ign Technology at St Mawes Primary School

OUR INTENT

At St Mawes Primary we aim to establish, develop and nurture in the children a love for learning about history. We do this through our motivating and varied curriculum, which covers local, national and international topics.

History helps us to understand the complexity of people's lives, the process of change, the diversity of societies and relationships between different groups, as well as our own identity and the challenges of our time.

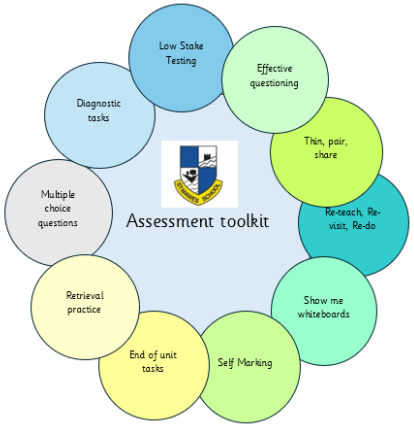
Developing a sense of chronology is important to us, and through this the children are able to increase their understanding of how the world has changed over time. Examples of history projects which have thoroughly engaged the children include: Who Am I? in KS1 and in KS2, a topic that links with our local environment and means a visit to St Mawes castle

SEQUENCING



FEEDBACK, PRACTICE AND RETRIEVAL

The purpose of feedback and assessment at St Mawes is to ensure children move forward in their learning, deepen their understanding and gain fluency. To ensure pupils make good progress, improve their confidence with a range of knowledge and skills and remember more of what they learn, regular practice and retrieval opportunities are planned for.





CROSS-CURRICULAR LINKS

Links are made between subjects to offer a creative way to develop children's knowledge, skills and understanding through a study of interconnected topics. Links are an effective way to teach children transferable problem solving skills, and to give real-world meaning to learning. Please see year group overviews for further details.

IMPACT

By the end of KS2, we want children to leave St Mawes as confident and enthusiastic historians who have a coherent knowledge and understanding of Britain's past and that of the wider world and a curiosity to know more about the past. In order to achieve this, we expect children to achieve the knowledge and skills goals stated on the year group overviews.

ENRICHMENT

Castle Class:

- Local history walk
- St Mawes castle
- Truro Museum workshops

Sail Class:

- Local history walk
- St Mawes castle
- Local Heritage group visitor
- Truro Museum workshops
- 4/5/6 residential will include a history based visit such as Natural History Museum in London or SS Great Britain in Bristol

SUPPORT

All children have access to the History curriculum at St Mawes.

Where specific support and guidance is needed, this is taken from the child's IPM or EHCP.

