

		Year 3	Year 4	Year 5	Year 6
Structures	Design			<ul style="list-style-type: none"> <li>• Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect.</li> <li>• Building frame structures designed to support weight.</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs.</li> </ul>
	Make			<ul style="list-style-type: none"> <li>• Creating a range of different shaped frame structures.</li> <li>• Making a variety of free standing frame structures of different shapes and sizes.</li> <li>• Selecting appropriate materials to build a strong structure and cladding.</li> <li>• Reinforcing corners to strengthen a structure.</li> <li>• Creating a design in accordance with a plan.</li> <li>• Learning to create different textural effects with materials.</li> </ul>	<ul style="list-style-type: none"> <li>• Building a range of play apparatus structures drawing upon new and prior knowledge of structures.</li> <li>• Measuring, marking and cutting wood to create a range of structures.</li> <li>• Using a range of materials to reinforce and add decoration to structures.</li> </ul>
	Evaluate			<ul style="list-style-type: none"> <li>• Evaluating structures made by the class.</li> <li>• Describing what characteristics of a design and construction made it the most effective.</li> <li>• Considering effective and ineffective designs.</li> </ul>	<ul style="list-style-type: none"> <li>• Improving a design plan based on peer evaluation.</li> <li>• Testing and adapting a design to improve it as it is developed.</li> <li>• Identifying what makes a successful structure.</li> </ul>
	Technical			<ul style="list-style-type: none"> <li>• To understand what a frame structure is.</li> <li>• To know that a 'free-standing' structure is one which can stand on its own.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that structures can be strengthened by manipulating materials and shapes.</li> </ul>
	Additional			<ul style="list-style-type: none"> <li>• To know that a pavilion is a a decorative building or structure for leisure activities.</li> <li>• To know</li> </ul>	<ul style="list-style-type: none"> <li>• To understand what a 'footprint plan' is.</li> </ul>

				<p>that cladding can be applied to structures for different effects.</p> <ul style="list-style-type: none"> <li>• To know that aesthetics are how a product looks.</li> <li>• To know that a product's function means its purpose.</li> <li>• To understand that the target audience means the person or group of people a product is designed for.</li> <li>• To know that architects consider light, shadow and patterns when designing.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that in the real world, design , can impact users in positive and negative ways.</li> <li>• To know that a prototype is a cheap model to test a design idea.</li> </ul>
Mechanisms	Design	<ul style="list-style-type: none"> <li>• Designing a toy which uses a pneumatic system.</li> <li>• Developing design criteria from a design brief.</li> <li>• Generating ideas using thumbnail sketches and exploded diagrams.</li> <li>• Learning that different types of drawings are used in design to explain ideas clearly</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a shape that reduces air resistance.</li> <li>• Drawing a net to create a structure from.</li> <li>• Choosing shapes that increase or decrease speed as a result of air resistance.</li> <li>• Personalising a design.</li> </ul>		
	Make	<ul style="list-style-type: none"> <li>• Creating a pneumatic system to create a desired motion.</li> <li>• Building secure housing for a pneumatic system.</li> <li>• Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy.</li> <li>• Selecting materials due to their functional and aesthetic characteristics.</li> <li>• Manipulating materials to create different effects by</li> </ul>	<ul style="list-style-type: none"> <li>• Measuring, marking, cutting and assembling with increasing accuracy.</li> <li>• Making a model based on a chosen design.</li> </ul>		

		cutting, creasing, folding and weaving.			
	Evaluate	<ul style="list-style-type: none"> <li>• Using the views of others to improve designs.</li> <li>• Testing and modifying the outcome, suggesting improvements.</li> <li>• Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance.</li> </ul>		
	Technical	<ul style="list-style-type: none"> <li>• To understand how pneumatic systems work.</li> <li>• To understand that pneumatic systems can be used as part of a mechanism.</li> <li>• To know that pneumatic systems operate by drawing in, releasing and compressing air.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that all moving things have kinetic energy.</li> <li>• To understand that kinetic energy is the energy that something (object/person) has by being in motion.</li> <li>• To know that air resistance is the level of drag on an object as it is forced through the air.</li> <li>• To understand that the shape of a moving object will affect how it moves due to air resistance.</li> </ul>		
	Additional	<ul style="list-style-type: none"> <li>• To understand how sketches, drawings and diagrams can be used to communicate design ideas.</li> <li>• To know that exploded-diagrams are used to show how different parts of a product fit together.</li> <li>• To know that thumbnail sketches are small drawings to get ideas down on paper quickly.</li> </ul>	<ul style="list-style-type: none"> <li>• To understand that products change and evolve over time.</li> <li>• To know that aesthetics means how an object or product looks in design and technology.</li> <li>• To know that a template is a stencil you can use to help you draw the same shape accurately.</li> <li>• To know that a birds-eye view means a view from a high angle (as if a bird in flight).</li> <li>• To know that graphics are images which are designed to explain or advertise something.</li> </ul>		

