



TOPIC	LIVING THINGS AND THEIR HABITATS (CLASSIFICATION)	ANIMALS INCLUDING HUMANS (CIRCULATORY SYSTEM AND HOW BODIES FUNCTION)	ELECTRICITY (COMPONENTS FUNCTIONS AND VARIATIONS)	LIGHT	EVOLUTION AND INHERITANCE
KEY SCIENTIST	Carl Linnaeus (Animal researcher)	Harshnira Patani (Senior Scientist in Drug Discovery)	Michael Faraday (Physicist)	Edith Clarke (Electrical Engineer)	Charles Darwin (Naturalist)
NATIONAL CURRICULUM OBJECTIVES (SUBSTANTIVE KNOWLEDGE)	<ul style="list-style-type: none"> describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals give reasons for classifying plants and animals based on specific characteristics 	<ul style="list-style-type: none"> identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function describe the ways in which nutrients and water are transported within animals, including humans 	<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 use recognised symbols when representing a simple circuit in a diagram 	<ul style="list-style-type: none"> recognise that light appears to travel in straight lines use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them 	<ul style="list-style-type: none"> recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
SCIENTIFIC ENQUIRY (DISCIPLINARY KNOWLEDGE)	<ul style="list-style-type: none"> Make decisions about what questions to investigate and how best to investigate them. Use and develop keys to identify, classify and describe living things and materials. Choose appropriate ways to record and present information, findings and conclusions for different audiences e.g. displays, oral or written explanations. 	<ul style="list-style-type: none"> Make decisions about what questions to investigate and how best to investigate them. Select and plan the most suitable test to answer a particular question, including which variables need to be controlled and why. Make their own decisions about which observations to make using test results and observations to make predictions or set up further comparative or fair tests. Choose appropriate ways to record and present information, findings and conclusions for different audiences e.g. displays, oral or written explanations. 	<ul style="list-style-type: none"> Make decisions about what questions to investigate and how best to investigate them. Select and plan the most suitable test to answer a particular question, including which variables need to be controlled and why. Make their own decisions about which observations to make using test results and observations to make predictions or set up further comparative or fair tests. Choose appropriate ways to record and present information, findings and conclusions for different audiences e.g. displays, oral or written explanations. 	<ul style="list-style-type: none"> Make decisions about what questions to investigate and how best to investigate them. Select and plan the most suitable test to answer a particular question, including which variables need to be controlled and why. Make their own decisions about which observations to make using test results and observations to make predictions or set up further comparative or fair tests. Choose appropriate ways to record and present information, findings and conclusions for different audiences e.g. displays, oral or written explanations. 	<ul style="list-style-type: none"> Make decisions about what questions to investigate and how best to investigate them. Choose appropriate ways to record and present information, findings and conclusions for different audiences e.g. displays, oral or written explanations.
SUGGESTED TASKS	<ul style="list-style-type: none"> Classify by sub dividing micro organisms, animals and plants. Classify vertebrates and invertebrates Reason why animals are classified in one group and not another (justify the choice) Classify and group unfamiliar and common animals and plants that require more justification from research (builds on from Y4 simple classification) 	<ul style="list-style-type: none"> Explain and draw the circulatory system, making reference to its job. Linking this to Y4 digestive system and knowledge about the brain, heart and lungs. Investigate the impact of exercise (link to PE) on health by: composing a question to answer, making predictions, taking measurements and recording. Study the impact of drugs on a healthy lifestyle (link to PHSE) and how the body can be damaged. Describe and draw the way that water and nutrients are transported in humans and animals. (ipad presentation) 	<ul style="list-style-type: none"> Draw and plan a circuit for a set brief using symbols Experiment with changing the buzzer sound and the brightness of the bulb (building on from Y4 how many bulbs a cell can light) a luxmetre can measure bulb brightness. Predict and record results in a line graph. 	<ul style="list-style-type: none"> Explore light travelling and draw diagrams to explain. Explain how a periscope would have worked in the war. Use a clear cup, water and a pencil to see what happens to light when it hits water. Explore blocking light to create shadows, noting the shape. (linking to silhouettes) Create and sketch shadows of objects from different angles. 	<ul style="list-style-type: none"> Explore how humans have changed over time Investigate how characteristics are passed to offspring Observe the characteristics when two breeds of the same animal are combined Look at natural adaptation over time: ie Pigs, cows, horses, sharks, giraffe, elephants and explain why they have adapted. Study the work of Darwin or Mary Anning and summarise their key findings. Compare 'the best' is it better to have...2 feet or 4, long or short beaks, no flowers or bright flowers and does opinion this change depending on habitat?