Knowledge Progression	Autumn	Spring	Summer
Whole School Year A	**Build a working model of a lighthouse** **KS1** A tall structure like a lighthouse is more stable and less likely to tip over when it has a wide, heavy base that lowers its centre of gravity. Thin, flexible materials such as paper and card bend easily, but rolling them into cylinders, folding, layering, or adding internal supports makes them much stronger and stiffer. Flat edges are weak when joined together; using tabs, slots, glue, or tape increases the contact area and creates a secure join between the tower and the base. The lantern room at the top of a lighthouse must be made from a transparent material (such as clear plastic) so that light from a torch or tea-light can shine straight through. **KS2** Electricity can only flow around a circuit to light the lighthouse bulb if there is a complete, unbroken loop connecting the cell (battery), wires, and bulb. A switch controls the lighthouse bulb by creating a deliberate break in the circuit when open (turning the light off) and completing the circuit when closed (turning the light on). Handmade switches require electrical conductors (such as metal paperclips, split pins, or foil) to allow electricity to flow through, mounted on an electrical insulator (such as card) to keep the circuit safe. A tapered tower shape—wider at the bottom and narrower at the top—improves stability against wind or knocks while providing an internal space to safely house and hide wires. **Key vocabulary-**lighthouse, coast, safety, cylinder, base, stable, sturdy, model, circuit, flow, insulator, conductor	**Clay sculptures** **All-** Clay is a natural, earthy material that is soft and malleable when wet, allowing it to be shaped, and becomes hard, rigid, and brittle once it dries. Designers research existing structures, create annotated sketches to plan how parts will connect, build prototypes or models using appropriate tools, and evaluate whether the final structure is strong and stable. **KS1-** A sculpture is more stable and less likely to topple over when it has a wide, flat base and is heavier at the bottom than at the top. Thin pieces of clay bend, sag, and snap easily when dry, whereas thicker walls and rolled coils provide greater strength and stiffness. As water evaporates from wet clay, it stiffens and hardens into a fixed shape. Working clay too much dries it out and causes it to crack. Simply pressing two pieces of clay together creates a weak join that will fall apart as the clay shrinks and dries; edges must be blended and smoothed together to stay attached. **KS2-** Scratching grooves (**scoring**) into two clay surfaces increases the surface area, and adding liquid clay (**slip**) acts like glue to bond the particles together into a strong, permanent joint. Rolling clay between wooden guide sticks creates slabs of uniform thickness. Even walls dry at the same speed, which prevents uneven shrinkage and cracking. Hollow structures (such as coiled pots or slab boxes) are lighter and stronger than solid lumps of clay, which are heavy and prone to cracking from the inside out. Adding a thin coil of clay along the inside corner of a slab join reinforces the seam and prevents the walls from pulling apart. **Key vocabulary-**clay, sculpt, malleable, brittle, blend, smooth, score, hollow, slab, coil	**Creating space buggies** **All-** Space buggies (rovers) are engineered to travel across uneven, rocky, or dusty terrain on other planets and moons without getting stuck or tipping over. Designers research real space rovers, draw annotated diagrams showing how wheels and mechanisms fit onto a chassis, build prototypes, and evaluate how well the vehicle moves over rough ground. **KS1** A wheel and axle mechanism reduces friction and allows a vehicle to roll smoothly over a surface instead of dragging. There are two ways to attach wheels to a buggy body (**chassis**). Either the axle is fixed tightly to the chassis and the wheels spin freely around it, or the wheels are fixed tightly to the axle and the axle rotates inside loose axle holders (such as straws or pegs). Axles must be straight and parallel to each other so the space buggy rolls in a straight line; if wheels rub against the chassis, friction slows the buggy down. Larger wheels with textured grips (such as rubber bands or card treads) help a space buggy climb over bumps and rocks more easily than small, smooth wheels. **KS2** A strong, lightweight frame chassis made from wooden dowels or reinforced card, strengthened with corner triangles (**triangulation**), prevents the buggy from twisting when driving over uneven ground. Space buggies can be powered without pushing by using stored mechanical energy, such as twisted elastic bands, balloons, or wind-up mechanisms that release energy to turn the axle. A pulley system uses a grooved wheel and an elastic drive belt to transfer rotational movement from a powered spindle or motor directly to the wheel axle. Connecting a small driver pulley to a larger follower pulley slows the wheels down but increases turning power (torque), helping the buggy climb steep or rocky slopes. **Key vocabulary**- buggy/rover, uneven, diagram, prototype, axle, chassis, parallel, pulley, rotate, torque

