



Class	Cycle	Autumn		Spring		Summer	
N/R	A	Building Big, Strong & Tall		Moving Models: Push, Pull, Slide		Tasty Creations: Preparing Rainbow Fruit Salad	
		Focus: Structures		Focus: Mechanisms		Focus: Food Technology	
		<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Materials have different properties: some are hard, others are soft or flexible. -Some shapes like triangles and arches help buildings stay strong. -Buildings fall down if they are not balanced or built on a wide base -Joining materials with glue, tape, or stacking helps structures hold together. -Some structures have special features like columns, beams, or roofs. -We can test if our building is stable by checking if it wobbles or falls. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Explore and describe the feel of different materials. Construct simple structures using different shapes. Test structures for stability by observing if they wobble. Practice different joining methods to combine materials. Identify and add structural features to model buildings. Evaluate models by testing balance and strength. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Things can move when you push or pull them -A lever helps something move up or down easily -A slider makes something move from side to side. -Wheels help things roll across the floor. -Fasteners like split pins can join pieces to make them spin. -We can test if our moving model works by seeing if it moves smoothly 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Explore different ways to create movement. -Use a lever to make part of a model move up/down. -Add a slider mechanism to a picture or model. -Construct a model using wheels for movement. -Assemble parts with split pins to rotate. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -We must use hygiene practices like washing hands and using clean equipment when preparing food. -Fruits can be eaten raw and have different textures and tastes. -We use tools like knives and peelers safely to cut and prepare food. -Some fruits grow on trees, others on bushes, and some underground - A rainbow salad includes different colours which help us stay healthy. -We can assemble ingredients to make a dish and talk about the flavours. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Practice hand washing and keeping tools clean. -Identify and sort fruits by their plant origins. -Use safe cutting techniques with adult support. -Explore and describe tastes and textures. -Select fruits of different colours for variety. -Combine ingredients to make a salad.
	<p>Final Product: A freestanding tower made from mixed natural and man-made materials</p>	<p>Final Product: A moving picture with sliding parts (e.g. an animal moving across a background).</p>	<p>Final Product: A colourful rainbow fruit salad prepared using a variety of fruits.</p>				



N/R	B	Textures & Patterns		Light & Dark: Exploring Simple Circuits		Natural Materials: Building with Nature	
		Focus: Textiles		Focus: Electrical Systems		Focus: Materials and Sustainability	
		<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Textiles are materials like fabric, felt, and cotton that can be used to make things. -Textiles have different textures — they can be soft, rough, or smooth. -We can join textiles using glue, tape, or simple stitches with help. -Patterns can be made by using different colours, shapes, or fabric pens. -Textiles can be cut into shapes for decoration or function We can evaluate our textile work by checking if it looks how we planned. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Explore different textiles by feel and sight. -Sort fabrics based on texture. -Practice joining two fabrics. -Create a pattern on fabric using pens or shapes. -Safely cut fabric into chosen shapes. -Reflect on choices of texture and colour. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Some objects need electricity to work, like torches and lamps. -A battery stores energy and powers devices. -A switch can turn things on and off by connecting or breaking a circuit. -A bulb lights up when the circuit is complete. -We must be safe when using anything powered by electricity. -We can test if our circuit works by seeing if the bulb lights up. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> - Identify devices that need electricity. -Connect a battery to a bulb with support. -Use a simple switch to control a bulb. -Complete a circuit to light the bulb. -Explore which materials conduct electricity. -Discuss safe handling of batteries and wires. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Some materials are natural, like wood, leaves, and stones -Some materials are man-made, like plastic and metal -We can use natural materials to create models or structures. -We can join materials by tying, gluing, or stacking. -Using materials again is called recycling or reusing. -We can make things that help nature, like homes for bugs or birds 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Identify and collect natural materials. -Compare natural vs man-made materials. -Explore different joining methods. -Select items that can be reused. -Create a design to help wildlife. -Test stability and purpose of model.
		<p>Final Product: A simple fabric collage using a variety of textures and colours.</p>		<p>Final Product: A simple light-up picture using a battery, bulb and wires (with adult support)</p>		<p>Final Piece: A nature-inspired model (e.g. a mini bug hotel or simple sculpture using natural materials).</p>	



