Oak Learning Partnership

Inclusion is at the **heart** of our trust

Long Term/Curriculum Plan

School: Crosshill School

Subject: Science - Inspire

Curriculum Planning

at Oak Learning Partnership

Long Term Plans

(Year/Pathway Group Overviews)

- Curriculum content on what students will learn about the subject content and about the logical order for teaching the content.
- Clear five/three year progression through the curriculum, which includes: key topics, termly knowledge and skills.
- Each year group/pathway individually broken down with unit overviews.
- Details around prior learning required.
- Clear end points and assessment information.
- Adaptations and key concepts mapped out.

Medium Term Plans

(Unit of Work for Each Year Group/Pathway)

- Each unit broken down by individual lessons.
- Specific pedagogical choices detailed, with links to appropriate resources.

7 Phase Lesson Plans

Lesson by lesson planning, using all of the above to achieve curriculum aims, adapted for class needs.

Curriculum Leadership	Katie Phillips – Science and Technology Lead
School Intent	Upon entry to Crosshill School, students are assessed and placed within one of our three highly personalised pathways: **Inspire, Explore and Discover.** Within these pathways students needs are identified as formal, semi-formal and emergent learning styles. Each pathway has a bespoke curriculum and particular learning approach that enables all of our students to flourish. Throughout all pathways we build the curriculum around 6 main outcomes to ensure our students will: • **Know themselves** • **Possess functional skills** • **Be independent** • **Be good communicators** • **Be curious learners** • **Be prepared for adulthood** The outcomes above are personalised around the three identified pathways and leaders carefully craft personalised curriculum provision to meet the needs of the learners within the pathways. Students may transition into different pathways whilst they are at Crosshill. We recognise that as our young people develop and grow, so does their need for different skills, learning approaches and experiences. We are a responsive provision and review individual students' needs.
Subject Intent	At Crosshill School, Science is a practical and engaging subject that fosters curiosity, exploration, and a deeper understanding of the world. Our Science curriculum for learners within the Inspire Pathway is designed to build essential knowledge and skills that support pupils on their journey to independence and adulthood. We strive to provide a rich, hands-on and meaningful learning experience that is accessible to all learners, embedding real-life contexts that make science relevant and functional. Through a structured and progressive approach, we ensure that every pupil has the opportunity to investigate, question, and make sense of scientific ideas in a way that supports their individual learning journey. Our intent is to develop confident, curious, and capable learners by: -Encouraging curiosity, inquiry, and active investigation to deepen understanding of key concepts in biology, chemistry, and physics. -Embedding essential scientific vocabulary and ideas -Promoting independent thinking and decision-making through practical problem-solving and real-world application. -Supporting pupils to reflect, reason, and communicate their ideas using methods that work for them -Celebrating discovery, nurturing confidence, and exploring new knowledge together.

Key Stage 2, National Curriculum Aims	**KS1 National Curriculum** **Animals Incl Humans** **Living Things and Their Habitat** **Everyday Materials** **Plants** **KS2 National Curriculum** **Animals Incl Humans** **Living Things and Their Habitat** **Light** **States of Matter** **Space** **Sound** **Electricity** **Properties of Materials** **Forces**	**Key Stage 3, National Curriculum Aims**	**KS3 Biology links** **Organ systems, Cells, Nutrition and Health** **KS3 Chemistry links** **Particle model, comparing and dissolving mixtures, techniques for separating mixtures** **KS3 Physics links** **Space Physics, Forces, Waves (light spectrum)**

Year 7	Year 8	Year 9	Year 10	Year 11
Topic: Animals Inc Humans	**Topic: Living Things & Their Habitat**	**Topic: Animals Inc Humans**	**Topic: Autumn** **Physics – Electricity** ***WJEC Working with electrical circuits*** **Entry 2 and 3**	**Topic: Autumn** **The Human Body** ***AIM Science and the Human Body*** ***A/505/4612***
Knowledge: **By the end of the unit, pupils will know:** **-The names of basic body parts**	**Knowledge:** **By the end of the unit, pupils will know:**	**Knowledge:** **By the end of the unit, pupils will know:** **-The digestive system helps to break down food so the body can absorb nutrients**	**Knowledge:** **By the end of the unit, pupils will know:** **-An electrical circuit is a complete loop that allows electricity to flow**	**Knowledge:** **By the end of the unit, pupils will know:** **-The names and basic structure of the major body systems, including: Circulatory,**

