

Term	Title	Unit Content	Key Vocabulary	Key Resources Needed
Autumn 1	<b>Living things and their habitats</b>	<p><u>Conditions for life</u>  Define an organism  State what animals and plants need to survive  Describe how to know if something is living or non-living</p> <p><u>Group organisms</u>  Define vertebrates and invertebrates  State features of different vertebrate groups  State which plants are flowering or non-flowering</p> <p><u>Classify animals</u>  State some example classifying keys and why they're important  Describe the difference between open and closed questions</p> <p><u>Classify plants</u>  State some features of flowering and non-flowering plants  State features of coniferous trees  Describe the differences between deciduous and evergreen trees</p> <p><u>Microorganisms</u>  Define microorganism  State where bacteria can be found and what they do  state what disease viruses and infections fungi can cause</p> <p><u>Classify microorganisms</u>  State how microorganisms can be classified  Describe similarities &amp; differences between bacteria, fungi and viruses</p> <p><u>Carl Linnaeus</u>  Explain why Linnaeus created a classification system  Describe how Linnaeus classified animals and plants  Explain how advances in science allowed us to identify, group and classify microorganisms</p>	<p>Organism, excretion, reproduction, living, non-living</p> <p>Organism, vertebrate, invertebrate, flowering plant</p> <p>Classification key, mollusc, arachnid, classification</p> <p>Deciduous tree, evergreen tree, coniferous tree</p> <p>Microorganism, bacteria, virus, fungi</p> <p>Microscope, organism, microorganism</p> <p>Characteristics, Carl Linnaeus, vertebrate invertebrate</p>	<p>Images of flowering and non-flowering plants, coins</p> <p>3 circular buttons, 2 square buttons</p> <p>Different shaped leaves, images of plants</p> <p>Sliced bread, clear resealable bags, water</p>

Autumn 2	<b>Electricity</b>	<p><u>Construct and draw series circuits using symbols</u>  Define and draw a series circuit  Draw common circuit symbols (cell, bulb, battery and wires)  Define current and voltage  Predict what would happen if the cells were removed from a series circuit</p> <p><u>Complete and incomplete circuits</u>  Describe a complete and incomplete circuit  Describe the role of a switch in a circuit  Describe what happens to the current in an incomplete circuit</p> <p><u>Variations within circuits</u>  Describe the effect of more components on the brightness of a bulb  Describe the effect of more components on the loudness of a buzzer  Explain why more components decreases the brightness/loudness</p> <p><u>Voltage experiment</u>  Design a circuit to investigate voltage  Write a clear method  Predict how increasing voltage affects loudness of a buzzer  Evaluate a practical and suggest improvements</p>	<p>Series circuit, cell, battery, bulb, current, voltage</p> <p>Complete circuit, incomplete circuit, switch, buzzer</p> <p>Series circuit, cell, bulb, current, voltage, buzzer</p> <p>Variables (control, dependent and dependent), voltage, current, repeatability</p>	<p>Cells, wires, bulbs, switches, buzzers, rulers, crocodile clips</p> <p>Cells, wires, bulbs, switches, buzzers, rulers, crocodile clips</p> <p>Cells, wires, bulbs, switches, buzzers, rulers, crocodile clips</p> <p>Cells, wires, bulbs, switches, buzzers, rulers, crocodile clips</p>
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Autumn 2	<b>Renewable energy</b>	<p><u>What is renewable energy?</u>          State the fossil fuels          Describe how wind and solar power can be used to generate electricity          State some advantages and disadvantages of wind and solar power          Describe the differences between renewable and non-renewable energy sources</p> <p><u>Using renewable energy</u>          Describe how solar panels work          Describe how wind turbines work          Explain how solar panels and wind turbines help the environment          State some advantages and disadvantages of solar panels and wind turbines</p>	<p>Solar power, wind power, renewable, non-renewable</p> <p>Solar panel, wind turbine, global warming, greenhouse gases</p>	<p>Mini solar panels, wires, crocodile clips, bulbs, switches</p> <p>Card, pencil, sticky tape, hair dryer, scissors</p>
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Spring 1	Light	<p><u>How we see</u> Describe the difference between a natural and an artificial light source Label and describe the function of the pupil, retina, lens and iris Explain how we see objects</p>	Light source, iris, retina, pupil, lens	Selection of luminous and non-luminous objects, eye diagram/ model
		<p><u>Light and straight lines</u> Describe how light travels Define reflection Explain how humans can see objects, even in a dark room</p>	Light source, reflection, ray diagram, angle, periscope	Cardboard, plastic mirrors, torches
		<p><u>Shadow formation</u> Define transparent, translucent and opaque Describe what a shadow is and how they are formed Explain how the shape of an object affect the shape of its shadow</p>	Shadow, opaque, translucent, transparent, solar eclipse	Torches, opaque objects, PE balls, cut out shapes
		<p><u>Shadow experiment</u> Investigate how the distance from an object to the light source or a wall effects the size of the shadow Make a prediction Evaluate data to draw a conclusion</p>	Independent, dependent and control variable, shadow, opaque	Torches, tape measure, opaque objects, light sources with different brightness
		<p><u>Refraction</u> Define refraction Explain why a pencil in water can look bent Describe what causes changes in direction of light during refraction</p>	Refraction, medium, transparent, lens	Plastic/glass block, water glass, pencil, torch and card with a thin slit
		<p><u>Explore light</u> Describe the spectrum of white light Explain how rainbows are formed State who Isaac Newton was and what he discovered about light State who Ibn Al-Haytham was and what he discovered about light Describe how we can make white light appear a different colour</p>	Refraction, rainbow, prism, coloured filter, spectrum of light	Torch and card with a thin slit, coloured filters

