

## Design Technology Knowledge and skills

	<b>National Curriculum</b>	<b>Year 1</b>	<b>Year 2</b>
Key Stage 1	<i>Design purposeful, functional, appealing products for themselves and other users based on design criteria.</i>	<p>Knowledge</p> <ul style="list-style-type: none"> <li>Design criteria are the explicit goals that a project must achieve.</li> </ul> <p>Skills</p> <ul style="list-style-type: none"> <li>Create a design to meet simple design criteria.</li> </ul>	<p>Knowledge</p> <ul style="list-style-type: none"> <li>Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.</li> </ul> <p>Skills</p> <ul style="list-style-type: none"> <li>Generate and communicate their ideas through a range of different methods.</li> </ul>
	<i>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</i>	<p>Knowledge</p> <ul style="list-style-type: none"> <li>Design criteria are the explicit goals that a project must achieve.</li> </ul> <p>Skills</p> <ul style="list-style-type: none"> <li>Create a design to meet simple design criteria.</li> </ul>	<p>Knowledge</p> <ul style="list-style-type: none"> <li>Ideas can be communicated in a variety of ways, including written work, drawings and diagrams, modelling, speaking and using information and communication technology.</li> </ul> <p>Skills</p> <ul style="list-style-type: none"> <li>Generate and communicate their ideas through a range of different methods.</li> </ul>
	<i>Select from and use a range of tools and equipment to perform practical tasks</i>	<p>Knowledge</p> <ul style="list-style-type: none"> <li>Specific tools are used for particular purposes. For example, scissors are used for cutting and glue is used for sticking.</li> <li>Scissors are used to cut fabrics. Glue and simple stitches, such as running stitch, can be used to join</li> </ul>	<p>Knowledge</p> <ul style="list-style-type: none"> <li>Different tools have characteristics that make them suitable for specific purposes. For example, scissors are used for cutting paper because they have sharp, metal blades that can cut through thin materials.</li> </ul>

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	<i>(for example, cutting, shaping, joining and finishing).</i>	<p>fabrics. Running stitch is made by passing a needle in and out of fabric at an even distance.</p> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Select the appropriate tool for a simple practical task.</li> <li>• Cut and join textiles using glue and simple stitches.</li> </ul>	<ul style="list-style-type: none"> <li>• Some ingredients need to be prepared before they can be cooked or eaten. There are many ways to prepare ingredients: peeling skins using a vegetable peeler, such as potato skins; grating hard ingredients, such as cheese or chocolate; chopping vegetables, such as onions and peppers and slicing foods, such as bread and apples.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Select the appropriate tool for a task and explain their choice.</li> <li>• Prepare ingredients by peeling, grating, chopping and slicing.</li> </ul>
Key Stage 1	<i>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.</i>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Different materials are suitable for different purposes, depending on their specific properties. For example, glass is transparent, so it is suitable to be used for windows.</li> <li>• Fabric can be decorated using materials and small objects, such as buttons and sequins. Decorations can be attached to the fabric by gluing, stapling or tying.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Select and use a range of materials, beginning to explain their choices.</li> <li>• Use gluing, stapling or tying to decorate fabric, including buttons and sequins.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Properties of components and materials determine how they can and cannot be used. For example, plastic is shiny and strong but it can be difficult to paint.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Choose appropriate components and materials and suggest ways of manipulating them to achieve the desired effect.</li> </ul>
	<i>Explore and evaluate a range of existing products.</i>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Two products can be compared by looking at a set of criteria and scoring both products against each one.</li> <li>• Everyday products are objects that are used routinely at home and school, such as a toothbrush, cup or pencil. All products are designed for a specific purpose.</li> <li>• The importance of a product may be that it fulfils its goals and performs a useful purpose.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Products can be improved in different ways, such as making them easier to use, more hardwearing or more attractive.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Explain how an everyday product could be improved.</li> </ul>