-Which body parts are linked to each of the five senses -That humans and animals have babies or offspring -That offspring grow and change into adults -That animals and humans need food, water, shelter and air to stay alive -That shelter and warmth are also important for many animals -That exercise helps keep our bodies healthy -That we should eat a balance of different types of food -That washing hands and brushing teeth helps stop illness and keep us clean	-Living things need food, water, air, and can grow, move, reproduce, and respond to their environment -Dead things were once alive but no longer have those features -Things that have never been alive include materials like plastic, metal, and rocks -A habitat is a place where animals and plants live and get everything they need -Different habitats have different conditions like light, water, temperature, and shelter -Animals and plants are suited (adapted) to the habitat they live in -Some examples of habitats and their inhabitants -Animals get their food from plants or other animals - food chains show how this works -A simple food chain e.g. *leaf → caterpillar → bird or seaweed → fish → seal* -A producer is a plant that makes its own food -A consumer is an animal that eats plants or other animals	-The main parts of the digestive system are: Mouth: where food is chewed Oesophagus: a tube food travels down Stomach: where food is mixed with acid and broken down more Small intestine: where nutrients are absorbed Large intestine: where waste is processed -Humans have different types of teeth, each with a specific job: Incisors, Canines and Molars -Diet, exercise, drugs, and lifestyle choices all affect how our bodies work -A healthy lifestyle includes: A balanced diet Regular exercise Avoiding harmful substances (e.g. tobacco, alcohol, drugs) Good mental health and sleep	-A working circuit needs: A power source (battery or cell), conductive wires, components (bulbs, buzzers, motors, switches) -The main components of a simple circuit and their functions: Bulb: lights up using electrical energy Buzzer: makes a sound when powered Motor: spins when current flows Switch: opens (off) or closes (on) the circuit Battery (Cell): provides energy for the circuit -The brightness of a bulb or volume of a buzzer depends on: The number of cells in the circuit The voltage of the cells Whether the circuit is complete or not -Energy changes in a circuit: Electrical energy is changed into light, sound, or movement -Key terms in electricity include: *current, component, voltage, conductor, insulator, circuit, symbol, switch, energy* -Circuit symbols are used to represent real-life components in diagrams -Electricity can be dangerous if used unsafely -Describe ways to stay safe around electricity at home and in school -Understand why we use insulated wires, fuse plugs, and safety signs	Respiratory, Digestive, Skeletal, Muscular, Nervous, Urinary. -The main organs within each system and what they do -The functions of each system - how they help the body survive, grow, and respond to the environment -That body systems are connected and rely on each other -Factors that increase the risk of ill health -Actions that promote health -The meaning of basic health data, such as: Pulse rate, Peak flow, Height, weight, and BMI -How to use simple equipment to gather data about health -How to record data accurately -How to make simple conclusions about someone's health based on data collected
Skills: -Look at and point to parts of the body on themselves or pictures/models -Match senses to body parts using images, songs, or interactive games -Match adults to their young -Sequence life stages using photo cards or storyboard -Respond to questions about what animals need to stay alive -Communicate what they need when they feel hungry, thirsty, tired, or unwell -Sort foods e.g. "healthy", "sometimes" and "unhealthy" choices using pictures or real items	**Skills:** -Sort images or real-world items into living, dead or never alive categories -Observe plants and minibeasts in a local habitat -Use magnifiers and ID charts to explore habitats -Compare different habitats -Match animals to their preferred habitats -Explain what living things need to survive in a given habitat -Discuss how changing a habitat can affect animals and plants -Describe how certain animals are suited to their environments	**Skills:** -Use models or drawings to show the digestive system and its parts -Create a "chew to poo" journey to explain food digestion -Handle and identify real or model teeth, linking structure to function -Observe how food is broken down with mashing and liquid experiments -Compare different types of teeth in humans and animals -Research or explore lifestyle factors that affect health -Describe in simple terms what happens when we eat	**Skills:** -Build simple circuits using wires, cells, bulbs, buzzers, motors and switches -Modify circuits to: add more components, change the brightness/volume by altering cells, test which materials are conductors or insulators	**Skills:** -Identify and name key organs and systems in the human body -Match body systems to their functions using simple scientific vocabulary -Link different body systems together and explain how they depend on one another -Compare healthy and unhealthy choices and explain their effects on the body -Use reasoning to suggest actions that promote better health -Use simple measurement tools -Collect, record and organise health data -Follow instructions to safely conduct health-related investigations -Interpret collected data and make basic conclusions about health and wellbeing -Present their learning clearly in a structured format