			<ul style="list-style-type: none"> <li>• To know that it is important to assess and evaluate design ideas and models against a list of design criteria.</li> </ul>		
Electrical systems	Design	<ul style="list-style-type: none"> <li>• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas.</li> </ul>		<ul style="list-style-type: none"> <li>• Designing a steady hand game - identifying and naming the components required.</li> <li>• Drawing a design from three different perspectives.</li> <li>• Generating ideas through sketching and discussion.</li> <li>• Modelling ideas through prototypes.</li> <li>• Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'.</li> </ul>	
	Make	<ul style="list-style-type: none"> <li>• Making a torch with a working electrical circuit and switch.</li> <li>• Using appropriate equipment to cut and attach materials.</li> <li>• Assembling a torch according to the design and success criteria.</li> </ul>		<ul style="list-style-type: none"> <li>• Constructing a stable base for a game.</li> <li>• Accurately cutting, folding and assembling a net.</li> <li>• Decorating the base of the game to a high quality finish.</li> <li>• Making and testing a circuit.</li> <li>• Incorporating a circuit into a base.</li> </ul>	
	Evaluate	<ul style="list-style-type: none"> <li>• Evaluating electrical products.</li> <li>• Testing and evaluating the success of a final product.</li> </ul>		<ul style="list-style-type: none"> <li>• Testing own and others finished games, identifying what went well and making suggestions for improvement.</li> <li>• Gathering images and information about existing children's toys.</li> <li>• Analysing a selection of existing children's toys.</li> </ul>	
	Technical	<ul style="list-style-type: none"> <li>• To understand that electrical conductors are materials which electricity can pass through.</li> </ul>		<ul style="list-style-type: none"> <li>• To know that batteries contain acid, which can be dangerous if they leak.</li> </ul>	

		<ul style="list-style-type: none"> <li>• To understand that electrical insulators are materials which electricity cannot pass through.</li> <li>• To know that a battery contains stored electricity that can be used to power products.</li> <li>• To know that an electrical circuit must be complete for electricity to flow.</li> <li>• To know that a switch can be used to complete and break an electrical circuit.</li> </ul>		<ul style="list-style-type: none"> <li>• To know the names of the components in a basic series circuit, including a buzzer.</li> </ul>	
	Additional	<ul style="list-style-type: none"> <li>• To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens.</li> <li>• To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison.</li> </ul>		<ul style="list-style-type: none"> <li>• To know that 'form' means the shape and appearance of an object.</li> <li>• To know the difference between 'form' and 'function'.</li> <li>• To understand that 'fit for purpose' means that a product works how it should and is easy to use.</li> <li>• To know that form over purpose means that a product looks good but does not work very well.</li> <li>• To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind.</li> <li>• To understand the diagram perspectives 'top view', 'side view' and 'back'</li> </ul>	
Cooking & Nutrition	Design	<ul style="list-style-type: none"> <li>• Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture,</li> </ul>	<ul style="list-style-type: none"> <li>• Designing a pizza within a given budget, drawing upon previous taste testing judgements.</li> </ul>		

		smell and appearance of the dish.			
	Make	<ul style="list-style-type: none"> <li>• Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination.</li> <li>• Following the instructions within a recipe.</li> </ul>	<ul style="list-style-type: none"> <li>• Following a baking recipe, from start to finish, including the preparation of ingredients.</li> <li>• Cooking safely, following basic hygiene rules.</li> <li>• Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet).</li> </ul>		
	Evaluate	<ul style="list-style-type: none"> <li>• Establishing and using design criteria to help test and review dishes.</li> <li>• Describing the benefits of seasonal fruits and vegetables and the impact on the environment.</li> <li>• Suggesting points for improvement when making a seasonal tart.</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating a recipe, considering: taste, smell, texture and appearance.</li> <li>• Describing the impact of the budget on the selection of ingredients.</li> <li>• Evaluating and comparing a range of food products.</li> <li>• Suggesting modifications to a recipe (e.g. This pizza has too many raisins, and it is falling apart, so next time I will use less raisins).</li> </ul>		
	Technical	<ul style="list-style-type: none"> <li>• To know that not all fruits and vegetables can be grown in the UK.</li> <li>• To know that climate affects food growth.</li> <li>• To know that vegetables and fruit grow in certain seasons.</li> <li>• To know that cooking instructions are known as a 'recipe'.</li> <li>• To know that imported food is food which has been brought into the country.</li> </ul>	<ul style="list-style-type: none"> <li>• To know that the amount of an ingredient in a recipe is known as the 'quantity.'</li> <li>• To know that it is important to use oven gloves when removing hot food from an oven.</li> <li>• To know the following cooking techniques: sieving, creaming, rubbing method, cooling.</li> <li>• To understand the importance of budgeting while planning ingredients for pizzas.</li> </ul>		