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		<b>Skills</b> <ul style="list-style-type: none"> <li>Describe the similarities and differences between two products.</li> <li>Name and explore a range of everyday products and describe how they are used.</li> <li>Describe why a product is important.</li> </ul>	
	<i>Evaluate their ideas and products against design criteria.</i>	<b>Knowledge</b> <ul style="list-style-type: none"> <li>A strength is a good quality of a piece of work. A weakness is an area that could be improved.</li> </ul> <b>Skills</b> <ul style="list-style-type: none"> <li>Talk about their own and each other's work, identifying strengths or weaknesses and offering support.</li> </ul>	<b>Knowledge</b> <ul style="list-style-type: none"> <li>Finished products can be compared with design criteria to see how closely they match. Improvements can then be planned.</li> </ul> <b>Skills</b> <ul style="list-style-type: none"> <li>Explain how closely their finished products meet their design criteria and say what they could do better in the future.</li> </ul>
	<i>Build structures, exploring how they can be made stronger, stiffer and more stable.</i>	<b>Knowledge</b> <ul style="list-style-type: none"> <li>Different materials can be used for different purposes, depending on their properties. For example, cardboard is a stronger building material than paper. Plastic is light and can float. Clay is heavy and will sink.</li> </ul> <b>Skills</b> <ul style="list-style-type: none"> <li>Construct simple structures, models or other products using a range of materials.</li> </ul>	<b>Knowledge</b> <ul style="list-style-type: none"> <li>Structures can be made stronger, stiffer and more stable by using cardboard rather than paper and triangular shapes rather than squares. A broader base will also make a structure more stable.</li> </ul> <b>Skills</b> <ul style="list-style-type: none"> <li>Explore how a structure can be made stronger, stiffer and more stable.</li> </ul>
	<i>Explore and use mechanisms (for example, levers, sliders, wheels and axles), in their products.</i>	<b>Knowledge</b> <ul style="list-style-type: none"> <li>An axle is a rod or spindle that passes through the centre of a wheel to connect two wheels.</li> </ul> <b>Skills</b> <ul style="list-style-type: none"> <li>Use wheels and axles to make a simple moving model.</li> </ul>	<b>Knowledge</b> <ul style="list-style-type: none"> <li>A mechanism is a device that takes one type of motion or force and produces a different one. A mechanism makes a job easier to do. Mechanisms include sliders, levers, linkages, gears, pulleys and cams.</li> </ul> <b>Skills</b> <ul style="list-style-type: none"> <li>Use a range of mechanisms (levers, sliders, wheels and axles) in models or products.</li> </ul>
	<i>Use the basic principles of a healthy and</i>	<b>Knowledge</b> <ul style="list-style-type: none"> <li>Using non-standard measures is a way of measuring that does not involve reading scales. For example, weight may be measured using a balance scale and</li> </ul>	<b>Knowledge</b> <ul style="list-style-type: none"> <li>Some ingredients need to be prepared before they can be cooked or eaten. There are many ways to prepare ingredients: peeling skins using a vegetable peeler, such as potato skins; grating hard</li> </ul>

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	<i>varied diet to prepare dishes.</i>	<p>lumps of plasticine. Length may be measured in the number of handspans or pencils laid end to end.</p> <ul style="list-style-type: none"> <li>Fruit and vegetables are an important part of a healthy diet. It is recommended that people eat at least five portions of fruit and vegetables every day.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Measure and weigh food items using non-standard measures, such as spoons and cups.</li> <li>Select healthy ingredients for a fruit or vegetable salad.</li> </ul>	<p>ingredients, such as cheese or chocolate; chopping vegetables, such as onions and peppers and slicing foods, such as bread and apples.</p> <ul style="list-style-type: none"> <li>A healthy diet should include meat or fish, starchy foods (such as potatoes or rice), some dairy foods, a small amount of fat and plenty of fruit and vegetables.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Prepare ingredients by peeling, grating, chopping and slicing.</li> <li>Describe the types of food needed for a healthy and varied diet and apply the principles to make a simple, healthy meal.</li> </ul>
	<i>Understand where food comes from</i>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Some foods come from animals, such as meat, fish and dairy products. Other foods come from plants, such as fruit, vegetables, grains, beans and nuts.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Sort foods into groups by whether they are from an animal or plant source.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Food comes from two main sources: animals and plants. Cows provide beef, sheep provide lamb and mutton and pigs provide pork, ham and bacon. Examples of poultry include chickens, geese and turkeys. Examples of fish include cod, salmon and shellfish. Milk comes mainly from cows but also from goats and sheep. Most eggs come from chickens. Honey is made by bees. Fruit and vegetables come from plants. Oils are made from parts of plants. Sugar is made from plants called sugar cane and sugar beet. Plants also give us nuts, such as almonds, walnuts and hazelnuts.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Identify the origin of some common foods (milk, eggs, some meats, common fruit and vegetables).</li> </ul>

