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## Design and Technology

| Year group  | National Curriculum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Knowledge                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Skills                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Vocab                                                                                                                                           |
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| Early Years | <p>The Early Learning Goals for</p> <p>Creating with materials;</p> <p>Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.</p> <ul style="list-style-type: none"> <li>• Share their creations, explaining the process they have used.</li> <li>• Make use of props and materials when role playing characters in narratives and stories.</li> </ul> <p>Fine motor skills;<br/>Use a range of small tools, including scissors, paint brushes and cutlery.</p> <ul style="list-style-type: none"> <li>• Begin to show accuracy and care when drawing.</li> </ul> | <p>Gain knowledge about materials and their properties.</p> <p>Follow step-by-step instructions to create a product.</p> <p>Gain independence to create new products.</p> <p>Explore new tastes and textures and understand the importance of healthy food.</p> <p>Explore and understand the relationship between moving parts in toys, books and equipment.</p> <p>Know that things can be taken apart and put back together again.</p> <p>Understand that tools can be used for specific purposes.</p> | <p>Be able to manipulate, cut and join a range of materials; paper, card, wool, buttons, clay.</p> <p>Use with developing precision and skill a range of tools including; scissors, brushes, rolling pins, knives, forks and spoons.</p> <p>Gain vocabulary to describe taste, textures and appearance of different foods.</p> <p>Develop 'have a go' skills when trying something new.</p> <p>Develop fine motor skills to manipulate construction equipment safely.</p> <p>Have resilience when faced with challenges.</p> | <p>Cut</p> <p>Roll</p> <p>Stick</p> <p>Glue</p> <p>Join</p> <p>Construct</p> <p>Design</p> <p>Make</p> <p>Improve</p> <p>Rotate</p> <p>Plan</p> |



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| <p>Year 1<br/>Autumn<br/>Free standing Structures; Funfair</p>           | <p><b>Design</b></p> <p>Design purposeful, functional, appealing products for themselves and other users based on design criteria</p> <p>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</p> <p><b>Make</b></p> <p>Select from and use;<br/>         *A range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> <p><b>Evaluate</b></p> <p>Explore and evaluate;</p> | <p>Can describe what a product is for and how it works.</p> <p>Is beginning to use simple design criteria to develop ideas.</p> <p>Can generate ideas and communicate them through discussion and sketches.</p> <p>Develop knowledge of tools and materials.</p> <p>Evaluate final products considering, what worked well and what could be changed.</p> | <p>See things from the perspective of others.</p> <p>Use spoken language and other methods to share ideas.</p> <p>Use materials and joining techniques for a purpose.</p> <p>Learn how to make a structure stronger, stiffer and more stable.</p> <p>Use tools effectively to shape materials.</p> | <p>Vocabulary;<br/>         Cut, join, fold, fix, structure, stronger, stiffer, stable, base, top, framework, tower, straight, curved</p> |
| <p>Year 1<br/>Spring<br/>Mechanisms; wheels and axles<br/>Moon buggy</p> | <p>*A wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristic.</p>                                                                                                                                                                                                                                                                                                                                                                                                    | <p>Explore and evaluate existing products.</p> <p>Can say how they will make a product suitable for the user.</p> <p>Distinguish between fixed and freely moving axels.</p> <p>Model ideas through kits and mock-ups.</p>                                                                                                                                | <p>Investigate and discuss as a whole class fist hand experiences of wheels and axels.</p> <p>Label and discuss parts of a mechanism.</p>                                                                                                                                                          | <p>Vehicle, axle, wheel, axle holder, chassis, cab, body, fixed, free moving.</p>                                                         |



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|                                                                                                 | <p>*A range of existing products.</p> <p>* Their ideas and products against design criteria</p>                                                       | <p>Can use simple design criteria to help develop own ideas.</p> <p>Can select materials and components according to their characteristics.</p> <p>Can combine, join and assemble components to create a functioning product.</p> <p>Evaluate their product and suggests ways to improve it.</p> <p>Explore and use wheels, axles and holders.</p> | <p>Following instructions to make something with moving parts.</p> <p>Use developing skill to create a buggy with moving parts.</p> <p>Evaluate final product against the design criteria considering, what worked well/could be changed.</p> |                                                                                                                               |
| <p>Year 1</p> <p>Summer</p> <p>Cooking and nutrition;</p> <p>Preparing fruit and vegetables</p> | <p>Cooking and nutrition</p> <p>Use the basic principles of a healthy and varied diet to prepare dishes.</p> <p>Understand where food comes from.</p> | <p>Understand where a range of fruit and vegetables come from.</p> <p>Understand and use basic principles of a healthy and varied diet to prepare dishes.</p> <p>Learn technical language and techniques when preparing fruit and vegetables.</p>                                                                                                  | <p>Research production and farming of fruit and vegetables.</p> <p>Sort food into the five food groups.</p> <p>Select fruit and vegetables to create a smoothie for parents.</p>                                                              | <p>Fruit and vegetable names, names of equipment and utensils.</p> <p>Sensory language associated with taste and texture.</p> |



