



Science Curriculum - Coverage and Outcomes - Knowledge and Skills

Key Stage 2

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Class						
POD	Unit: Animals including humans Focus: Biology Knowledge Outcomes: • I know that humans and other animals need food, water and air to survive. • I can name important parts of the human body and describe simple functions. • I know that exercise, nutrition and hygiene contribute to health.	Unit: Forces and magnets Focus: Physics Knowledge Outcomes: • I know that pushes and pulls are forces that can change movement. • I know that friction acts between surfaces. • I know magnets attract or repel and attract some materials.	Unit: Light Focus: Physics Knowledge Outcomes: • I know that light is needed to see and that darkness is the absence of light. • I know that light can be reflected from surfaces. • I know that shadows form when an opaque object blocks light.	Unit: Rocks Focus: Chemistry / Earth science Knowledge Outcomes: • I know that rocks have different properties and uses. • I know that fossils form from living things over very long periods. • I know that soil contains rock particles and organic material.	Unit: Plants Focus: Biology Knowledge Outcomes: • I know the functions of roots, stems, leaves and flowers. • I know plants need water, light, air and suitable conditions to grow. • I know flowers are involved in the life cycle of flowering plants.	Unit: Working scientifically Focus: Working scientifically Knowledge Outcomes: • I know that scientific enquiries begin with questions. • I know a fair test changes one factor while others are kept the same. • I know observations and measurements provide evidence for conclusions.

	Skills Outcomes: • I can identify and group animals using observable features. • I can make and record simple observations about bodies and health. • I can ask questions and use evidence from a simple test. • I can use key scientific vocabulary to explain what I have found.	Skills Outcomes: • I can compare how objects move on different surfaces. • I can test and sort magnetic and non-magnetic materials. • I can make a prediction and record results in a simple table. • I can describe patterns using evidence.	Skills Outcomes: • I can identify light sources and reflective materials. • I can investigate how shadow size or position changes. • I can measure and record observations safely. • I can use results to explain a simple pattern.	Skills Outcomes: • I can observe, compare and classify rocks. • I can carry out a simple test of a rock property. • I can record findings using labelled drawings or a table. • I can use observations to justify a classification.	Skills Outcomes: • I can identify and label plant structures. • I can observe plant growth over time and measure changes. • I can plan a simple comparative test with support. • I can present results and draw a conclusion.	Skills Outcomes: • I can ask enquiry questions and make predictions. • I can use simple equipment and standard units safely. • I can record data in tables, charts or graphs. • I can identify patterns, draw conclusions and suggest an improvement.
Class 1	Unit: Electricity	Unit: Sound	Unit: Animals including humans	Unit: States of matter	Unit: Living things and their habitats	Unit: Sustainability
	Focus: Physics	Focus: Physics	Focus: Biology	Focus: Chemistry	Focus: Biology	Focus: Environmental science
	Knowledge Outcomes: • I know that electrical devices require a source of electricity. • I know a complete circuit is needed for components to work. • I know conductors allow current to pass and insulators do not.	Knowledge Outcomes: • I know sounds are produced by vibrations. • I know vibrations travel through a medium to the ear. • I know pitch and volume can be changed.	Knowledge Outcomes: • I know the main parts and functions of the digestive system. • I know different teeth have different functions. • I know food chains show feeding relationships.	Knowledge Outcomes: • I know materials can be solids, liquids or gases. • I know heating and cooling can cause changes of state. • I know evaporation and condensation are parts of the water cycle.	Knowledge Outcomes: • I know living things can be grouped using shared characteristics. • I know classification keys help identify organisms. • I know habitats can change and affect living things.	Knowledge Outcomes: • I know resources are finite and choices can affect the environment. • I know waste can be reduced through reusing and recycling. • I know scientific evidence can inform sustainable decisions.
	Skills Outcomes: • I can construct and test simple series circuits. • I can identify and solve faults in a circuit. • I can compare materials for conductivity safely. • I can draw and explain a simple circuit.	Skills Outcomes: • I can identify vibrating parts of sound sources. • I can investigate factors affecting pitch or volume. • I can measure or rank results and identify patterns. • I can explain findings using vibration vocabulary.	Skills Outcomes: • I can label and sequence digestive-system processes. • I can compare teeth and relate structure to function. • I can construct and interpret food chains. • I can use models and evidence to communicate explanations.	Skills Outcomes: • I can classify materials by observable properties. • I can measure temperature during a change of state. • I can record results and identify trends. • I can explain the water cycle using particle ideas at an appropriate level.	Skills Outcomes: • I can sort organisms and use a simple classification key. • I can observe a local habitat responsibly. • I can record and compare organisms found. • I can explain how environmental change may affect a habitat.	Skills Outcomes: • I can investigate waste, energy or resource use. • I can collect and present environmental data. • I can compare solutions using evidence. • I can propose and justify a practical sustainable action.