Whole School Year B	**Create a warning siren/ trap system** **All-** A warning siren or trap system is engineered to detect movement, pressure, or intrusion and immediately alert a user (through sound, light, or a physical barrier) to protect an object or space. Designers identify a security problem, draw annotated diagrams showing how a trigger activates an alarm or barrier, build prototypes using safe materials, and test the reliability of the system. **KS1** A lever is a rigid bar that pivots around a fixed point (**fulcrum**); pushing down on one end lifts or drops the other end, allowing a small movement to release a trapdoor or raise a warning flag. A slider is a strip of card or wood held in place by guides that moves back and forth in a straight line to open a gap, drop a cage, or reveal a hidden warning sign. A simple trap relies on a physical trigger (such as pulling a string or knocking away a support stick) to release stored gravity, causing a barrier to fall or a bell to ring. A trap box or frame must be reinforced with folds, tabs, or triangular corners so it stays upright and does not collapse when the mechanism snaps shut. **KS2** An electrical warning system uses a complete series circuit containing a cell (battery), wires, and an output component—such as a **buzzer** for a loud siren or a **bulb** for a flashing alert. A pressure pad works by separating two metal conductors (such as foil sheets) with a spongy insulator (such as foam or folded card with a hole in the middle); stepping on the pad presses the conductors together to complete the circuit and sound the buzzer. A tripwire alarm uses a wooden clothes peg wrapped in foil that is held open by a card insulator tied to a string; pulling the tripwire yanks the card out, allowing the foil contacts to snap together and trigger the siren. Wires and cells must be neatly hidden inside a box or behind scenery, using electrical insulators (such as masking tape or card) so bare wires do not touch and cause a short circuit. **Key vocabulary**- alarm, lever, activate, barrier, prototype, slider, trigger, buzzer, bulb, contacts, insulator, conductor	**Build shelters-** **All-** A shelter is a structure engineered to protect people, animals, or objects from weather conditions (such as rain, wind, cold, and sun) or danger. Designers investigate existing shelters, identify the user and environment, draw annotated diagrams showing how parts join together, build prototypes, and test whether the finished shelter is strong, stable, and weatherproof. **KS1** A shelter is more stable and less likely to blow over or collapse when it has a wide base that stays firmly on the ground. Flat sheets of paper or card bend and droop easily; folding, rolling into tubes, or layering materials makes them much stiffer and able to hold up a roof. Placing two edges side-by-side creates a weak join; using folded tabs, slots, glue, or masking tape creates stronger joins that hold walls and roofs together. Different materials have different properties; a shelter roof needs to be made from a waterproof material (such as plastic or foil) rather than an absorbent material (such as tissue or plain paper) to keep the inside dry. **KS2** A shell structure uses a strong outer skin to hold itself up (like an igloo or a dome tent), whereas a frame structure relies on a rigid internal skeleton (made from wooden dowels, straws, or sticks) covered with outer cladding. Square and rectangular frames twist and collapse easily when pushed from the side; adding diagonal struts to create triangles (triangulation) locks the frame into a rigid shape because triangles cannot change shape without breaking. Adding cardboard triangles (gussets) or tight elastic/string lashings across frame corners prevents joints from pulling apart under weight or wind. Flat roofs allow rain or snow to collect and weigh the shelter down, whereas pitched (sloped) or curved roofs allow water to run off quickly. **Key vocabulary**- waterproof, stable, sturdy, shelter, gussets, lashings, pitched,	**Cook and taste local produce** **All** Humans need to eat a balanced variety of foods from different food groups (represented on the *Eatwell Guide*) every day to grow, stay active, and keep healthy. Washing hands with soap, tying back long hair, cleaning work surfaces, and using tools safely prevents harmful bacteria from contaminating food and causing illness. **KS1** All food comes either from plants (such as fruits, vegetables, and grains) or from animals (such as meat, fish, eggs, and dairy milk). Many fresh ingredients are grown on nearby farms, in allotments, or in school gardens rather than being made in factories. We eat different parts of local plants, including roots (carrots, potatoes), stems (celery), leaves (lettuce, cabbage), flowers (broccoli), and fruits or seeds (apples, berries, peas). Cold dishes (such as fruit salads, vegetable crudités, or sandwiches) can be safely prepared without heat using simple tools to peel, grate, snip, and slice soft ingredients using the bridge hold and claw grip. **KS2** Different crops grow and ripen at specific times of the year depending on weather and daylight; eating seasonal local produce means food is fresher, tastier, and does not need to be flown long distances. Ingredients reach our kitchens through different farming and harvesting methods—crops are grown in soil or greenhouses, livestock are reared on farms for meat, milk, and eggs, and fish or shellfish are caught in rivers and seas. Some raw local ingredients are changed (processed) before we eat them, such as milling wheat into flour, churning cream into butter, or pressing apples into juice. Preparing balanced savoury dishes (such as seasonal vegetable soups, savoury scones, or stuffed flatbreads) involves accurately measuring ingredients, mixing, kneading, and safely applying heat through baking or simmering. Buying locally grown, seasonal produce reduces food miles (the distance food travels from farm to plate), which lowers carbon emissions, reduces packaging waste, and supports local farmers. **Key vocabulary-**ingredients, local, seasonal, farming, allotments, harvesting, crops, raw, cooked, produce, wast, food miles