Class	Cycle	Royal Structures: Designing for Queens & Cities		Transport & Tools for Leaders of the Past		Feasts of the Famous: Baking Flatbreads for Global Rulers	
		Focus: Structures		Focus: Mechanisms		Focus: Food Technology	
1/2	A	Substantive Knowledge -Different materials have strength , flexibility , and durability . -Shapes like triangles , arches , and buttresses help strengthen buildings. -Structures need foundations to distribute weight and prevent collapse. -Joining methods include flanges , tabs , and slots to hold materials together. -Buildings are designed for both function (what it does) and aesthetics (how it looks) -Testing and evaluating helps check a structure's stability and design success.	Disciplinary Skills -Investigate materials for building. -Apply shapes to reinforce design . -Build a model with a strong foundation . -Apply suitable joining techniques . -Design for function and appearance . -Evaluate against design criteria .	Substantive Knowledge - Levers and sliders create simple movement in models. -A wheel and axle system helps things move more easily over a surface. -Movements can be linear (back and forth) or rotational (round and round). -Mechanisms must be securely joined to work repeatedly without breaking. -Designs can combine multiple mechanisms for more complex movement. -We evaluate if a mechanism is strong , smooth , and meets its purpose .	Disciplinary Skills -Plan where to use levers/sliders in a model. -Construct and attach wheels and axles to a base. -Experiment with different movement types in models. -Use appropriate techniques to join moving parts securely. -Integrate multiple mechanisms in one model. -Test and evaluate movement and strength of model.	Substantive Knowledge -A recipe provides a list of ingredients and steps to follow. - Flour comes from grains , like wheat , grown on farms. - Kneading dough develops gluten , which makes bread stretchy and chewy. -Cooking techniques like baking and grilling transform food's texture and flavour . -A savoury dip (e.g. yogurt with herbs) complements bread and adds nutrition -A balanced diet includes a mix of carbohydrates , protein , and vegetables .	Disciplinary Skills -Follow a simple recipe accurately. -Identify and discuss the origins of flour. -Practice kneading dough correctly. -Bake or grill the prepared dough. -Prepare a simple savoury dip (e.g. yogurt, herbs). -Discuss the meal's nutritional value.
		Final Product: A model landmark inspired by Durham or Royal Buildings, e.g. a castle or cathedral tower.	Final Product: A moving vehicle model (a cart or chariot) with levers and sliders.	Final Product: Freshly baked flatbreads with a simple savoury yogurt and herb dip.			



1/2	B	Protect & Survive: Great Fire Textiles Focus: Textiles		Lighting Up the Past: Victorian Illuminated Homes Focus: Electrical Systems		Stone Age Solutions: Tools & Eco-Inventions Focus: Materials and Sustainability	
		<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Fabric is made from woven threads like cotton, wool, or synthetic fibres. -We can join fabrics using a running stitch, which is a basic sewing method. -Using a template helps cut fabric into the correct shape. -We can add decoration using appliqué, which means sewing or gluing fabric on top. -Choosing appropriate fabrics makes sure our product is strong and fit for purpose (like an apron for fire protection). -Evaluating means checking if it is secure, neat, and does what we wanted it to. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Identify and name types of fabric. -Learn and practice the running stitch. -Use a template to cut fabric. -Apply an appliqué design onto fabric. -Select appropriate materials for durability. -Reflect and suggest improvements. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Circuit need a battery, wires, and a bulb to work. -A circuit must be complete for the electricity to flow. -A switch controls whether a circuit is open (off) or closed (on). -Different materials are conductors (let electricity flow) or insulators (block it). -Lights can be used for both practical uses and decoration. -We can evaluate if the circuit works and whether it meets the design criteria. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Construct a basic circuit with one bulb. -Check if circuits are complete and working. -Add a switch to control the circuit. -Test materials to sort into conductors and insulators. -Design lighting for purpose or decoration. Test final circuit and product. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -In the Stone Age, tools were made from natural materials like stone, bone, and wood. -Tools have purposes like cutting, grinding, or scraping. -Using natural resources carefully helps us protect the environment. -Upcycling means turning waste materials into something useful. -Some materials can be recycled, like glass and metal. -We evaluate if an item is strong, safe, and eco-friendly. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Explore materials used historically. -Design a tool with a clear function. -Select sustainable materials. -Create something new from waste. -Identify materials that are recyclable. -Test and reflect on the final product.
		<p>Final Product: A fabric pouch inspired by the Great Fire of London, using running stitch and decoration.</p>		<p>Final Piece: A model Victorian house with an internal bulb circuit to light up the window.</p>		<p>Final Piece: A model Stone Age-style tool from recycled/natural materials.</p>	