Class 2	Unit: Living things and their habitats	Unit: Earth and space	Unit: Properties and changes of materials	Unit: Light	Unit: Forces	Unit: Scientists and Inventors
	Focus: Biology	Focus: Physics	Focus: Chemistry	Focus: Physics	Focus: Physics	Focus: Working scientifically
	Knowledge Outcomes: • I know life cycles differ between mammals, amphibians, insects and birds. • I know reproduction is part of the life cycle. • I know scientists observe change over time to understand life cycles.	Knowledge Outcomes: • I know the Sun is a star and planets orbit it. • I know the Earth rotates and the Moon orbits Earth. • I know rotation explains day and night.	Knowledge Outcomes: • I know materials have properties that suit particular uses. • I know dissolving, mixing and changes of state may be reversible. • I know some changes form new materials and are irreversible.	Knowledge Outcomes: • I know light travels in straight lines. • I know objects are seen when light enters the eye. • I know shadow shape is linked to straight-line travel.	Knowledge Outcomes: • I know gravity acts between masses. • I know air resistance, water resistance and friction affect movement. • I know levers, pulleys and gears can change the effect of forces.	Knowledge Outcomes: • I know scientists ask questions, test ideas and use evidence. • I know inventions are designed to solve problems. • I know discoveries develop through creativity, collaboration and perseverance.
	Skills Outcomes: • I can compare and represent different life cycles. • I can observe and record change over time. • I can research using suitable sources. • I can communicate similarities and differences clearly.	Skills Outcomes: • I can use models to represent relative movement. • I can interpret diagrams and data about space. • I can explain day and night using scientific vocabulary. • I can evaluate the strengths and limits of a model.	Skills Outcomes: • I can select and carry out comparative material tests. • I can separate mixtures using appropriate methods. • I can record measurements accurately. • I can use evidence to classify changes as reversible or irreversible.	Skills Outcomes: • I can plan an investigation using variables. • I can construct ray diagrams and use models. • I can collect repeated measurements where appropriate. • I can explain results and evaluate the method.	Skills Outcomes: • I can investigate the effects of resistance. • I can use force diagrams or models. • I can identify variables and conduct a fair test. • I can analyse data and support a conclusion with evidence.	Skills Outcomes: • I can research and compare contributions of scientists and inventors. • I can design and test a solution to a problem. • I can record modifications and explain decisions. • I can evaluate an idea against evidence and criteria.

Key Stage 3

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Class						
Class 3	Unit: Forces and speed	Unit: Electricity and magnets	Unit: Particulate nature of matter and chemical reactions	Unit: Light	Unit: Acids and alkalis	Unit: Reproduction
	Focus: Physics	Focus: Physics	Focus: Chemistry	Focus: Physics	Focus: Chemistry	Focus: Biology

	Knowledge Outcomes: • I know speed describes distance travelled in a given time. • I know resultant forces affect motion. • I know friction and resistance can change speed.	Knowledge Outcomes: • I know current flows in a complete circuit. • I know magnetic fields act around magnets and current-carrying wires. • I know electromagnets can be controlled and have practical uses.	Knowledge Outcomes: • I know solids, liquids and gases can be explained using particles. • I know chemical reactions rearrange particles and form new substances. • I know evidence of reaction can include temperature change, gas or colour change.	Knowledge Outcomes: • I know light can be reflected and refracted. • I know colour is related to the wavelengths of visible light. • I know lenses and mirrors change the path of light.	Knowledge Outcomes: • I know the pH scale describes acidity and alkalinity. • I know indicators change colour at different pH values. • I know neutralisation produces new substances.	Knowledge Outcomes: • I know reproduction enables continuation of a species. • I know human and plant reproductive systems have specialised structures. • I know growth and development involve physical changes.
	Skills Outcomes: • I can measure distance and time and calculate speed. • I can represent forces using arrows. • I can plan a fair investigation and control variables. • I can analyse graphs and evaluate reliability.	Skills Outcomes: • I can build, test and represent circuits safely. • I can investigate factors affecting an electromagnet. • I can record quantitative data and identify relationships. • I can explain applications using evidence.	Skills Outcomes: • I can use particle models to explain changes. • I can observe reactions and record evidence safely. • I can distinguish physical and chemical change. • I can write a supported conclusion and evaluate observations.	Skills Outcomes: • I can investigate reflection or refraction. • I can draw accurate ray diagrams. • I can measure angles or distances and process results. • I can explain a pattern and evaluate experimental uncertainty.	Skills Outcomes: • I can use indicators and measure pH safely. • I can classify solutions from evidence. • I can investigate neutralisation using a careful method. • I can analyse results and identify safety considerations.	Skills Outcomes: • I can label and explain key reproductive structures. • I can compare reproductive processes in plants and humans. • I can interpret life-cycle information. • I can communicate scientific information accurately and respectfully.
Class 4	Unit: Pure and impure substances	Unit: Cells and organisation	Unit: Voltage and resistance	Unit: Adaptations, food webs and plant reproduction	Unit: Photosynthesis	Unit: Space physics and gravity
	Focus: Chemistry	Focus: Biology	Focus: Physics	Focus: Biology	Focus: Biology	Focus: Physics