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Spring 1</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Light pollution</b></p>	<p><u>What is light pollution</u>  Describe light pollution  Define glare, light trespass and skyglow  Explain why its essential to use outdoor lights wisely  Describe how light pollution impacts animals and their habitats</p> <p><u>How can we reduce light pollution</u>  Explain why light pollution is an issue  Explain some changes you can make to reduce light pollution  State some examples of light pollution in schools and homes</p>	<p>Migration, glare, light trespass, skyglow, light pollution</p> <p>Urban, rural, light emission, appliance, light pollution</p>	<p>Images of adults, birds and nocturnal and marine animals</p> <p>Pictures or labels of devices linked to light pollution</p>
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Spring 2

**The circulatory system**

The circulatory system

Describe the function of the circulatory system  
Name the three main parts of the circulatory system  
Describe the function of the heart and blood vessels  
Name the three main types of blood vessels

Blood

Describe is the role of blood in the circulatory system  
Describe the names and functions of each part of our blood  
State where we get oxygen and nutrients from  
Explain why we need white blood cells

The heart

Describe the function of the heart in the circulatory system  
Name the four chambers of the heart  
Describe how the heart works  
Explain why our heart needs to pump blood around the body?

Blood flow in the heart

Describe what arteries and veins do  
Describe how the veins make sure blood only moves in one direction  
Explain why it's important that blood only moves in one direction

Oxygenated and deoxygenated blood

Describe the function of the circulatory system  
Describe similarities and differences between veins and arteries  
Define oxygenated and deoxygenated blood  
Explain the function of each side of the heart

Dissection of the heart

Describe the physical differences between sides of the heart  
Describe the function of each side of the heart  
Explain why there is a difference between the left and right sides of the heart

Circulatory system,  
heart, blood vessel,  
veins, arteries,  
capillaries

Red blood cell,  
white blood cell,  
lungs, nutrients,  
plasma, oxygen

Heart, atria,  
ventricles, right  
atrium, right  
ventricle, left atrium,  
left ventricle