Whole School Year	**Rainforest foods** **All** Tropical fruits, vegetables, nuts, and spices provide essential vitamins, minerals, and fibre that contribute to a healthy, balanced diet alongside everyday staple foods. Washing hands thoroughly, rinsing fresh tropical produce before peeling or cutting, and using kitchen tools safely prevents bacteria from contaminating food. **KS1** Many everyday foods in our kitchens—such as bananas, pineapples, mangoes, avocados, coconuts, and cocoa—originally come from hot, wet tropical rainforests near the equator. Tropical fruits and plants cannot grow outdoors in the UK because our climate is too cold; they need year-round warmth, bright sunlight, and heavy rainfall to grow and ripen. Rainforest foods grow on different parts of tropical plants, including fruits on trees (bananas, mangoes, cacao pods), fruits on low ground plants (pineapples), and spices from tree bark (cinnamon). Tropical fruits can be safely prepared into healthy snacks using simple tools to peel, scoop, snip, and slice soft ingredients using the bridge hold and claw grip. **KS2** Unlike the UK, which has four distinct seasons, tropical rainforest regions stay warm and wet all year round, allowing crops like bananas, rice, and citrus fruits to grow and be harvested continuously throughout the year. Tropical ingredients are grown on plantations or small farms (such as cacao, coffee, sugar cane, and black pepper), while river fish and crustaceans are caught in major rainforest rivers like the Amazon. Many rainforest ingredients cannot be eaten raw and must be processed before they reach shops—for example, cacao beans are fermented, dried, roasted, and ground to make cocoa powder and chocolate, while cassava roots are peeled and cooked to make flour or flatbreads. Rainforest ingredients are used across global cuisines to make balanced savoury dishes (such as vegetable and black bean wraps, coconut rice, or plantain dishes), requiring accurate measuring, mixing, and safe simmering or baking. Rainforest foods are grown thousands of miles away from the UK, they must be harvested early, chilled, and transported by cargo ship or plane (food miles) so they arrive fresh and safe to eat. Sustainable Farming and Fairtrade: Clearing rainforest trees to create large plantations (deforestation) destroys habitats; choosing Fairtrade and sustainably farmed ingredients (such as Rainforest Alliance certified cocoa, bananas, and palm oil) ensures farmers are paid fairly and protects rainforest ecosystems. **Key vocabulary-** seasonal, tropical, climate, global, cuisine, food miles, sustainable, fairtrade	**Jewellery Design** **All** Jewellery is a wearable 3D structure designed to fit comfortably on the body (such as wrists, necks, or lapels) without breaking, falling off, or causing discomfort to the wearer. Designers research existing jewellery styles, measure the user to ensure a correct fit, draw annotated diagrams showing how parts connect and fasten, build prototypes, and evaluate durability and comfort. **KS1** Flat paper and thin card bend, tear, and lose their shape easily when worn; rolling paper into tight beads, folding card into strips, or layering materials makes jewellery pieces much stronger and stiffer. Single strands of thin cotton or wool snap easily under tension; thicker cords, pipe cleaners, or doubled-up threads provide greater strength to hold beads together. Passing a thread through hollow tubes or punched holes connects individual parts into a flexible chain, while tying simple knots prevents beads from sliding off the ends. Wearable structures must have smooth edges and fit loosely enough to slip safely over a hand or head without pinching or scratching the skin. **KS2** Jewellery must withstand pulling forces (tension) when being put on, worn, or caught on clothing; weak joins between heavy decorative pendants and chains will snap unless reinforced. Instead of relying on stretchy elastic, rigid or fitted jewellery requires a secure fastening mechanism—such as a hook-and-eye, toggle clasp, button loop, or overlapping slot—so it can be easily opened and closed by the wearer. Interlocking paper, card, or wire links distribute weight evenly across a necklace or bracelet, while overlapping and gluing link seams prevents them from pulling apart. Materials such as salt dough, air-dry clay, or papier-mâché can be shaped into 3D pendants and hardened; keeping pendants thin and lightweight prevents them from pulling down or breaking the supporting chain. **Key vocabulary-**jewellery, comfortable, strong, stiff, prototype, durability, tension,	**Create bridges that hold weight and explore axels on vehicles-** **All** Bridges are engineered to span a gap safely while supporting heavy loads, while vehicles use rotating mechanisms to transport loads smoothly across surfaces and over bridges. Designers investigate existing bridges and vehicles, draw annotated diagrams showing structural supports and moving parts, build prototypes, and test how much weight the bridge holds and how smoothly the vehicle crosses it. **KS1** A simple beam bridge placed across a gap bends and sags in the middle when weight is added; folding paper into concertina pleats, rolling tubes, or layering card makes the bridge deck much stiffer and stronger. Bridges need wide, stable pillars (abutments) at both ends to transfer the weight of a vehicle safely down to the ground without tipping over. Wheels are attached to a rod called an axle so they can roll smoothly across a bridge deck instead of dragging, which reduces friction. Vehicles can be built in two ways—either the axle is fixed tightly to the vehicle body (chassis) and the wheels spin freely around it, or the wheels are fixed tightly to the axle and the axle rotates inside loose axle holders (such as straws). **KS2** Square and rectangular bridge frames twist and collapse easily under weight; adding diagonal struts to form triangles (triangulation) locks the bridge into a rigid truss structure because triangles cannot change shape without breaking. Curved arch bridges and triangulated truss bridges spread the downward weight (load) of a crossing vehicle outward toward the supports, allowing them to hold much heavier weights than flat beam bridges. A vehicle's chassis must be reinforced with corner triangles so it stays flat, and both axles must be parallel to each other so the vehicle drives straight across the bridge without veering off the edge. Instead of pushing a vehicle by hand, stored mechanical energy (such as a twisted elastic band) or a pulley and drive belt can be used to turn the axle automatically. **Key vocabulary-**bridge, support, stable, support, abutments, arch, truss, parallel