-Group actions e.g. “good for my body” or “bad for my body” -Wash hands and observing what happens to germs with glitter or paint. -Join in with a simple physical activity and talk about how their body feels -Use or match words like: *head, eyes, smell, baby, grow, food, water, exercise, clean, healthy, wash*	-Build and label simple food chains using picture cards or drawn diagrams -Use correct terms like *plant*, *producer*, *consumer* -Predict what happens to other animals in a food chain if one part is removed -Label drawings of habitats and food chains	-Link each tooth type to what it does and why it’s important -Recognise that what we eat and do can help or harm our health -Use key vocabulary such as: *digest, stomach, intestine, chew, absorb, nutrients, molar, incisor, canine, lifestyle, health, drugs, balanced diet, growth, development* -Label diagrams of the digestive system and types of teeth -Create health and lifestyle info posters or booklets -Complete observation tables or comparison charts	-Use diagrams to help assemble circuits -Observe and record the effects of changes (e.g. more batteries → brighter bulb) -Draw simple circuits using recognised symbols -Label parts of a circuit in diagrams -Describe what happens when a component is removed or added -Use tables or checklists to record: Which circuits worked or didn’t work Changes in brightness or sound -Use key vocabulary in context: “The switch is open, so the circuit is broken.” “The buzzer is louder because there are two batteries.” -Begin to explain causal links: “The bulb is dim because it only has one cell.” “This material didn’t let electricity flow, so it’s an insulator.” -Identify errors in circuits -Predict what will happen if components are changed or removed -Choose correct components for a task	-Reflect on their own health and suggest realistic improvements
Topic: Everyday Materials	**Topic: Light**	**Topic: States of Matter**		
Knowledge: By the end of the unit, pupils will know: -An *object* is what something is and a *material* is what it is made from -The same material can be used for different objects, and the same object can be made from different materials -The names of common materials -Basic properties of materials -Materials can be grouped or sorted by their properties -Some materials are better for certain jobs -Some materials are not suitable for some uses -Some solid materials can change shape by *bending, stretching, squashing* or *twisting*. These changes can be temporary or permanent	**Knowledge:** By the end of the unit, pupils will know: -Darkness is the absence of light -Some things give off light (light sources), like the sun, torches, candles, lamps -We can see things because light bounces off (is reflected from) objects and travels into our eyes -The sun is our main natural light source -Looking directly at the sun is dangerous and it can hurt our eyes -We protect ourselves from sunlight with sunglasses, hats, shade, and sun cream -Light reflects off surfaces - smooth, shiny surfaces (like mirrors) reflect light well -Dull and rough surfaces do not reflect light as well -A shadow is made when an object blocks light -Light travels in straight lines, so shadows form on the opposite side of the light source	**Knowledge:** By the end of the unit, pupils will know: -Materials can be grouped as solids, liquids, or gases based on how their particles behave: Solids hold their shape and can be held Liquids flow and take the shape of their container Gases spread out to fill the space they are in -Some materials can change state: Solids can melt into liquids Liquids can evaporate into gases Gases can condense into liquids Liquids can freeze into solids -Heating or cooling can cause a change of state -Different materials change at different temperatures -In the water cycle, water changes state: Evaporation: the Sun heats water and it turns into water vapour (gas) Condensation: water vapour cools and forms clouds (gas to liquid)		

	-Shadows are the same shape as the object because the object blocks the same shape of light	Water then falls as rain (precipitation) and the cycle repeats -The rate of evaporation can change with temperature		
Skills: -Touch and explore a range of objects and name what they are made from -Match objects to materials -Use simple words to describe how a material feels or looks -Use scientific terms through e.g. repetition, matching. -Sort materials based on a single property -Compare two or more materials for similarities and differences -Carry out simple tests e.g. which material is waterproof? -Record findings using pictures, symbols, or sentences -Respond to questions like "Which one is the softest?" or "What would happen if we tried to make a cup from paper?" -Talk about why a material is good for a job -Squash, bend, twist, or stretch a range of objects and describe what happened -Predict whether an object will change shape and test it.	**Skills:** -Identify light sources and sort them from non-light sources -Observe what happens in a completely dark space -Investigate which materials reflect light using torches and different surfaces -Observe how shadows change size and shape depending on the distance and position of the light -Draw diagrams to show how light travels and forms shadows -Predict what will happen when an object is placed in front of a light source -Investigate which materials block light and which let it through (opaque, transparent, translucent) -Set up a simple fair test -Use and understand words like: *light source, reflect, mirror, shiny, shadow, block, straight line*.	**Skills:** -Sort and group materials by whether they are solid, liquid, or gas -Observe ice melting, water boiling, and steam condensing -Measure temperatures using simple thermometers when materials change state -Investigate how quickly water evaporates in different conditions (warm/cool, open/closed) -Use visual or physical particle models to compare solids, liquids, and gases -Explore the water cycle through practical demonstrations or role play -Create or draw flow diagrams of the water cycle and changing states -Describe what happens when a material changes state using accurate vocabulary -Use terms such as: *solid, liquid, gas, melt, freeze, evaporate, condense, temperature, heat, cool, water cycle, state change, precipitation* -Record results of investigations in tables or pictograms -Label diagrams of state changes and the water cycle		
Topic: Space	**Topic:** Animals incl Humans	**Topic:** Living things in their Habitat	**Topic:** Spring Biology – Animals *WJEC Intro into Animal Care Entry 2 and 3*	**Topic:** Spring Our Universe *AIM Science and our Universe A/505/4612*
Knowledge: By the end of the unit, pupils will know: -That we live on the planet Earth -There are other planets in space, and they all go around the Sun	**Knowledge:** By the end of the unit, pupils will know: -Animals, including humans, need food to live, grow and stay healthy	**Knowledge:** By the end of the unit, pupils will know: -All living things go through a life cycle, but the stages and lengths of life cycles can differ between animals	**Knowledge:** By the end of the unit, pupils will know: -All animals need: Food appropriate to their species and size Clean water	**Knowledge:** By the end of this unit, pupils will know: -The structure of our solar system: sun, planets, moons, asteroid belt, and their order from the sun