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	<b>National Curriculum</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>
Key Stage 2	<i>Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups.</i>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Develop design criteria to inform a design.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Use annotated sketches and exploded diagrams to test and communicate their ideas.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>A pattern piece is a drawing or shape used to guide how to make something. There are many different computer-aided design packages for designing products.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Use pattern pieces and computer-aided design packages to design a product.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways.</li> </ul>
	<i>Generate, develop, model and communicate their ideas through discussion,</i>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Design criteria are the exact goals a project must achieve to be successful. These criteria might include the product's use, appearance, cost and target user.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Annotated sketches and exploded diagrams show specific parts of a design, highlight sections or show functions. They communicate ideas in a visual, detailed way.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>A pattern piece is a drawing or shape used to guide how to make something. There are many different computer-aided design</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Design criteria should cover the intended use of the product, age range targeted and final appearance. Ideas can be communicated in a</li> </ul>

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	<i>annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</i>	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Develop design criteria to inform a design.</li> </ul>	<p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Use annotated sketches and exploded diagrams to test and communicate their ideas.</li> </ul>	<p>packages for designing products.</p> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Use pattern pieces and computer-aided design packages to design a product.</li> </ul>	<p>range of ways, including through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Develop design criteria for a functional and appealing product that is fit for purpose, communicating ideas clearly in a range of ways.</li> </ul>
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	<p><i>Select from and use a wider range of tools and equipment to perform practical tasks (for example, cutting, shaping, joining and finishing), accurately.</i></p>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Specific tools can be used for cutting, such as saws. Wood can be joined using glue, nails, staples, or a combination of these. Safety rules must be followed to prevent injury from sharp blades. These rules include using a bench hook to keep the wood still, using a junior hacksaw with a pistol grip and working under adult supervision.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Use tools safely for cutting and joining materials and components.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>A loom is a piece of equipment that is used for making fabric by weaving wool or thread. Weaving involves interlacing pieces of thread or yarn.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Cut and join wools, threads and other materials to a loom.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>There are many rules for using tools safely and these may vary depending on the tools being used. For example, someone using a chisel should chip or cut with the cutting edge pointing away from their body. All tools should be cleaned and put away after use, and should not be used if they are loose or cracked.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Name and select increasingly appropriate tools for a task and use them safely.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>A hem runs along the edge of a piece of cloth or clothing. It is made by turning under a raw edge and sewing to give a neat and quality finish.</li> <li>Precision is important in producing a polished, finished product. Correct selection of tools and careful measurement can ensure the parts fit together correctly.</li> <li>Pinning with dressmaker pins and tacking with quick, temporary stitches holds fabric together in preparation for and during sewing.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Hand sew a hem or seam using a running stitch.</li> <li>Select appropriate tools for a task and use them safely and precisely.</li> <li>Pin and tack fabrics in preparation for sewing</li> </ul>
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					and more complex pattern work.
