach, acid small intestine, large intestine, rectum, anus, carnivore, herbivore, omnivore, producer, consumer, predator, prey, food chain	• **(WS)** Asking relevant questions and using different types of scientific enquiries to answer them • **(WS)** Setting up simple practical enquiries, comparative and fair tests • **(WS)** Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • **(WS)** Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
Sound Key Scientists AristotlGailileo GalileiAlexander Graham Bell	• identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases	Sound, sound source, noise, vibration, travel, solid, liquid, gas, pitch, tune, high, low, volume, loud, quiet, fainter, muffle, strength of vibrations, insulation, instrument, percussion, strings, bass, woodwind, tuned instrument	• **(WS)** Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • **(WS)** Setting up simple practical enquiries, comparative and fair tests • **(WS)** Identifying differences, similarities or changes related to simple scientific ideas and processes
Electricity Key Scientists Thomas Edison(First Working Lightbulb)Joseph Swan(Incadesecant Light Bulb)	• 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	Electricity, appliance, device, mains, plug, electrical circuit, complete circuit, circuit diagram, circuit symbol, components, cell, battery, positive/negative, connect, connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, motor, faster/slower, conductor, insulator, metal/non metal	• **(WS)** Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • **(WS)** Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • **(WS)** Using straightforward scientific evidence to answer questions or to support their findings. • **(WS)** Asking relevant questions and using different types of scientific enquiries to answer them • **(WS)** Identifying differences, similarities or changes related to simple scientific ideas and processes
States of Matter Key Scientists Anders CelciusDaniel Fahrenheit	• 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	States of matter, solid, liquid, gas, air, oxygen, powder, granular/grain, crystals, change state, ice/water/steam, water vapour, heating, cooling, temperature, degrees Celsius, melt, freeze, solidify, melting point, boil, boiling point, evaporation, condensation, water cycle, precipitation, transpiration	• **(WS)** Identifying differences, similarities or changes related to simple scientific ideas and processes • **(WS)** Setting up simple practical enquiries, comparative and fair tests • **(WS)** Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • **(WS)** Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
Living things and their habitats Key scientists Cindy LooyJaques Cousteau	• 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	Classification keys, environment, fish, amphibians, reptiles, birds, mammals, vertebrates, invertebrates, names of them, human impact, positive, negative	• **(WS)** Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • **(WS)** Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • **(WS)** Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • **(WS)** Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions

			• **(WS)** Using straightforward scientific evidence to answer questions or to support their findings