-Some or all of the planet names in order -That planets are different in size, and some are closer to the Sun than others -The Sun is a star -The Sun is at the centre of the solar system -The planets move around the Sun -The Moon orbits Earth -Humans have visited the Moon -The first moon landing was in 1969 with astronauts from NASA -Astronauts wear special suits and travel in rockets -Neil Armstrong was the first person to walk on the Moon -"The Eagle has landed" is a famous quote from the Moon landing	-We need the right types and amounts of nutrition – not just more food, but the right balance -The main food groups are: *Carbohydrates* (for energy) *Proteins* (for growth and repair) *Fats* (for energy and warmth) *Vitamins and minerals* (for keeping healthy) *Water and fibre* (for digestion and hydration) -Different animals eat different types of food to meet their nutritional needs -Animals, including humans, cannot make their own food – they must eat plants or other animals -Some animals are: Herbivores – eat plants Carnivores – eat meat Omnivores – eat both -Animals and humans have skeletons to: Support the body, protect, help with movement -The muscles pull on bones to help us move. -Some animals have skeletons outside their body, others have skeletons inside.	-The life cycles of: a mammal, an amphibian, an insect, a bird -Animals reproduce in different ways: Some give birth to live young, some lay eggs -Plants reproduce in two main ways: Sexual reproduction: using flowers, pollen, seeds Asexual reproduction: new plants grow from parts of a parent plant -The parts of a flower have special roles in reproduction: Stamen (male): makes pollen Carpel (female): receives pollen Petals attract insects	Shelter and protection from extreme weather Space to move and behave naturally Company or solitude, depending on the species Exercise to stay healthy -Ill health in animals can be caused by: Inadequate diet, injury, poor living conditions, or lack of hygiene in their habitat -Signs of ill health may include: Changes in appetite, behaviour, movement or physical appearance, symptoms such as coughing, diarrhoea, or hair/fur loss -Prevention of ill health includes: Regular cleaning of living space A balanced diet Routine health checks and vaccinations (where applicable) Proper handling and hygiene -Caring for a sick animal involves: Monitoring symptoms Providing a quiet, comfortable environment Ensuring proper nutrition and hydration Seeking veterinary help if needed -Animals need different diets based on: Their species Their stage of life Their activity levels -Consequences of imbalanced diets: Obesity from overfeeding or poor-quality food, starvation from underfeeding or lack of nutrients, deficiency diseases, e.g., brittle bones from lack of calcium -Breeds are types within a species -Different breeds may have different sizes, behaviours, and care needs -Selective breeding is used to: Enhance traits like speed, size, temperament, or coat colour	-The differences between inner (rocky) and outer (gas giant) planets - size, composition, atmosphere -The composition and location of the asteroid belt between Mars and Jupiter -The meaning of a galaxy as a large system of stars, gas, and dust bound by gravity -Different types of galaxies: spiral, elliptical, irregular - their shapes and characteristics -Components of the Milky Way galaxy beyond the sun, planets, and asteroids, such as stars, nebulae, black holes, and gas clouds -Images of space objects captured in different parts of the electromagnetic spectrum -Advantages of space-based telescopes -Advantages of earth-based telescopes -Information gathered by space probes -Factors affecting the surface of planets and moons, including water, atmosphere, volcanic activity, and impacts -How water shapes surfaces -The role of an atmosphere in surface conditions -Effects of volcanic activity on planetary surfaces -Why craters form from impacts and why some planets/moons have many craters while others have few
Skills: -Recognise and name Earth, the Sun, the Moon and some planets using pictures, models or songs -Match or sequence planet names using images or mnemonics -Use words like *big/small*, *near/far*, *hot/cold* to compare planets and their distance from the Sun -Recognise which planets are large and which are small -Explore solar system models, orbits, and scale representations	**Skills:** -Sort and group foods into food groups. -Compare the diets of different animals (herbivore, carnivore, omnivore). -Match animals to what they eat using food sorting activities -Identify what different animals (including humans) need to eat to stay healthy -Talk about what happens if we don't have the right diet -Name key bones in the human body using models or diagrams -Understand how muscles work in pairs to move bones	**Skills:** -Observe and compare life cycles of different animals using diagrams and videos -Dissect or explore real or artificial flowers to identify reproductive parts -Observe plant reproduction over time -Watch life cycle changes -Draw and label life cycle diagrams for mammals, birds, amphibians, and insects -Create flowcharts showing the stages of reproduction in plants -Record observations in plant growth journals or simple data tables		**Skills:** -Name and describe the components of the solar system and their order -Identify and explain differences between inner and outer planets -Recognise and classify types of galaxies using images and descriptions -Describe the components of the Milky Way beyond the common celestial bodies