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	<p><i>Select from and use a wider range of materials and components, including construction materials, textiles and ingredients, according to their functional properties and aesthetic qualities.</i></p>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Materials for a specific task must be selected on the basis of their properties. These include physical properties as well as availability and cost.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Plan which materials will be needed for a task and explain why.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Different materials and components have a range of properties, making them suitable for different tasks. It is important to select the correct material or component for the specific purpose, depending on the design criteria. Recipe ingredients have different tastes and appearances. They look and taste better and are cheaper when in season.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Choose from a range of materials, showing an understanding of their different characteristics.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Materials should be cut and combined with precision. For example, pieces of fabric could be cut with sharp scissors and sewn together using a variety of stitching techniques.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Select and combine materials with precision.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>It is important to understand the characteristics of different materials to select the most appropriate material for a purpose. This might include flexibility, waterproofing, texture, colour, cost and availability.</li> <li>Fastenings hold a piece of clothing together. Types of fastenings include zips, press studs, Velcro and buttons.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Choose the best materials for a task, showing an understanding of their working characteristics</li> <li>Use different methods of fastening for function and decoration, including press studs, Velcro and buttons.</li> </ul>
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	<p><i>Investigate and analyse a range of existing products.</i></p>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Particular products have been designed for specific tasks, such as nail clippers, the spinning top and the cool box.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Explain how an existing product benefits the user.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>A comparison table can be used to compare products by listing specific criteria on which each product can be judged or scored.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Create and complete a comparison table to compare two or more products</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Design features are the aspects of a product's design that the designer would like to emphasise, such as the use of a particular material or feature that makes the product easier to use or more durable.</li> <li>Culture is the language, inventions, ideas and art of a group of people. A society is all the people in a community or group. Culture affects the design of some products. For example, knives and forks are used in the western world, whereas chopsticks are used mainly in China and Japan. The design of products needs to take into account the culture of the target audience. For example, colours might mean very different things in different cultures.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Products and inventions can be compared using a range of criteria, such as the impact on society, ease of use, appearance and value for money.</li> <li>People's lives have been improved in countless ways due to new inventions and designs. For example, the Morrison shelter, designed by John Baker in 1941, was an indoor air-raid shelter used in over half a million homes during the Second World War. It saved the lives of many people caught in bombing raids.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Create a detailed comparative report about two or more products or inventions.</li> <li>Analyse how an invention or product has significantly</li> </ul>
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				<p>Skills</p> <ul style="list-style-type: none"><li>• Investigate and identify the design features of a familiar product.</li><li>• Explain how the design of a product has been influenced by the culture or society in which it was designed or made.</li></ul>	<p>changed or improved people's lives.</p>
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	<p><i>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</i></p>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Asking questions can help others to evaluate their products, such as asking them whether the selected materials achieved the purpose of the model.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Suggest improvements to their products and describe how to implement them, beginning to take the views of others into account.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Evaluation can be done by considering whether the product does what it was designed to do, whether it has an attractive appearance, what changes were made during the making process and why the changes were made. Evaluation also includes suggesting improvements and explaining why they should be made.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Identify what has worked well and what aspects of their products could be improved, acting on their own suggestions and those of others when making improvements.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>A focus group is a small group of people whose reactions and opinions about a product are taken and studied. Evaluations can be made by asking product users a selection of questions to obtain data on how the product has met its design criteria.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Survey users in a range of focus groups and compare results</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Design is an iterative process, meaning alterations and improvements are made continually throughout the manufacturing process. Evaluating a product while it's being manufactured, and explaining these evaluations to others, can help to refine it.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Demonstrate modifications made to a product as a result of ongoing evaluation by themselves and to others.</li> </ul>