Whole School Year D	**Making healthy pizzas** **All** A balanced pizza includes ingredients from the main food groups on the Eatwell Guide—starchy carbohydrates for the base, vegetables for vitamins and fibre, protein (such as lean meat, beans, or fish), and moderate amounts of dairy (cheese) for calcium. Washing hands thoroughly, cleaning surfaces, tying back hair, and using kitchen tools safely prevents bacteria from contaminating food. **KS1** Pizza toppings come from both plants and animals—tomatoes, peppers, sweetcorn, and mushrooms grow on plants, while mozzarella cheese and ham come from animals (dairy cows and pigs). Pizza bases are made from flour, which is produced by growing wheat crops in fields, harvesting the grains, and grinding them into a fine powder Adding a variety of colourful vegetables increases vitamins and fibre, whereas adding too much salty processed meat or thick layers of cheese makes a pizza less healthy. Pre-baked bases (such as pitta breads, English muffins, or flatbreads) can be safely assembled without heat using simple tools to spread sauce, tear herbs, grate cheese, and slice soft vegetables using the bridge hold and claw grip. **KS2** Many pizza ingredients undergo processing before reaching the kitchen—wheat is milled into flour, ripe tomatoes are cooked and blended into passata sauce, and milk is curdled and aged to make cheese. Choosing UK seasonal vegetables (such as summer tomatoes, courgettes, or autumn mushrooms and peppers) makes pizzas fresher, tastier, and more environmentally friendly than using out-of-season imported ingredients. A basic flatbread or scone-style pizza base combines flour, water, a little oil, and a chemical raising agent (such as baking powder) that releases gas bubbles when wet and heated to make the dough light rather than heavy. Rolling dough to an even thickness ensures it cooks at the same speed without burning at the edges, while baking in a hot oven turns soft, wet dough into a firm, golden crust. Traditional pizza dough relies on yeast (a microscopic living fungus) which feeds on sugars in the flour and releases carbon dioxide gas during proving (fermentation); kneading stretches the gluten proteins in the flour to trap these gas bubbles and create a chewy, airy crust. **Key vocabulary**- healthy, base, flour, harvest, grains, bridge, claw grip, yeast, process	**Beach chairs** **All** A beach chair is a portable, lightweight seat engineered to support a person's weight comfortably on soft, uneven sand while folding flat for easy carrying and storage. Designers research existing deckchairs and folding loungers, consider user comfort and portability, draw annotated diagrams showing moving joints and frame supports, build scaled prototypes, and test weight-bearing strength. **KS1** A folding beach chair uses linked wooden or card strips that rotate around a fixed pin (pivot or fulcrum); moving one lever arm allows the chair frame to open into a seat or fold flat. A slider mechanism (such as a wooden bar sliding into notched grooves) locks the backrest at different angles so the user can sit upright or recline safely without the chair collapsing. Thin chair legs sink into soft sand and tip over easily; adding wide feet, cross-bars, or a flat base distributes weight over a larger surface area to keep the chair stable. A deckchair seat must be made from a strong, flexible textile (such as canvas or heavy cotton) rather than rigid card or brittle plastic so it bends comfortably to support the user's body without tearing. **KS2** Wooden dowel or reinforced card frames must be joined securely at corners using gussets, string lashings, or dowel joints so the frame does not twist under weight. When opened, the intersecting legs of a folding deckchair form triangles (triangulation), which locks the structure into a rigid, weight-bearing shape that resists collapsing sideways. Beach environments expose chairs to bright sunlight, salt water, and damp sand; fabrics must be tightly woven and water-resistant, while wooden frames need protective finishes to prevent warping or rotting. Designers use simple 2D computer drawing programs to accurately measure, mirror, and plan identical frame parts before cutting, ensuring both sides of the chair match perfectly. **Key vocabulary-** deckchair, frame, joint, slider, cross-bar, reinforce, grooves, flexible, resistant	**Creating images in sewing** **All** Textiles are flexible materials used to create functional products (such as bags, pouches, cushions, and clothing) that must be joined securely to hold weight and withstand everyday wear without tearing. Designers investigate existing textile products, create paper templates to measure and plan shapes, select appropriate fabrics and stitches, assemble the product, and evaluate seam strength and finish. **KS1** Different fabrics have different properties—felt is thick, dense, and does not fray when cut, whereas loosely woven cotton frays easily at the edges and needs careful handling. A running stitch passes a needle and thread over and under the fabric in a straight line to join two flat pieces of textile together. Short, even stitches hold two pieces of fabric together much more securely than long, loose stitches, which leave gaps where small items can fall out. Tying a secure knot at the end of a thread prevents it from pulling straight through the fabric, while finishing with a knot locks the seam in place so it does not unravel. **KS2** A backstitch overlaps stitches backward to create a continuous, unbroken line of thread that is much stronger than a running stitch for load-bearing seams, while an overstitch (whip stitch) wraps around raw edges to lock them together and prevent fraying. Flexible fabrics collapse under their own weight when made into tall bags or hats; adding internal stiffeners—such as iron-on interfacing, quilted padding, plastic canvas, or cardboard inserts—gives the textile structure rigidity and stability. **Key vocabulary-**textile, stitch, running, cross, backstitch, seam, thread