-Observe videos or animations showing planets orbiting the Sun -Sequence key events from the 1969 Moon landing -Retell facts using visual timelines, role-play or books -Ask questions about space and astronauts using topic words and pictures -Listen to stories or watch clips about astronauts and the Moon landing -Explore artefacts and themed role-play -Learn and use words like: *planet, orbit, solar system, astronaut, Moon, Sun, rocket, space, stars, landing*.	-Build or explore a skeleton model to show how bones support the body -Use a simple model to show how muscles move bones -Compare skeletons of different animals to spot similarities/differences -Create food group posters, skeleton diagrams or nutrition plates -Explain findings using scientific language	-Use correct scientific terms such as: *life cycle, reproduction, mammal, amphibian, insect, bird, offspring, pollen, seed, fertilisation, stamen, carpel, sexual, asexual* -Use sorting activities to match animals to their type and life cycle -Sequence stages of reproduction using visuals or matching cards -Role play pollination and fertilisation using props or animation	-Safe animal care includes: Handling animals gently, feeding animals correctly, cleaning their environment regularly, checking their behaviour and physical health, washing hands after contact **Skills:** -Identify signs of healthy vs. unhealthy animals -Recognise common needs for survival across species -Spot signs of illness or injury in an animal -Observe behavioural differences between two breeds or species -Label diagrams showing basic needs -Complete care routines -Write or sequence instructions for animal care tasks -Describe animal differences using key vocabulary -Use correct animal care terms: *diet, species, breed, health, ill, clean, feed, shelter, exercise, prevention* -Explain how to care for an animal in sentences or verbal instructions -Discuss what might happen if an animal is overfed or underfed -Demonstrate basic animal care routines (with real animals or models): Feeding, cleaning a cage/hutch/enclosure, checking an animal for signs of health/illness -Follow safety rules when handling or being around animals -Show how to prepare an animal's habitat/environment -Make comparisons between two different species, two different breeds -Explain why different animals need different diets or habitats	-Identify images of space objects produced using different electromagnetic wavelengths -Compare and contrast the uses and benefits of space-based and earth-based telescopes -Explain the roles of space probes in gathering data about the universe -Analyse images and data to understand planetary surfaces and changes caused by natural processes -Conduct simple demonstrations/simulations (e.g., crater formation) to illustrate scientific phenomena -Summarise and communicate scientific information
Topic: Animals inc Humans	**Topic: Sound**	**Topic: Animals incl Humans**		
Knowledge: By the end of the unit, pupils will know: -The names and features of a variety of common animals, including pets, farm animals, and wild animals -That animals can be grouped into fish, amphibians, reptiles, birds, and mammals -That fish have scales and live in water -That birds have feathers and lay eggs -That mammals have fur or hair and usually give birth to live young -That reptiles have dry, scaly skin -That amphibians live on land and in water, and many start life in water -A carnivore eats meat -A herbivore eats plants -An omnivore eats both meat and plants -Examples of each type of eater -Animals have different body parts suited to how they live -Similarities and differences between animals	**Knowledge:** By the end of the unit, pupils will know: -Sounds are made when something vibrates - the object moves back and forth quickly -These vibrations travel through the air (or another medium like water or solids) to our ears -Our ears detect vibrations and our brain helps us understand them as sound -Without something to carry the vibrations (like air or water), we wouldn't be able to hear sound -The pitch of a sound depends on the size, tightness, or length of the vibrating object -Smaller, tighter, or shorter things make higher-pitched sounds -The volume of a sound depends on the strength of the vibrations -Bigger vibrations = louder sound -Smaller vibrations = quieter sound -Sounds get quieter the further you are from the source, because the vibrations spread out and lose energy	**Knowledge:** By the end of the unit, pupils will know: -The circulatory system is made up of the: Heart – a muscle that pumps blood around the body Blood vessels – *arteries*, *veins*, and *capillaries* that carry blood Blood – carries oxygen, nutrients, and waste products -The heart has two sides: One side pumps blood to the lungs to get oxygen The other side pumps oxygen-rich blood around the body -The pulse shows how fast the heart is beating -After food is digested, nutrients are absorbed into the blood and carried to where they're needed -Water is also absorbed from food and drink, and travels in the blood to keep the body hydrated -Blood helps the body: Get energy from food Stay cool or warm		