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	<p><i>Understand how key events and individuals in design and technology have helped shape the world</i></p>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Work from different designers can be compared by assessing specific criteria, such as their visual impact, fitness for purpose and target market.</li> <li>• Key inventions in design and technology have changed the way people live.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Explain the similarities and difference between the work of two designers.</li> <li>• Describe how key events in design and technology have shaped the world.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Significant designers and inventors can shape the world.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Explain how and why a significant designer or inventor shaped the world.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Many new designs and inventions influenced society. For example, labour-saving devices in the home reduced the amount of housework, which was traditionally done by women. This enabled them to have jobs.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Describe the social influence of a significant designer or inventor.</li> </ul>	
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	<p><i>Apply their understanding of how to strengthen, stiffen and reinforce more complex structures</i></p>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Shell structures are hollow, 3-D structures with a thin outer covering, such as a box. Frame structures are made from thin, rigid components, such as a tent frame. The rigid frame gives the structure shape and support. Diagonal struts can strengthen the structure.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Create shell or frame structures using diagonal struts to strengthen them</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• A prototype is a mock-up of a design that will look like the finished product but may not be full size or made of the same materials. Shell and frame structures can be strengthened by gluing several layers of card together, using triangular shapes rather than squares, adding diagonal support struts and using 'Jinks' corners (small, thin pieces of card cut into a right-angled triangle and glued over each joint to straighten and strengthen them).</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Prototype shell and frame structures, showing awareness of how to strengthen, stiffen and reinforce them.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Various methods can be used to support a framework. These include cross braces, guy ropes and diagonal struts. Frameworks can be built using lolly sticks, skewers and bamboo canes.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Build a framework using a range of materials to support mechanisms</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Strength can be added to a framework by using multiple layers. For example, corrugated cardboard can be placed with corrugations running alternately vertically and horizontally. Triangular shapes can be used instead of square shapes because they are more rigid. Frameworks can be further strengthened by adding an outer cover.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Select the most appropriate materials and frameworks for different structures, explaining what makes them strong.</li> </ul>
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	<p><i>Understand and use mechanical systems in their products (for example, gears, pulleys, cams, levers and linkages).</i></p>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Levers consist of a rigid bar that rotates around a fixed point, called a fulcrum. They reduce the amount of work needed to lift a heavy object. Sliders move from side to side or up and down, and are often used to make moving parts in books. Axles are shafts on which wheels can rotate to make a moving vehicle. Cams are devices that can convert circular motion into up-and-down motion</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Explore and use a range of mechanisms (levers, sliders, axles, wheels and cams) in models or products</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Mechanisms can be used to add functionality to a model. For example, sliders or levers can be used in moving pictures, storybooks or simple puppets; linkages in moving vehicles or puppets; gears in motorised vehicles or spinning toys; pulleys in cable cars or transport systems and cams in 3-D moving toys or pictures.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Explore and use a range of mechanisms (levers, axles, cams, gears and pulleys) in models or products.</li> </ul>	<p><b>Knowledge</b></p> <p>Pneumatic systems use energy that is stored in compressed air to do work, such as inflating a balloon to open a model monster's mouth. These effects can be achieved using syringes and plastic tubing.</p> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Use mechanical systems in their products, such as pneumatics.</li> </ul>	
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## Design Technology Knowledge and skills