		<ul style="list-style-type: none"> <li>• To know that exported food is food which has been sent to another country..</li> <li>• To understand that imported foods travel from far away and this can negatively impact the environment.</li> <li>• To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre.</li> <li>• To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health.</li> <li>• To know safety rules for using, storing and cleaning a knife safely.</li> <li>• To know that similar coloured fruits and vegetables often have similar nutritional benefits.</li> </ul>			
Textiles	Design	<ul style="list-style-type: none"> <li>• Designing and making a template from an existing cushion and applying individual design criteria.</li> </ul>			<ul style="list-style-type: none"> <li>• Designing a stuffed toy, considering the main component shapes required and creating an appropriate template.</li> <li>• Considering the proportions of individual components.</li> </ul>
	Make	<ul style="list-style-type: none"> <li>• Following design criteria to create a pencil case</li> <li>• Selecting and cutting fabrics with ease using fabric scissors.</li> <li>• Threading needles with greater independence.</li> <li>• Tying knots with greater independence.</li> <li>• Sewing cross stitch to join fabric.</li> </ul>			<ul style="list-style-type: none"> <li>• Creating a 3D stuffed toy from a 2D design.</li> <li>• Measuring, marking and cutting fabric accurately and independently .</li> <li>• Creating strong and secure blanket stitches when joining fabric.</li> <li>• Threading needles independently.</li> </ul>

		<ul style="list-style-type: none"> <li>Decorating fabric using appliqué.</li> <li>Completing design ideas with stuffing and sewing the edges (Pencil case)</li> </ul>			<ul style="list-style-type: none"> <li>Using appliqué to attach pieces of fabric decoration.</li> <li>Sewing blanket stitch to join fabric.</li> <li>Applying blanket stitch so the spaces between the stitches are even and regular</li> </ul>
	Evaluate	<ul style="list-style-type: none"> <li>Evaluating an end product and thinking of other ways in which to create similar items.</li> </ul>			<ul style="list-style-type: none"> <li>Testing and evaluating an end product and giving point for further improvements.</li> </ul>
	Technical	<ul style="list-style-type: none"> <li>To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.</li> <li>To know that when two edges of fabric have been joined together it is called a seam.</li> <li>To know that it is important to leave space on the fabric for the seam.</li> <li>To understand that some products are turned inside out after sewing so the stitching is hidden.</li> </ul>			<ul style="list-style-type: none"> <li>To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric.</li> <li>To understand that it is easier to finish simpler designs to a high standard.</li> <li>To know that soft toys are often made by creating appendages separately and then attaching them to the main body.</li> <li>To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely.</li> </ul>
	Additional				
Digital World	Design				<ul style="list-style-type: none"> <li>Writing a design brief from information submitted by a client.</li> <li>Developing design criteria to fulfil the client's request.</li> <li>Considering and suggesting additional functions for my navigation tool.</li> <li>Developing a product idea through annotated sketches.</li> </ul>



					<ul style="list-style-type: none"> <li>• Placing and manoeuvring 3D objects, using CAD.</li> <li>• Changing the properties of, or combining one or more 3D objects, using CAD.</li> </ul>
	Make				<ul style="list-style-type: none"> <li>• Considering materials and their functional properties, especially those that are sustainable and recyclable (for example, cork and bamboo).</li> <li>• Explaining material choices and why they were chosen as part of a product concept.</li> <li>• Programming an N,E, S, W cardinal compass.</li> </ul>
	Evaluate				<ul style="list-style-type: none"> <li>• Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.</li> <li>• Developing an awareness of sustainable design.</li> <li>• Identifying key industries that utilise 3D CAD modelling and explaining why.</li> <li>• Describing how the product concept fits the client's request and how it will benefit the customers.</li> <li>• Explaining the key functions in my program, including any additions.</li> <li>• Explaining how my program fits the design criteria and how it would be useful as part of a navigation tool.</li> <li>• Explaining the key functions and features of my navigation tool to the client as part of a product concept pitch.</li> </ul>

					<ul style="list-style-type: none"> <li>• Demonstrating a functional program as part of a product concept pitch.</li> </ul>
	Technical				<ul style="list-style-type: none"> <li>• To know that accelerometers can detect movement.</li> <li>• To understand that sensors can be useful in products as they mean the product can function without human input.</li> </ul>
	Additional				<ul style="list-style-type: none"> <li>• To know that designers write design briefs and develop design criteria to enable them to fulfil a client's request.</li> <li>• To know that 'multifunctional' means an object or product has more than one function.</li> <li>• To know that magnetometers are devices that measure the Earth's magnetic field to determine which direction you are facing.</li> </ul>