		Fight illness	-Give reasons why certain animals are bred for specific traits	
Skills: -Closely observe different animals using images, models or live examples -Compare two animals using key language -Sort animals into their scientific groups using pictures or cards -Classify animals by features such as body covering or number of legs -Group animals by diet using simple labels and reasoning -Begin using precise vocabulary like *amphibian, reptile, mammal, herbivore* with confidence -Answer simple reasoning questions like "Why does a fish have fins instead of legs?" -Begin asking their own questions about animals they're curious about -Use drawings, labels, and captions to show animal groups and their features -Begin using tables or Venn diagrams to group or compare animals	**Skills:** -Investigate how different objects make sounds -Watch or feel how objects vibrate when they make sound -Use hands or a balloon to feel vibrations -Change the length, tension, or material of a sound-making object to see how pitch changes -Use a range of distances to explore how volume decreases -Record what happens when vibrations are made stronger or weaker -Use terms like *vibration, pitch, volume, loud, quiet, high, low, distance, sound wave* -Label drawings of sound experiments or musical instruments -Complete tables and charts showing how pitch and volume change -Create posters or diagrams showing how we hear	**Skills:** -Measure and compare pulse rates before and after exercise -Create models or diagrams of the circulatory system -Use secondary sources to learn how blood moves -Investigate how exercise affects the body -Label diagrams of the heart, blood vessels, and blood -Write short explanations of how the circulatory system works -Record pulse rate data in a table or bar chart -Sequence the journey of a red blood cell around the body -Use and understand key terms like: *heart, lungs, blood, arteries, veins, capillaries, pulse, oxygen, nutrients, circulatory system, hydration, transport* -Build a simple model of the heart using plastic bottles or balloons -Act out the journey of blood through the body using role-play -Trace the movement of nutrients and water from food to cells		
Topic: Plants	**Topic: Electricity**	**Topic: Properties and Changes of Materials**	**Topic: Summer Chemistry - Materials and Compounds** ***WJEC Making Useful Compounds Entry 2 and 3***	**Topic: Summer Forensic Science**
Knowledge: By the end of this unit, pupils will know: -The names of common garden and wild plants	**Knowledge:** By the end of the unit, pupils will know: -Some appliances and devices use electricity to work	**Knowledge:** By the end of the unit, pupils will know: -Materials have different properties which make them useful for different purposes:	**Knowledge:** By the end of this unit, pupils will know: -Acids and bases react to form salts and water, as a product of neutralisation	**Knowledge:** By the end of this unit, pupils will know: -The role of a forensic scientist in solving crimes