Whole School Year E	**Mask Making** **All** Across different cultures worldwide (such as Ancient Greek theatre, West African storytelling, Chinese Opera, and Venetian carnivals), masks are engineered as wearable 3D structures used to represent characters, express emotions, and bring stories to life. Designers research traditional masks from different cultures, measure the wearer's face so eye holes and straps align accurately, create annotated sketches, build prototypes, and evaluate comfort, durability, and visual impact. **KS1** Thin paper bends, flops, and tears easily when worn; using thicker card, layering paper, or rolling strips into tubes makes a mask much stronger and stiffer. Flat masks look plain, whereas folding card into concertina pleats, rolling cones for noses or horns, and curling paper strips creates bold 3D shapes that stand out during storytelling. Gluing flat edges directly onto a mask creates weak joins that fall off easily; cutting small folded tabs onto 3D parts increases the gluing surface area so features stay firmly attached. Eye holes must be measured and spaced to match the wearer's eyes for safe vision, while elastic or card headbands must be reinforced with tape or extra card at the attachment points so they do not rip when stretched. KS2 Large cultural mask features (such as expressive eyebrows, beaks, or animal snouts) can be sculpted from scrunched newspaper taped onto the base before covering with papier-mâché, keeping the structure hollow and lightweight rather than heavy and solid. Different materials serve distinct structural and aesthetic roles—rigid wire or dowel frames support wide outer structures, lightweight foam or card adds crisp geometric detail, and sealing paints protect the surface from moisture and wear. Tall headdresses, wide manes, or protruding horns shift a mask's centre of gravity forward or upward; engineers counterbalance this by reinforcing the headband structure or adding a chin strap so the mask stays stable during movement. **Key vocabulary-**stable, sturdy, durability, comfort, cultural, reinforce, headband, chinstrap, papier mache	**Tie dye T-shirts** **All** Tie-dyeing is a textile design technique used to transform plain garments into durable, patterned wearable products by blocking liquid dye from reaching specific areas of the fabric. Designers plan colour combinations and folding patterns using annotated diagrams, prepare and bind the fabric using resist techniques, apply dyes safely, and evaluate whether the final pattern and garment structure are durable and washable. **KS1** Fabrics made from natural plant fibres (such as 100% cotton) are absorbent, meaning they soak up liquid dye quickly, whereas synthetic fabrics (such as polyester or nylon) repel water and will not hold standard fabric dyes well. Folding, scrunching, or twisting a T-shirt and wrapping elastic bands tightly around it squeezes the fabric fibres together; this acts as a physical barrier (resist) that stops liquid dye from soaking into the bound folds, leaving white patterns behind. Wrapping elastic bands tightly creates crisp, clear white lines, whereas loose bands allow liquid dye to seep underneath, creating blurry, blended edges. When two primary liquid dyes (such as red and blue, or yellow and blue) touch on absorbent cotton, the wet fibres draw the liquids together (wicking), mixing them into secondary colours (purple or green). **KS2** Folding a T-shirt neatly into pleats, triangles, or spirals before binding creates predictable, symmetrical patterns (such as stripes, bullseyes, or sunbursts) rather than random spots. Liquid dye initially sits loosely on cotton fibres and will wash out in water unless it is fixed (set) by leaving the damp fabric sealed in a bag to cure and rinsing it in cold water until the water runs clear. Plain or worn T-shirts can be structurally redesigned and reinforced after dyeing—such as cutting and braiding fringes, adding stitched pockets, inserting reinforced neckline bindings, or sewing seams to transform a basic T-shirt into a structured tote bag or fitted top. **Key vocabulary-**absorbent, fold, wrap, scrunch, twist, dye, wicking, symmetrical	**Build animal homes- bug hotels, bird feeders** **All** Animal homes and feeders are outdoor structures engineered to provide safe shelter, nesting spaces, or accessible food for local wildlife while protecting them from predators and harsh weather. Designers research the specific needs of target species (such as garden birds, solitary bees, or ladybirds), create annotated diagrams showing structural supports and access holes, build prototypes using safe natural or reclaimed materials, and evaluate durability outdoors. **KS1** Ground-level bug hotels must have a wide, flat base and be packed tightly so they do not roll, wobble, or blow over in the wind. Thin plastic bottles or cardboard tubes bend and crush easily when hung up; reinforcing openings with tape or choosing rigid containers (such as wooden boxes or thick tubes) helps a bird feeder hold its shape. Different creatures need specific materials—insects shelter inside dry hollow stems, pine cones, and rolled corrugated card, whereas bird feeders need waterproof roofs and smooth perches without sharp edges. Hanging bird feeders require strong, knotted string or wire threaded through reinforced holes near the top so the weight of the birdseed does not rip through the container. **KS2** Damp, rotting conditions harm many overwintering insects and spoil birdseed; adding a sloped (pitched) waterproof roof with an overhang channels rainwater away, while small drainage holes in the base of bird feeders prevent seed from getting soggy and mouldy. Entrance holes must be sized accurately for the target animal—for example, drilling narrow 6–8mm tunnels in wood blocks for solitary bees, or sizing bird box openings to keep larger predators out. **Key vocabulary**- prototype, reclaimed, predator, prey, reinforced

