

## Design and Technology

Threshold Concept	Milestone One	Milestone Two	Milestone Three
	By the end of Year Two, the children should be able to:	By the end of Year Four, the children should be able to:	By the end of Year Six, the children should be able to:
<p><b>Master practical skills</b> This concept involves developing the skills needed to make high quality products (we have highlighted a range of skills but they may be added to or changed)</p> <p style="text-align: center;"><b>Food</b></p>	<ul style="list-style-type: none"> <li>• Cut, peel or grate ingredients safely and hygienically.</li> <li>• Measure or weigh using measuring cups or electronic scales.</li> <li>• Assemble or cook ingredients.</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare ingredients hygienically using appropriate utensils.</li> <li>• Measure ingredients to the nearest gram accurately.</li> <li>• Follow a recipe.</li> <li>• Assemble or cook ingredients (controlling the temperature of the oven or hob, if cooking).</li> </ul>	<ul style="list-style-type: none"> <li>• Understand the importance of correct storage and handling of ingredients (using knowledge of micro-organisms).</li> <li>• Measure accurately and calculate ratios of ingredients to scale up or down from a recipe.</li> <li>• Demonstrate a range of baking and cooking techniques.</li> <li>• Create and refine recipes, including ingredients, methods, cooking times and temperatures.</li> </ul>
<p style="text-align: center;"><b>Materials</b></p>	<ul style="list-style-type: none"> <li>• Cut materials safely using tools provided.</li> <li>• Measure and mark out to the nearest centimetre.</li> <li>• Demonstrate a range of cutting and shaping techniques (such as tearing, cutting, folding and curling).</li> </ul>	<ul style="list-style-type: none"> <li>• Cut materials accurately and safely by selecting appropriate tools.</li> <li>• Measure and mark out to the nearest millimetre.</li> <li>• Apply appropriate cutting and shaping techniques that include cuts within the perimeter of the material (such as slots or cut outs).</li> </ul>	<ul style="list-style-type: none"> <li>• 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).</li> <li>• Show an understanding of the qualities of materials to choose appropriate tools to cut and shape (such as the nature of fabric may require sharper scissors than</li> </ul>

	<ul style="list-style-type: none"> <li>• Demonstrate a range of joining techniques (such as gluing, hinges or combining materials to strengthen).</li> </ul>	<ul style="list-style-type: none"> <li>• Select appropriate joining techniques.</li> </ul>	would be used to cut paper).
<b>Textiles</b>	<ul style="list-style-type: none"> <li>• Shape textiles using templates.</li> <li>• Join textiles using running stitch. <ul style="list-style-type: none"> <li>• Colour and decorate textiles using a number of techniques (such as dyeing, adding sequins or printing).</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Understand the need for a seam allowance.</li> <li>• Join textiles with appropriate stitching.</li> <li>• Select the most appropriate techniques to decorate textiles.</li> </ul>	<ul style="list-style-type: none"> <li>• Create objects (such as a cushion) that employ a seam allowance. <ul style="list-style-type: none"> <li>• Join textiles with a combination of stitching techniques (such as back stitch for seams and running stitch to attach decoration).</li> </ul> </li> <li>• 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).</li> </ul>
<b>Electricals and Electronics</b>	<ul style="list-style-type: none"> <li>• Diagnose faults in battery operated devices (such as low battery, water damage or battery terminal damage)</li> </ul>	<ul style="list-style-type: none"> <li>• Create series and parallel circuits</li> </ul>	<ul style="list-style-type: none"> <li>• Create circuits using electronics kits that employ a number of components (such as LEDs, resistors, transistors and chips).</li> </ul>
<b>Computing</b>	<ul style="list-style-type: none"> <li>• Model designs using software.</li> </ul>	<ul style="list-style-type: none"> <li>• Control and monitor models using software designed for this purpose.</li> </ul>	<ul style="list-style-type: none"> <li>• Write code to control and monitor models or products.</li> </ul>
<b>Construction</b>	<ul style="list-style-type: none"> <li>• Use materials to practise drilling, screwing, gluing and nailing materials to make and strengthen products.</li> </ul>	<ul style="list-style-type: none"> <li>• Choose suitable techniques to construct products or to repair items. <ul style="list-style-type: none"> <li>• Strengthen materials using suitable techniques.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Develop a range of practical skills to create products (such as cutting, drilling and screwing, nailing, gluing, filing and sanding).</li> </ul>
<b>Mechanics</b>	<ul style="list-style-type: none"> <li>• Create products using levers, wheels and winding mechanisms.</li> </ul>	<ul style="list-style-type: none"> <li>• Use scientific knowledge of the transference of forces to choose appropriate mechanisms for a product</li> </ul>	<ul style="list-style-type: none"> <li>• Convert rotary motion to linear using cams. <ul style="list-style-type: none"> <li>• Use innovative combinations of</li> </ul> </li> </ul>

		(such as levers, winding mechanisms, pulleys and gears).	electronics (or computing) and mechanics in product designs.
<b>Design, make, evaluate and improve</b> <b>This concept involves developing the process of design thinking and seeing design as a process</b>	<ul style="list-style-type: none"> <li>• Design products that have a clear purpose and an intended user.</li> <li>• Make products, refining the design as work progresses.</li> <li>• Use software to design.</li> </ul>	<ul style="list-style-type: none"> <li>• Design with purpose by identifying opportunities to design.</li> <li>• Make products by working efficiently (such as by carefully selecting materials).</li> <li>• Refine work and techniques as work progresses, continually evaluating the product design.</li> <li>• Use software to design and represent product designs.</li> </ul>	<ul style="list-style-type: none"> <li>• Design with the user in mind, motivated by the service a product will offer (rather than simply for profit).</li> <li>• Make products through stages of prototypes, making continual refinements.</li> <li>• Ensure products have a high quality finish, using art skills where appropriate.</li> <li>• Use prototypes, cross-sectional diagrams and computer aided designs to represent designs.</li> </ul>
<b>Take inspiration from design throughout history</b> <b>This concept involves appreciating the design process that has influenced the products we use in everyday life.</b>	<ul style="list-style-type: none"> <li>• Explore objects and designs to identify likes and dislikes of the designs.</li> <li>• Suggest improvements to existing designs.</li> <li>• Explore how products have been created.</li> </ul>	<ul style="list-style-type: none"> <li>• Identify some of the great designers in all of the areas of study (including pioneers in horticultural techniques) to generate ideas for designs.</li> <li>• Improve upon existing designs, giving reasons for choices.</li> <li>• Disassemble products to understand how they work.</li> </ul>	<ul style="list-style-type: none"> <li>• Combine elements of design from a range of inspirational designers throughout history, giving reasons for choices.</li> <li>• Create innovative designs that improve upon existing products.</li> <li>• Evaluate the design of products so as to suggest improvements to the user experience.</li> </ul>