	Knowledge Outcomes: • I know pure substances have fixed properties. • I know mixtures contain substances that are not chemically combined. • I know separation methods depend on physical properties.	Knowledge Outcomes: • I know cells are the fundamental units of living organisms. • I know specialised cells have structures related to function. • I know cells form tissues, organs and organ systems.	Knowledge Outcomes: • I know voltage transfers energy and current is the flow of charge. • I know resistance affects current. • I know series and parallel circuits behave differently.	Knowledge Outcomes: • I know adaptations support survival and reproduction. • I know food webs show interdependence within ecosystems. • I know flowering-plant reproduction involves pollination, fertilisation and dispersal.	Knowledge Outcomes: • I know photosynthesis uses light, carbon dioxide and water to make glucose. • I know chlorophyll absorbs light energy. • I know photosynthesis supports food webs and affects gas balance.	Knowledge Outcomes: • I know gravity depends on mass and acts over distance. • I know the solar system is part of a galaxy in the universe. • I know models explain orbits, seasons and other space phenomena.
	Skills Outcomes: • I can select filtration, evaporation, distillation or chromatography appropriately. • I can follow methods safely and record observations. • I can interpret chromatograms or separation data. • I can evaluate efficiency and sources of error.	Skills Outcomes: • I can use a microscope and prepare or observe specimens safely. • I can draw and label cells using conventions. • I can compare plant, animal and specialised cells. • I can use scale information and evidence to explain organisation.	Skills Outcomes: • I can use circuit symbols and construct circuits safely. • I can measure current and voltage. • I can investigate relationships between circuit variables. • I can plot, interpret and evaluate circuit data.	Skills Outcomes: • I can interpret food webs and predict effects of change. • I can compare structural and behavioural adaptations. • I can investigate plant reproduction or dispersal. • I can use evidence to explain ecosystem relationships.	Skills Outcomes: • I can represent photosynthesis using a word equation. • I can test a factor affecting photosynthesis. • I can collect and graph quantitative data. • I can evaluate variables, reliability and conclusions.	Skills Outcomes: • I can use models and diagrams to explain orbital motion. • I can interpret data about mass, weight or planetary motion. • I can apply gravitational ideas to unfamiliar contexts. • I can evaluate models and scientific evidence.
Class 5	Unit: Energy transfer	Unit: Earth's structure	Unit: Waves properties	Unit: Genetics and evolution	Unit: Gas exchange systems	Unit: Digestion
	Focus: Physics	Focus: Chemistry / Earth science	Focus: Physics	Focus: Biology	Focus: Biology	Focus: Biology
	Knowledge Outcomes: • I know energy is transferred between stores by different pathways. • I know energy is conserved although useful energy may spread to surroundings. • I know efficiency compares useful transfer with total input.	Knowledge Outcomes: • I know Earth has a layered internal structure. • I know rocks form through processes in the rock cycle. • I know plate movement is linked to earthquakes and volcanoes.	Knowledge Outcomes: • I know waves transfer energy without transferring matter overall. • I know amplitude, wavelength and frequency describe waves. • I know sound and light show wave behaviours.	Knowledge Outcomes: • I know genetic information is inherited and variation occurs within species. • I know natural selection can lead to evolution. • I know evidence for evolution includes fossils and inherited characteristics.	Knowledge Outcomes: • I know gas exchange occurs at specialised surfaces. • I know the breathing system moves air and supports exchange. • I know exercise, smoking and health factors affect the system.	Knowledge Outcomes: • I know digestion breaks large molecules into smaller soluble molecules. • I know organs and enzymes have specific roles. • I know absorbed nutrients are transported and used by cells.

	Skills Outcomes: • I can identify and represent energy transfers. • I can calculate or compare efficiency in accessible contexts. • I can investigate thermal or mechanical transfer. • I can analyse data and suggest improvements to reduce waste.	Skills Outcomes: • I can interpret models and evidence about Earth's structure. • I can classify rocks and explain rock-cycle pathways. • I can analyse data or maps of tectonic activity. • I can evaluate hazards and scientific explanations.	Skills Outcomes: • I can identify and measure wave features. • I can use diagrams and simple relationships to compare waves. • I can investigate reflection, absorption or frequency. • I can interpret data and evaluate limitations.	Skills Outcomes: • I can distinguish inherited and environmental variation. • I can interpret simple inheritance information. • I can use evidence to explain natural selection. • I can evaluate explanations and communicate conclusions accurately.	Skills Outcomes: • I can label and explain the gas-exchange system. • I can investigate breathing rate before and after activity. • I can process data and identify patterns. • I can evaluate method, variability and health evidence.	Skills Outcomes: • I can model and sequence digestion. • I can explain organ function using scientific vocabulary. • I can investigate an aspect of enzyme action safely where appropriate. • I can interpret evidence and evaluate the model or method.
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