	Making souvenirs	Build a model house	Moving vehicles
Whole School Year F	**All** A souvenir is a small, portable object designed to remind a visitor of a specific place, landmark, or event; it must be sturdy enough to survive being packed in a bag and displayed or used at home. Designers research local landmarks and existing tourist gifts, identify a target audience, create annotated sketches showing dimensions and materials, build prototypes, and evaluate durability and visual appeal. **KS1** Free-standing souvenirs (such as miniature landmark models or photo frames) need a wide, flat base or a folded triangular stand so they stay upright on a shelf without toppling over. Thin paper and card bend and crush easily in a suitcase; layering card, rolling tubes, or folding concertina pleats makes souvenir structures much stiffer and stronger. Gluing flat edges directly together creates weak joins that snap easily; cutting folded tabs onto 3D shapes increases the gluing surface area so parts stay firmly attached. Wearable or hanging souvenirs (such as keyrings, badges, or fridge magnets) need thick, rigid backing materials so pins, magnets, or key loops do not tear through when pulled. **KS2** Geometric souvenirs (such as miniature buildings, keepsake boxes, or snow-globe bases) are constructed from flat 2D nets; scoring along fold lines creates crisp edges and accurate 3D forms. Hollow 3D card or wooden souvenirs can crush under pressure; adding internal cross-braces, triangular gussets, or corrugated layers reinforces the walls against squashing forces (compression). Different souvenirs require specific material properties—moulded air-dry clay or salt dough creates heavy, solid paperweights, whereas lightweight balsa wood or rigid plastic prevents keyrings and ornaments from weighing down bags. Uncoated paper, card, and clay absorb moisture and scuff easily; applying a protective varnish, PVA glaze, or laminate layer seals the surface to improve durability and longevity. **Key vocabulary-**souvenir, durability, memories, geometric, hollow,	**All** A house is a permanent architectural structure engineered to stand upright, support its own roof weight, and protect the people living inside from weather conditions such as rain, wind, and cold. Designers research real buildings and local architecture, draw annotated floor plans and elevations showing walls, roofs, and openings, build prototypes using safe tools, and evaluate structural strength and finish. **KS1** A model house is more stable and less likely to tip over when it has a wide, flat footprint firmly anchored to a rigid baseboard. Single sheets of paper or thin card bend and buckle under the weight of a roof; layering cardboard, rolling paper tubes for pillars, or folding concertina pleats makes walls much stronger and stiffer. Taping or gluing two flat card edges edge-to-edge creates a weak corner that splits easily; using folded flange tabs or L-shaped paper hinges increases the gluing surface area so walls stay firmly joined. Cutting large doors and windows out of cardboard walls removes material and weakens the structure; leaving solid wall sections around openings prevents the walls from sagging. **KS2** Simple box houses rely on rigid outer walls (shell structure), whereas larger model houses use an internal wooden dowel or straw skeleton (frame structure) covered with outer cladding. Square and rectangular wooden frames twist and collapse sideways when pushed; adding diagonal struts or cardboard corner triangles (gussets) creates rigid triangles (triangulation) that lock the walls upright. Flat roofs trap water and sag in the middle under weight; sloped (pitched) roofs built using triangular roof trusses transfer weight outward onto the walls and allow rainwater to run off easily. Doors and shutters can be engineered to open and close smoothly without tearing by reinforcing the hinge edge with cloth tape, folded card strips, or split-pin pivots. **Key vocabulary-**stable, sturdy, waterproof, hinges, gussets, pitched,	**All** Vehicles are engineered to transport people or cargo safely and efficiently across land or water using mechanisms, hull shapes, and propulsion systems suited to their environment. Designers research real land and water vehicles, draw annotated diagrams showing hulls, chassis, and moving parts, build prototypes, and test buoyancy, balance, speed, and straight-line travel. **KS1** boat must be made from waterproof, lightweight materials (such as plastic trays, foil, or waxed card) that do not soak up water, become heavy, and sink. A wide, flat hull base keeps a boat balanced on the water; placing cargo evenly in the centre prevents the boat from tipping over (capsizing). A wheel and axle mechanism reduces friction and allows a vehicle to roll smoothly across a surface instead of dragging. Wheeled vehicles can be built in two ways—either the axle is fixed tightly to the vehicle body (chassis) and the wheels spin freely around it, or the wheels are fixed tightly to the axle and the axle rotates inside loose axle holders (such as straws). **KS2** Wide, flat boat fronts push against a lot of water and move slowly; shaping the front of a boat into a pointed bow (streamlining) reduces water resistance so it cuts smoothly through the water. Vehicles can move without being pushed by hand using stored mechanical energy—such as sails catching wind, twisted elastic bands spinning a paddle wheel on a boat, or a pulley and drive belt turning a wheeled vehicle's axle. A wheeled vehicle's chassis must be reinforced with corner triangles (triangulation) so it stays flat and does not twist under weight. Both axles on a wheeled vehicle must be fixed straight and parallel to each other so the vehicle travels in a straight line without veering off course. **Key vocabulary-** waterproof, lightweight, capsize, axle, friction, rotate