Atria, ventricles,  
blood vessels, veins,  
arteries, capillaries

Lungs, oxygenated  
blood,  
deoxygenated  
blood, capillaries

Heart, atria,  
ventricles, dissection

Diagram of blood  
vessels

Diagram showing  
contents of the  
blood, materials  
to make a model

Stethoscopes,  
cocktail sticks,  
mini  
marshmallows

blank heart  
template

large print out of  
circulatory  
system, blue and  
red counters

heart, scalpel  
(adult use)  
scissors, boards,  
table covers

Spring 2	<b>Diet, drugs and lifestyle</b>	<p><u>Diet</u> Describe a balanced diet State the functions of proteins, carbohydrates, fats, vitamins and minerals Describe the difference between saturated, unsaturated &amp; trans fats state some benefits of eating foods high in vitamins and minerals</p> <p><u>Drugs</u> Define 'drug' and state some examples Describe what painkillers do and the effect they have on the body Describe what stimulants do and the effect they have on the body Describe what addiction is State why some drugs are legal and others are illegal</p> <p><u>Cigarettes</u> State what cigarettes contain Describe the effects of tar, nicotine and carbon monoxide on the body Explain why smoking and vaping is bad for you Explain how it is possible to become addicted to smoking/ vaping</p> <p><u>Heart rate experiment</u> Describe the positive impacts of exercise on the body State what your heart rate is and how to measure it Plan an experiment to investigate the effects of exercise on heart rate Draw conclusions from data and evaluate an experiment</p>	<p>Balanced diet, calories, unsaturated fats, saturated fats, trans fats</p> <p>Drug, painkiller, simulate, depressant, addiction</p> <p>Cigarette, vape, tar, nicotine, carbon monoxide, addiction</p> <p>Heart, heart rate, duration, conclusion, evaluation</p>	<p>Images of a variety of foods</p> <p>Images of pain killers, drinks with stimulants</p> <p>Images of cigarette packets</p> <p>Stopwatch, cards with variables and their definitions</p>





<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Summer 1</p>	<p style="writing-mode: vertical-rl; transform: rotate(180deg);"><b>Adaptations</b></p>	<p><u>Animal adaptations</u>  Define the terms 'adaptation' and 'habitat'  Describe the conditions of a polar habitat and explain how animals who live there are adapted to that habitat  Describe the conditions of a desert habitat and explain how animals who live there are adapted to that habitat</p> <p><u>Plant adaptations</u>  Describe the kinds of habitats that plants live in  Describe some characteristics of plants in a desert habitat  Explain how these characteristics help them to survive</p> <p><u>Evolution</u>  Describe evolution and state what types of organisms evolve  Explain what evolution allows organisms to do and why its important for animals and plants</p> <p><u>Charles Darwin</u>  State who Charles Darwin was and why his work was important  Define what is meant by a 'common ancestor'</p> <p><u>Natural selection</u>  Describe what 'natural selection' is  Explain why it's important that organisms pass on their characteristics to the next generation  Explain how natural selection causes evolution</p> <p><u>Darwin's finches</u>  State what islands Charles Darwin visited in 1835 and why  Describe what he notices about the finches on the Galapagos Islands  Explain the importance of Charles Darwin's work on Galapagos Islands</p>	<p>Characteristics, adaptations, polar habitat, desert habitat, habitat</p> <p>Characteristics, adaptations, polar habitat, desert habitat, habitat</p> <p>Evolution, characteristics, adaptations</p> <p>Evolution, theory, common ancestor</p> <p>Charles Darwin, natural selection</p> <p>Galapagos Islands, finch, evolution, adaptations</p>	<p>Images of animals with distinct adaptations and their habitats</p> <p>Different sized cardboard tubes, paint, glue, pipe cleaners, sand</p> <p>Images of different habitats, latops</p> <p>A3 or A4 paper</p> <p>A3 or A4 paper, different colour pens, crayons</p> <p>Spoons, chopsticks, tweezers, pens, marbles, rubber bands, seeds, stopwatch, beaker</p>
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Summer 2	Fossils	<p><u>Fossil formation</u> State what fossils are Describe how fossils are formed, including how long it takes Describe what sediment is</p> <p><u>Explore fossils</u> Explain why older fossils are found deeper in layers of rock Describe some similarities/ differences between older and newer fossils Explain how scientists can use fossils to show evolution over time</p> <p><u>Mary Anning</u> Describe how fossils are formed Describe who Mary Anning was and what she discovered Discuss some of the challenges Mary Anning faced Explain how Mary Anning's discoveries changed our understanding of fossils and evolution</p>	<p>Fossil, rock, decompose, skeleton</p> <p>Fossil, rock, Charles Darwin, evolution</p> <p>Fossil, rock, palaeontologist, Mary Anning, plesiosaur skeleton</p>	<p>Clear plastic cups, different colours jelly, jelly sweets</p> <p>Images or examples of fossils</p> <p>Resources to research Mary Anning, A4 paper</p>
Summer 2	Themed projects	<p><u>Melting Points</u> <i>Plan an investigation that will allow learners to:</i> 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 Measure the temperature which materials change state at</p> <p><u>Thermal conductivity</u> <i>Plan an investigation that will allow learners to:</i> Compare and group together everyday materials on the basis of their thermal conductivity Link uses of materials to their properties including: metals, wood and plastic</p>	<p>Temperature, variables, melting point, states of matter</p> <p>Properties, material, thermal conductivity, insulator, conductor</p>	<p>Scales, zip-lock bags, different types of chocolate, thermometer, warm water</p> <p>different materials for wrappers, scales, bowl, plate, chocolate, thermometer, stopwatch, warm water</p>