	<p><i>Understand and use electrical systems in their products (for example, series circuits incorporating switches, bulbs, buzzers and motors).</i></p>		<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Components can be added to circuits to achieve a particular goal. These include bulbs for lighthouses and torches, buzzers for burglar alarms and electronic games, motors for fairground rides and motorised vehicles and switches for lights and televisions.</li> <li>• Electrical circuits can be controlled by a simple on/off switch, or by a variable resistor that can adjust the size of the current in the circuit. Real-life examples are a dimmer switch for lights or volume control on a stereo.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Incorporate circuits that use a variety of components into models or products.</li> <li>• Use electrical circuits of increasing complexity in their models or products, showing an understanding of control</li> </ul>		<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>• Computer programs can control electrical circuits that include a variety of components, such as switches, lamps, buzzers and motors.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>• Understand and use electrical circuits that incorporate a variety of components (switches, lamps, buzzers and motors) and use programming to control their products.</li> </ul>
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## Design Technology Knowledge and skills

	<p><i>Apply their understanding of computing to program, monitor and control their products.</i></p>		<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Remote control is controlling a machine or activity from a distance. Computers can be used to remotely control a device, such as a light, speaker or buzzer.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Write a program to control a physical device, such as a light, speaker or buzzer.</li> </ul>		<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Computer monitoring uses sensors as a scientific tool to record information about environmental changes over time. Computer monitoring can also log data from sensors and record the resulting information in a table or graph.</li> <li>Computer programs can control electrical circuits that include a variety of components, such as switches, lamps, buzzers and motors.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Use a sensor to monitor an environmental variable, such as temperature, sound or light.</li> <li>Understand and use electrical circuits that incorporate a variety of components (switches, lamps, buzzers and motors) and use</li> </ul>
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## Design Technology Knowledge and skills

					programming to control their products.
	<i>Understand and apply the principles of a healthy and varied diet.</i>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>There are five main food groups that should be eaten regularly as part of a balanced diet: fruit and vegetables; carbohydrates (potatoes, bread, rice and pasta); proteins (beans, pulses, fish, eggs and meat); dairy and alternatives (milk, cheese and yoghurt) and fats (oils and spreads). Foods high in fat, salt and sugar should only be eaten occasionally as part of a healthy, balanced diet.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Identify the main food groups (carbohydrates, protein, dairy, fruits and vegetables, fats and sugars).</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Healthy snacks include fresh or dried fruit and vegetables, nuts and seeds, rice cakes with low-fat cream cheese, homemade popcorn or chopped vegetables with hummus. A healthy packed lunch might include a brown or wholemeal bread sandwich containing eggs, meat, fish or cheese, a piece of fresh fruit, a low-sugar yoghurt, rice cake or popcorn and a drink, such as water or semi-skimmed milk.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Design a healthy snack or packed lunch and explain why it is healthy.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>A balanced diet gives your body all the nutrients it needs to function correctly. This means eating a wide variety of foods in the correct proportions.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Evaluate meals and consider if they contribute towards a balanced diet.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Eating a balanced diet is a positive lifestyle choice that should be sustained over time. Food that is high in fat, salt or sugar can still be eaten occasionally as part of a balanced diet.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Plan a healthy daily diet, justifying why each meal contributes towards a balanced diet.</li> </ul>

## Design Technology Knowledge and skills

	<p><i>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques</i></p>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Preparation techniques for savoury dishes include peeling, chopping, deseeding, slicing, dicing, grating, mixing and skinning.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Prepare and cook a simple savoury dish</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Cooking techniques include baking, boiling, frying, grilling and roasting.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Identify and use a range of cooking techniques to prepare a simple meal or snack</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Sweet dishes are usually desserts, such as cakes, fruit pies and trifles. Savoury dishes usually have a salty or spicy flavour rather than a sweet one.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Use an increasing range of preparation and cooking techniques to cook a sweet or savoury dish.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Ingredients can usually be bought at supermarkets, but specialist shops may stock different items. Greengrocers sell fruit and vegetables, butchers sell meat, fishmongers sell fresh fish and delicatessens usually sell some unusual prepared foods, as well as cold meats and cheeses.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Follow a recipe that requires a variety of techniques and source the necessary ingredients independently.</li> </ul>
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## Design Technology Knowledge and skills

	<p><i>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</i></p>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>The types of food that will grow in a particular area depend on a range of factors, such as the rainfall, climate and soil type. For example, many crops, such as potatoes and sugar beet, are grown in the south-east of England. Wheat, barley and vegetables grow well in the east of England.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Identify and name foods that are produced in different places.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Particular areas of the world have conditions suited to growing certain crops, such as coffee in Peru and citrus fruits in California in the United States of America.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Identify and name foods that are produced in different places in the UK and beyond.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Seasonality is the time of year when the harvest or flavour of a type of food is at its best. Buying seasonal food is beneficial for many reasons: the food tastes better; it is fresher because it hasn't been transported thousands of miles; the nutritional value is higher; the carbon footprint is lower, due to reduced transport; it supports local growers and is usually cheaper.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Describe what seasonality means and explain some of the reasons why it is beneficial.</li> </ul>	<p><b>Knowledge</b></p> <ul style="list-style-type: none"> <li>Organic produce is food that has been grown without the use of man-made fertilisers, pesticides, growth regulators or animal feed additives. Organic farmers use crop rotation, animal and plant manures, hand-weeding and biological pest control.</li> </ul> <p><b>Skills</b></p> <ul style="list-style-type: none"> <li>Explain how organic produce is grown.</li> </ul>
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