Food	**Skills Progression**
EYFS	Beginning to understand some of the tools, techniques and processes involved in food preparation. E.g. taking turns stirring the mixture for a cake and then watching it rise while cooking. Children should practise stirring, mixing, pouring and blending ingredients during cookery activities. Practise basic hygiene skills when handling and preparing food.
Year 1 and 2	Be aware of the Eatwell Plate Know about 5 portions fruit/veg

	Cut, peel or grate ingredients safely and hygienically. Measure or weigh using measuring cups or electronic scales. Assemble or cook ingredients. Understand where food comes from (plants/animals) and that it has to be farmed, grown, and caught.
Year 3 and 4	Prepare ingredients hygienically using appropriate utensils Measure ingredients to the nearest gram accurately Follow a recipe Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking) To know that food is grown, reared and caught in UK, Europe and wider world
Year 5 and 6	Understand the importance of correct storage and handling of ingredients (using knowledge of microorganisms) Measure accurately and calculate ratios of ingredients to scale up or down from a recipe Demonstrate a range of baking and cooking techniques Know that seasons may affect the food available
Materials	**Skills Progression**
EYFS	Show an awareness of how to be safe using tools. Begin to show a range of techniques and tools to shape materials such as scissors or tearing. Begin to join materials using a variety of tools and techniques such as Sellotape, glues, string and consider which is the most suitable for the task
Year 1 and 2	Cut materials safely using tools provided. Measure and mark out to the nearest centimetre. Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling). Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen). Select from a range of tools and equipment
Year 3 and 4	Cut materials accurately and safely by selecting appropriate tools Measure and mark out to the nearest millimetre Apply appropriate cutting and shaping techniques that include Cut within the perimeter of the material Select appropriate joining techniques
Year 5 and 6	Cut materials with precision and refine the finish with appropriate tools (such as sanding wood after cutting or a more precise scissor cut after roughly cutting out a shape) Show an understanding of the qualities of materials to choose appropriate tools to cut and shape

Textiles	**Skills Progression**
EYFS	Show an awareness of how to be safe using tools. Explore texture, quality and print of materials and discuss their suitability to a task. Begin to understand a variety of techniques for decorating textiles such as printing or tie dying.
Year 1 and 2	Shape textiles using templates. Join textiles using running stitch. Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing). Select from a range of materials and components according to characteristics.
Year 3 and 4	Join textiles with appropriate stitching Select the most appropriate techniques to decorate textiles
Year 5 and 6	Use the qualities of materials to create suitable visual and tactile effects in the decoration of textiles (such as a soft decoration for comfort on a cushion)
Electronics	**Skills Progression**
EYFS	Show an understanding of which devices need electricity/battery to enable them to operate.

Year 1 and 2	Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage).
Year 3 and 4	
Year 5 and 6	
Computing	**Skills Progression**
EYFS	Begin to use an age-related program to design/draw models.
Year 1 and 2	Model designs using software. Develop and communicate ideas using computing.
Year 3 and 4	Create series and parallel circuits
Year 5 and 6	Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips)
Construction	**Skills Progression**
EYFS	Learning to construct with a purpose in mind, use scissors, glue, string and a hole punch or construction resources such as Lego or wooden bricks.
Year 1 and 2	Use materials to practice drilling, screwing, gluing and nailing materials to make and strengthen products.
Year 3 and 4	Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding
Year 5 and 6	Use innovative combinations of electronics (or computing) and mechanics in product designs Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears)
Mechanics	**Skills Progression**
EYFS	Use age-appropriate resources such as Lego or cogs and gears to create moving parts.
Year 1 and 2	Create products using levers, wheels and winding mechanisms. Use sliders and axles.
Year 3 and 4	Choose suitable techniques to construct products or to repair items. Strengthen materials using suitable techniques Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filling and sanding
Year 5 and 6	Use innovative combinations of electronics (or computing) and mechanics in product designs Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product (such as levers, winding mechanisms, pulleys and gears)