-The difference between a deciduous tree and an evergreen tree. -That trees have a trunk, while plants usually have stems. -Basic parts of a plant: *roots, stem/trunk, leaves, flowers*. -What each part of a plant does: *Roots* take in water and hold the plant in place. *Stems/trunks* carry water and support the plant. *Leaves* help the plant make food (using sunlight). *Flowers* attract insects and help plants make seeds. -Plants start as seeds or bulbs and grow into mature plants. -Plants need water, sunlight, air, and soil to grow and stay healthy. -Flowers are important in the life cycle of a plant. -Water travels from the roots up to the leaves through the stem.	-Some use mains electricity, while others use batteries (cells) -A circuit is a path that electricity flows through -A simple circuit needs: a cell (battery), wires to carry the electricity, a bulb, buzzer, or motor -Electricity will only flow if the circuit is complete -A lamp will light if it is part of a complete loop with a battery -A switch can be added to open or close a circuit: closed switch = circuit complete = lamp is on. Open switch = circuit broken = lamp is off -Electricity flows through conductors – materials that let electricity pass -Insulators are materials that do not let electricity pass -Most wires are made of metal inside and plastic outside	Hardness – how strong or scratch-resistant a material is Solubility – whether it dissolves in water Transparency – whether you can see through it Thermal conductivity – how well it conducts heat Electrical conductivity – how well it conducts electricity Magnetism – whether it is attracted to a magnet -Materials can be compared and grouped based on these properties. -Some materials dissolve in a liquid to form a solution -Materials that do not dissolve form mixtures -Mixtures can be separated using: Sieving – separating large solids Filtering – separating small solids from liquids Evaporating – removing liquid to leave solid behind -Some changes in materials are reversible, such as: Dissolving (salt in water → evaporate → get salt back), melting and freezing and evaporation and condensation	-Neutralisation reactions occur when an acid and base cancel each other out to form a neutral solution. They can be used in real life, such as treating bee or wasp stings, reducing soil acidity, using indigestion remedies -Hazard symbols are used to show dangers of different substances and how to handle and store chemicals safely -Key lab equipment includes: Test tubes, beakers, measuring cylinders, Bunsen burners or heat sources, funnels and filter paper, evaporating basins, stirring rods, chromatography paper -Safe lab practice involves: wearing PPE (goggles, gloves, lab coat), handling chemicals with care, knowing what to do in case of a spill or accident -Solids have particles packed closely together in a fixed arrangement -Liquids have particles that move past each other and take the shape of the container -Gases have particles that move freely and spread to fill any space -The particle model helps explain: Changes in state (melting, boiling, condensation), why materials behave differently in solid, liquid or gas form -Mixtures can be two or more substances not chemically joined and solids dissolved in liquids -Mixtures can be separated using physical methods: Filtration, Evaporation, Distillation and Chromatography	-That forensic science involves collecting, examining, and analysing evidence -Common types of forensic evidence: fingerprints, footprints, fibres, blood, hair, handwriting -Fingerprints are unique and can be used to identify individuals -There are three main fingerprint patterns: loops, whorls, and arches -Footprints and shoe prints provide clues about height, weight, and movement -Fibres and hairs can be used to link people or objects to a scene -Handwriting can also be analysed for similarities or differences -How forensic scientists observe, record, and analyse evidence -The importance of being detailed and careful in evidence handling -Forensic scientists must use logical thinking and deductive reasoning to draw conclusions -Crime scenes need to be investigated methodically -Scientific evidence helps build a case but doesn't always give a clear answer -Forensics involves a combination of science, problem solving, and teamwork
Skills: -Identify and name local plants and trees during nature walks or in the school grounds. -Use magnifying glasses to examine different parts of a plant -Observe seeds and bulbs as they grow over time -Label diagrams of plants and trees with increasing detail -Use drawings, symbols, and sentences to record observations	**Skills:** -Identify and sort appliances into those that use electricity and those that don't -Build a simple circuit using: a cell (battery), wires, a bulb, buzzer, or motor -Add a switch to turn a component on and off -Test circuits to find out why a bulb does/doesn't light -Predict whether a circuit will work and test it -Test different materials to identify conductors and insulators	**Skills:** -Test materials for properties: hardness (scratch test), transparency (torch test), conductivity (bulb circuit), magnetism (using magnets) -Explore dissolving by mixing materials into water -Separate mixtures using sieves, filters, and evaporation dishes -Sort and classify materials based on their properties using charts or Venn diagrams -Record observations from tests in tables and describe outcomes	**Skills:** -Identify key equipment from a diagram or in the lab -Recognise hazard symbols and link them to appropriate safety rules	**Skills:** -Observe small differences between similar-looking items -Remember and describe key visual details -Make accurate comparisons between evidence types -Take and classify their own fingerprints -Record findings clearly using templates or charts -Label and describe different types of physical evidence -Use clues to build a theory or explanation