<p>STICKY KNOWLEDGE</p>	<ul style="list-style-type: none"> Variation exists within a population (and between offspring of some plants) - NB: this Key Idea is duplicated in Year 6 Evolution and Inheritance. Organisms best suited to their environment are more likely to survive long enough to reproduce. Organisms reproduce and offspring have similar characteristic patterns. Competition exists for resources and mates. Scientists, called Taxonomists, sort and group living things according to their similarities and differences. 	<ul style="list-style-type: none"> The heart pumps blood around the body. Oxygen is breathed into the lungs where it is absorbed by the blood. Muscles need oxygen to release energy from food to do work (Oxygen is taken into the blood in the lungs; the heart pumps the blood through blood vessels to the muscles; the muscles take oxygen and nutrients from the blood) Drugs, alcohol and smoking have negative effects on the body. 	<ul style="list-style-type: none"> Batteries are a store of energy. This energy pushes electricity around the circuit. When the battery's energy is gone it stops pushing. Voltage measures the 'push' Symbols for: lamp, wire, buzzer, cell, battery, motor, switch (open), switch (closed). A series circuit will not work if a lamp is broken or a wire is disconnected. 	<ul style="list-style-type: none"> Animals see light sources when light travels from the source into their eyes. Animals see objects when light is reflected off that object and enters their eyes. Light reflects off all objects (unless they are black). Non shiny surfaces scatter the light so we don't see the beam. Light travels in straight lines, called rays or beams of light. 	<ul style="list-style-type: none"> Life cycles have evolved to help organisms survive to adulthood. Over time the characteristics that are most suited to the environment become increasingly common.NB: The following could be duplicated in Year 6 Living things and their habitats. Organisms best suited to their environment are more likely to survive long enough to reproduce. Organisms best adapted to reproduce are more likely to do so. Organisms reproduce and offspring have similar characteristic patterns. Variation exists within a population (and between offspring of some plants). Competition exists for resources and mates.
<p>PRIOR LEARNING</p> 	<p>Year 1 - Plants (Identify and describe basic structure)</p> <p>Year 2 - Living things and their habitats (Identifying habitats and needs) & Plants (How seeds and bulbs grow and mature and plants needs)</p> <p>Year 3 - Living things and their habitats (Plants)</p> <p>Year 4 - Living things and their habitats (Grouping & Identifying and Environmental changes)</p> <p>Year 5 - Living things and their habitats (Life Cycles and reproduction)</p>	<p>Year 1 - Animals including humans (Identifying and classifying animals and body parts)</p> <p>Year 2 - Animals including humans (Offspring growing into adults and animals basic needs) Healthy Me (Exercise, diet and hygiene)</p> <p>Year 3 - Animals including humans (Skeletons and nutrition)</p> <p>Year 4 - Animals including humans (Food chains, Teeth and Digestion)</p> <p>Year 5 - Animals including humans (Changes in human development)</p>	<p>Year 4 - Electricity (Simple Circuits and Insulators & conductors)</p>	<p>Year 3 - Light</p> <p>Year 4 - Sound</p>	<p>Year 3 - Animals including humans (Skeletons and nutrition)</p> <p>Year 4 - Animals including humans (Food chains, Teeth and Digestion)</p> <p>Year 5 - Animals including humans (Changes in human development)</p>
<p>FUTURE LEARNING</p> 	<p>KS3 Relationships in an ecosystem Cells and organisation in plants</p>	<p>KS3 Gas exchange systems</p>	<p>KS3 Current electricity</p>	<p>KS3 - Light Waves</p>	<p>KS3 Reproduction in humans, The skeletal and muscular systems, Inheritance, chromosomes, DNA and genes</p>
<p>VOCABULARY</p>	<p>amphibians, animals, bacteria, birds, characteristics, classification system, classified, differences, fish, groups, habitats, insects, invertebrates, key, living things, mammals, micro-organisms, organisms, plants, reptiles, similarities, snails, spiders, subdivided, variation, vertebrates, worms</p>	<p>animals, artery, blood, blood vessels, circulatory system, damaged, deoxygenated, diet, digestive system, drugs, exercise, functions, harm, health, heart, human, impact, internal organs, lifestyle, muscular system, nutrients, oxygenated, respiration, skeletal system, substances, transported, valve, veins, water</p>	<p>brightness, bulb, buzzer, cells, circuits, components, diagram, function, insulator, lamp, loudness, motor, series circuit, switches, symbols, variations, voltage, volume</p>	<p>beam, cast, coloured filters, emitted, eye, glare, light, light source, periscope, rainbows, reflect, reflection, shadows, straight lines, Sun, travel, visible</p>	<p>adapted, adaption, breed, changed, characteristics, competitions, environment, evolution, fossils, identical, inhabited, inherited, living things, mutation, offspring, parents, produce, reproduction, suit, survive, survival of the fittest, variation, vary</p>
<p>SCIENCE CAPITAL</p>	<ul style="list-style-type: none"> Who might need knowledge of classifying animals in their jobs? Real world application. 	<ul style="list-style-type: none"> Who might use circulatory system knowledge in their jobs? Real life applications. Impact on not understanding it. Impact on poor choices to own health. 	<ul style="list-style-type: none"> Electricity used in the home. Use of electricity in the wider world. Jobs that rely on the use of electricity. 	<ul style="list-style-type: none"> Why do people need glasses? Who relies on light for their jobs? Light in the real world - rainbows 	<ul style="list-style-type: none"> Who might need knowledge of evolution and inheritance in their jobs? Real world application.