3/4	A	Pyramids of Power: Constructing Egyptian Monuments Focus: Structures		Engineering the Indus: Moving Water in Ancient Cities Focus: Mechanisms		Flavours of the Ancients: Making Greek Mezze Platters Focus: Food Technology	
		<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Materials are chosen based on mechanical properties like rigidity and load-bearing capacity -Structures must resist compression, tension, and torsion forces. -A framework spreads load evenly and includes trusses and beams. -Braces, gussets, and cross-beams add strength to joints. -Structures should balance purpose, cultural symbolism, and aesthetics. -Prototyping, testing, and refining improve the design's strength and accuracy. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Select materials based on properties. -Experiment with building techniques for force resistance. -Build a structure with frameworks. -Add reinforcements to models. -Adapt design to include cultural themes. -Improve through testing and refinement. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -A pulley changes the direction of a force to lift objects. Gears transfer force between turning parts and change speed or power. -Linkages connect parts of a mechanism to move together. -A belt system moves power between separate shafts or parts. -Friction affects how smoothly mechanisms operate — reducing friction helps movement. -Testing and improving mechanisms ensures they are efficient, safe, and fit for purpose 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Build a working pulley system. -Assemble gears to demonstrate speed change. -Construct linkages in a mechanism. -Create a belt-driven part in a model. -Modify designs to reduce friction. -Test for efficiency and refine if necessary. 	<p>Substantive Knowledge</p> <p>A Mezze platter is a variety of small savoury dishes, common in the Mediterranean diet. Common ingredients include yogurt, cucumber, garlic, and olive oil for dips like tzatziki. Chopping, grating, and mixing are preparation techniques that affect texture and taste. Protein, carbohydrates, and fats provide energy and nutrients in a meal. The Mediterranean diet is rich in vegetables, herbs, and healthy fats, which support heart health. Presentation of food affects how appealing it looks and encourages balanced eating.</p>	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Plan what items will be on the mezze platter. -Prepare and mix ingredients accurately. -Apply appropriate preparation techniques. -Identify the nutritional components of the platter. -Discuss benefits of Mediterranean eating. -Arrange the platter aesthetically.
		<p>Final Product: A model pyramid with internal framework, showing reinforcement techniques.</p>		<p>Final Product: A model water-lifting system (e.g. Shaduf or water wheel) inspired by the Indus Valley.</p>		<p>Final Product: A Greek Mezze Platter including tzatziki, hummus, chopped salad, and flatbread.</p>	



3/4	B	Threads of Time: Roman Textiles & Coastal Gear Focus: Textiles		Warning Systems: Earthquake Alarms Focus: Electrical Systems		Eco-Designs by the Sea: Coastal Upcycling & Protection Focus: Materials and Sustainability	
		<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Different fabrics have different properties: absorbency, durability, flexibility. -More durable joining methods include backstitch and overstitch, which are stronger than running stitch. -Seam allowance is the extra fabric added to allow for stitching. -Decorative techniques include embroidery and appliqué to add detail and texture. -A wearable product (bag) must balance functionality and appearance. - Evaluate by checking durability, comfort, and how well it meets the design brief. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> - Test fabrics for these properties. -Practice backstitch and overstitch. -Include seam allowance when cutting. -Apply decorative techniques to fabric. -Balance function with decoration in designs. -Assess and record how well the product works 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -A series circuit has components connected in one path. -A buzzer converts electricity into sound for alerts. -A switch can be used to activate alarms manually or automatically. Circuit diagrams help us plan where each component will go. -If a circuit is broken, electricity cannot flow and the device won't work. -Products must be tested for reliability and consistency of function 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Construct a series circuit with multiple outputs. -Connect a buzzer in a circuit. -Add a switch to activate the buzzer. -Draw a circuit diagram before assembly. -Troubleshoot broken circuits. -Test product under 'earthquake' conditions. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Coastal areas face challenges like pollution and erosion -Designing with sustainability means reducing waste and reusing materials. -Properties of materials (e.g. waterproof, durable) affect their use in coastal areas. Upcycling gives new life to discarded items like plastic bottles or rope -Sustainable design can help protect the environment and reduce landfill. -Evaluating a product means checking for functionality, durability, and environmental impact. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Research environmental issues in coastal areas. -Plan an upcycled product for sustainability. -Test materials for intended use. -Create an upcycled item using waste. -Adapt designs for minimal waste. -Assess product's usefulness and sustainability.
		<p>Final Product: A functional Roman-style drawstring bag, featuring decorative stitching and appliqué.</p>		<p>Final Product: An earthquake warning system model with a buzzer and light to signal a 'quake'.</p>		<p>Final Product: A product made from upcycled materials designed to help or protect coastal environments (e.g. bird feeder, beach litter picker).</p>	