-Keep a simple plant diary with photos, drawings, or measurements -Set up a fair test to explore what plants need to grow -Carry out a water transport investigation using celery and food dye -Compare growth between a plant in sunlight vs a plant kept in the dark -Sort plants into categories: *flowering/non-flowering*, *deciduous/evergreen*, *tree/plant* -Compare different seeds and bulbs by shape, size, and what they grow into -Use and understand vocabulary like: *leaf, petal, stem, root, bulb, trunk, sunlight, soil, nutrients, life cycle, flower, seed*	-Record results and spot patterns -Use terms like: *circuit, complete, cell, battery, bulb, switch, buzzer, conductor, insulator, metal, plastic, flow, electricity*. -Label circuit diagrams -Create posters or safety signs for electricity	-Create diagrams or instructions for how to separate mixtures -Use key terms such as: *soluble, solution, mixture, reversible, properties, conductivity, magnetic, filter, evaporate, dissolve* -Compare changes of state with water, ice and steam -Act out reversible changes through role-play or sequencing activities -Use hands-on challenges: e.g. "How could we get clean water from muddy water?"	-Describe materials as solid, liquid or gas using the particle model -Identify whether a substance is a mixture or a pure substance -Carry out safe experiments to: neutralise acids with bases and observe salt formation, use separation techniques on mixtures, dissolve solids in water and recover them by evaporation -Demonstrate proper lab technique, including: using measuring equipment correctly, heating substances safely, setting up and observing chromatography paper -Label diagrams of lab equipment -Record observations and results using: Tables, diagrams and simple reports -Use scientific terms correctly: *acid, base, neutral, salt, mixture, solution, filter, evaporate, dissolve, distil, chromatograph* -Explain why certain separation methods are chosen for particular mixtures -Predict outcomes of mixing substances -Compare solids, liquids, and gases in terms of movement and spacing of particles -Give examples of where neutralisation is useful in everyday life	-Discuss evidence as a group to suggest what might have happened -Draw logical conclusions based on what they've observed or collected -Set up and work through a basic mock crime scene -Use simple tools and to collect evidence -Work collaboratively to gather, analyse and interpret information -Present findings in a group -Listen to peer theories and respond with questions or ideas
Topic: Forces	**Topic: Earth in Space**	**Topic: Living Things in their Habitat**		
Knowledge: By the end of the unit, pupils will know: -A force is a push or a pull and forces change how things move. -Objects move differently on different surfaces -Friction is a force that slows things down and is stronger on rough surfaces -Some forces need contact to work -Magnetic force can work without touching -Magnets have two poles: a north pole and a south pole -Opposite poles attract and the same poles repel -Only some materials are magnetic - usually metals like iron, steel, nickel and cobalt -Not all metals are magnetic e.g. aluminium and copper	**Knowledge:** By the end of the unit, pupils will know: -The Sun is at the centre of the solar system -The Earth and other planets orbit (move around) the Sun in a fixed path -The planets orbit the Sun at different speeds and distances -The Moon orbits the Earth — it takes about 28 days to go all the way around -The Moon does not produce its own light – we see it because it reflects light from the Sun -The Sun, Earth and Moon are spherical, not flat or circular. -The Earth spins (rotates) on its axis -It takes 24 hours for one full rotation, which causes day and night	**Knowledge:** By the end of the unit, pupils will know: -Living things can be sorted into groups based on things we can see and observe -The main groups (kingdoms) include: Animals (e.g. mammals, birds, reptiles) Plants (e.g. flowering, non-flowering) Microorganisms (tiny living things such as bacteria, fungi, mould) -Animals can be further grouped into: Vertebrates (animals with backbones) Invertebrates (animals without backbones) -Animals and plants are also grouped based on specific characteristics such as: Body covering, method of reproduction, habitat, diet and leaf shape, flower colour, or root type in plants -Scientists classify living things to: Understand more about them		

		Describe how they are similar or different Identify new species Group species in a logical way
Skills: -Test how things move on different surfaces and record how far/fast they go -Compare how friction affects movement using ramps and toy vehicles -Observe and describe forces in action in everyday life -Test which materials are magnetic using real magnets and a range of objects -Group materials into magnetic and non-magnetic -Discover that some materials look the same but behave differently with magnets -Use labelled magnets to explore attraction and repulsion between poles -Predict whether two magnets will attract or repel based on their poles. -Use diagrams and arrows to show magnetic interactions -Begin to use terms like: *friction, force, attract, repel, contact, non-contact, magnetic, surface, pole* -Make predictions -Draw conclusions from experiments	**Skills:** -Use models (balls, torches, globes) to demonstrate: The Earth orbiting the Sun The Moon orbiting the Earth Day and night on a spinning Earth -Explore how a torch and ball can simulate light from the Sun on Earth/Moon -Describe the shape and movements of Earth, the Moon, and the Sun -Use simple models, videos, or diagrams to support their explanation -Explain in their own words why we have day and night -Sequence planets by distance from the Sun -Compare time taken for different planets to orbit the Sun -Compare the relative sizes of the Earth, Moon, and Sun using scaled visuals -Use vocabulary such as: *orbit, rotate, spin, sphere, solar system, planet, moon, Sun, light, day, night* -Label diagrams of the solar system -Create illustrated sequences showing night and day -Write or present simple explanations of the Earth's movement	**Skills:** -Sort and group animals and plants using photos, models or real-life examples -Use classification keys to identify living things -Observe and describe features of leaves, flowers, insects, etc -Use magnifying glasses or digital microscopes to explore microorganisms -Create branching diagrams or simple classification keys -Label animals and plants using correct vocabulary -Use sorting charts and tables to organise animals by features -Present findings with pictograms, diagrams or labelled drawings -Use and understand key terms such as: *classification, vertebrate, invertebrate, microorganism, characteristics, species, bacteria, fungi* -Use scientific comparisons: "Unlike mammals, amphibians..." "Both birds and reptiles..." -Create classification charts -Role-play as scientists discovering a new species -Grow mould on bread to explore microorganisms safely and visually