5/6	A	The Round City: Building Islamic Architecture & Aqueducts Focus: Structures		Voyages & Warriors: Mechanised Viking Longships Focus: Mechanisms		Taste of the Tropics: Cooking Amazonian Manioc & Savoury Plantain Stew Focus: Food Technology	
		<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Materials are selected for specific tensile, compressive, or corrosion-resistant qualities. -Engineers must understand and manage compression, tension, and torsion in designs -Load distribution is managed through arches, domes, and cantilevers. -Scale and proportion are vital in architectural design to ensure structural integrity. Design reflects cultural symbolism, geometric patterns, and functionality -Using iterative design, prototypes are tested, analysed, and improved. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Assess materials for required properties. -Apply understanding of forces in designs. -Design features for effective load distribution. -Apply scale and proportion in models. -Incorporate cultural motifs in designs. Test, analyse, and refine product. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -A cam mechanism converts rotary motion to linear motion. -A crank changes rotational motion to reciprocating (back and forth) motion. -Linkages and levers combined can control complex movements in machinery. Combining gears, pulleys, and belts can increase mechanical advantage. -Prototypes are built to test how mechanisms function before final production. -Mechanisms are evaluated for efficiency, precision, and durability under stress. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Design a cam mechanism for controlled movement. -Assemble a crank mechanism. -Construct combined linkage-lever systems. Integrate gears, pulleys, or belts into design. -Build and refine a prototype mechanism. -Final product evaluated against all criteria. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Manioc (or cassava) is a starchy root staple in the Amazon region. -Plantain is cooked (not eaten raw) and used in stews for its savoury flavour. -Cooking methods like boiling, frying, and simmering develop flavours and textures. -Adding spices (e.g. cumin, paprika) and herbs enhances taste and reflects cultural traditions. Understanding seasonality and sourcing helps reduce food miles and supports sustainability. -A nutritionally balanced meal includes carbohydrates, proteins, vegetables, and healthy fats 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Identify and handle tropical ingredients. -Peel and prepare plantain safely. -Select suitable cooking methods for ingredients. -Season the stew with appropriate spices. -Discuss seasonality and ingredient sourcing. -Evaluate the dish for nutritional balance.
		<p>Final Product: A model of the Round City of Baghdad or a functioning aqueduct model</p>		<p>Final Product: A mechanised Viking Longship model with a cam-driven moving figurehead or paddles.</p>		<p>Final Product: A savoury Amazonian-inspired stew using manioc, plantain, and tropical vegetables.</p>	



5/6	B	Weaving the World: Maya Textiles & Climate Action Focus: Textiles		Powering Progress: Motorised Models of Industrial Britain Focus: Electrical Systems		Mend & Make Do: WWII Upcycling for a Sustainable Future Focus: Materials and Sustainability	
		<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -Textiles can be created by weaving, which interlaces warp and weft threads. -Understanding traditional Maya textiles shows how fabrics can tell stories through symbols and patterns. -Combining stitches: blanket stitch for edges, chain stitch for decoration. - Pattern cutting allows for accurate replication of textile products. -Choosing materials that are sustainable, like organic cotton or recycled fabrics, helps reduce environmental impact. -Products are evaluated on durability, sustainability, and how well they communicate a message (e.g. climate change awareness). 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Practice setting up a simple loom for weaving. -Design patterns inspired by Mayan symbols. -Apply decorative stitches to the textile piece. -Cut fabric accurately following patterns. -Select sustainable fabrics for construction. -Present final product and reflect on its impact. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -A motor converts electrical energy into movement. -A parallel circuit allows multiple components to work independently. -A switch can control different parts of a circuit for different outputs. -Motors can be connected to gears to adjust the speed and torque of movement. -Circuit diagrams use symbols to show how to assemble electrical systems. -Final models are evaluated for efficiency, speed, and power output. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Construct a motor circuit. -Build a parallel circuit with motor and light. -Design and install a switch in the circuit. -Connect gears to the motor to adjust speed. -Draw accurate circuit diagrams. -Test and refine motorised system. 	<p>Substantive Knowledge</p> <ul style="list-style-type: none"> -During WWII, people reused materials through the 'Make Do and Mend' campaign -Designing for sustainability involves using recycled or biodegradable materials. -The product life cycle tracks a product from creation to disposal. -We can design products to reduce carbon footprint and support a circular economy. -Materials are evaluated for their sustainability, strength, and aesthetic appeal. -We assess if the final product is durable, recyclable, and meets the design brief. 	<p>Disciplinary Skills</p> <ul style="list-style-type: none"> -Explore historical reuse examples. -Select sustainable materials for making. -Map the life cycle of a material. -Consider environmental cost in design. -Choose materials for strength and appearance. -Test and present the final product.
		<p>Final Piece: A woven textile eco-banner incorporating Mayan-inspired patterns and sustainable materials.</p>		<p>Final Product: A motorised model inspired by Industrial Britain machinery (e.g. rotating crane, pulley system or vehicle).</p>		<p>Final Product: A repurposed product made from recycled fabrics or materials (e.g. a reusable bag, pencil case, or cushion cover).</p>	