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|                                                                           |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                        | Prepare a simple dish using the equipment safely and hygienically.<br><br>Evaluate final product against a criteria.                                                                                   |                                                                                                                                                                                                                                                                                    |
| Year 1<br>Skills<br>Builder<br>steps                                      | <p>Aiming High - I know what doing well looks like for me.</p> <p>Creativity - I imagine different situations and can say what I imagine.</p> <p>Speaking - I speak clearly to a small group of people I know.</p> <p>Problem solving - I complete tasks by finding someone to help if I need them.</p> |                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                    |
| Year 2<br>Autumn<br>Cooking and nutrition;<br>Creating a healthy lunchbox | <p>Cooking and nutrition</p> <p>Use the basic principles of a healthy and varied diet to prepare dishes.</p> <p>Understand where food comes from.</p>                                                                                                                                                   | <p>Research farming and production to understand that food is grown, reared and caught.</p> <p>Understand the basic principles of a healthy and varied diet when designing and preparing a lunchbox.</p> <p>Learn the names and purposes of some kitchen utensils.</p> | <p>Generate a design criteria in which to inform choices and support evaluation.</p> <p>Name the 5 food groups.</p> <p>Use tools with developing skills using safe handling and cutting practises.</p> | <p>Types of lunchbox food - wrap, bread, pasta, crackers etc.</p> <p>Name of equipment- grater, chopping board, knife, handle.</p> <p>Associated words; rinse, grate, hold, push, slice, grip, squeeze, peel, chop.</p> <p>Sensory language associated with taste and texture.</p> |
| Year 2<br>Spring<br><b>Mechanisms</b>                                     | <p><b>Design</b></p> <p>Design purposeful, functional, appealing products for</p>                                                                                                                                                                                                                       | <p>Communicate the purpose of their product.</p>                                                                                                                                                                                                                       | <p>Generate and communicate ideas through drawing and mock-ups, giving reasons for choices.</p>                                                                                                        | <p>Lever</p> <p>Pivot</p> <p>Slider</p> <p>Left, right</p>                                                                                                                                                                                                                         |



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| <p><b>Sliders and lever;</b><br/>         Australia information display</p>                                                  | <p>themselves and other users based on design criteria.<br/> <i>Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology.</i></p> <p><b>Make</b></p> <p>Select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]</p> | <p>Begin to develop their own design criteria that informs their ideas.</p> <p>Gain knowledge and understanding of sliders and levers - related to real world examples.</p> <p>Explore sliders through explicit teaching, models and mock ups.</p> <p>Understand how mechanical systems operate and create movement.</p>                                      | <p>Plan a project by thinking about next steps.</p> <p>Select appropriate materials and tools to ensure their book has moving parts.</p>                                                                                                                                                                             | <p>Push, pull, up and down<br/>         Forwards, backwards</p>                                                                                                                                                            |
| <p>Year 2<br/>         Summer<br/> <b>Textiles;</b><br/>         templates and joining;<br/>         bag for an explorer</p> | <p>Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristic.</p> <p><b>Evaluate</b></p> <p>Explore and evaluate a range of existing products.<br/>         Evaluate their ideas and products against design criteria</p>                                                                                 | <p>Can investigate existing products to understand how simple 3D textile products are made,<br/>         Is able to use a template to create identical pieces.</p> <p>Understand how to join fabrics using different techniques - running stitch, glue, over stitch, stapling.</p> <p>Learn about different finishing techniques - paint, fabric crayons,</p> | <p>Generate a design criteria based on an explorers needs.<br/>         Make and accurately cut out templates to aid the making process.</p> <p>Use an appropriate method to join the fabric.</p> <p>Use developing sewing techniques as part of the design.</p> <p>Is able to use short, long and cross-stitch.</p> | <p>Template<br/>         Pattern pieces<br/>         Mark out<br/>         Join<br/>         Decorate<br/>         Finish<br/>         Stitches - running, back stitch, tying off.<br/>         Sequins/buttons/ribbon</p> |



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|                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | stitching, sequins, buttons and ribbon.                                                                                                                                                                                                                                                       |                                                                                                                                                                                                    |                                                                                                                                                                                      |
| Year 2<br>Skills<br>Builder                                                              | <p><b>Aiming High</b> - I work with care and attention to detail.</p> <p><b>Creativity</b> - I imagine different situations and can bring them to life in different ways.</p> <p><b>Problem solving</b> - I complete tasks by explaining problems to someone for advice if I need.</p>                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                    |                                                                                                                                                                                      |
| Year 3<br>Autumn<br><b>Mechanical systems;</b><br>levers and linkages;<br>stone age book | <p><b>Design</b><br/>Investigate and analyse a range of existing products.<br/>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.<br/>Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design.</p> <p><b>Make</b><br/>Select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately.</p> | <p>Investigate a range of products that have levers and linkage mechanisms.</p> <p>Be able to name and talk about levers and linkages.</p> <p>Develop a deeper understanding of the processes involved in making a mechanical system.</p>                                                     | <p>Answer questions and label drawings identifying moving parts and their functions.</p> <p>Replicate a working model.</p> <p>Respond to problems and solve them as the project develops.</p>      | <p><b>Mechanism</b><br/>Lever<br/>Linkage<br/>Slot<br/>Guide or bridge<br/>Loose pivot<br/>Fixed pivot<br/>System<br/>Input/output<br/>Oscillating<br/>Reciprocating</p>             |
| Year 3<br>Spring<br><b>Textiles 2D and 3D shapes;</b>                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Gain an understanding of the innovations made in the history of textiles - the use of zips, Velcro and buttons.</p> <p>Take apart a finished product and identify separate parts.</p> <p>Through the design process identify appropriate materials and joining techniques - developing</p> | <p>Be able to name parts of an existing product</p> <p>Understand that 2D patterns and turned into 3D shapes.</p> <p>Use the design criteria to identify appropriate materials and fastenings.</p> | <p>Names of fabrics<br/>Stiffening<br/>Templates/pattern<br/>Applique<br/>Seam<br/>Seam allowance<br/>Prototype<br/>Aesthetics<br/>Back/running/over/blanket stitching technics.</p> |



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|  | <p>Select from and use a wider range of materials and components, including construction materials and textiles according to their properties and aesthetic qualities.</p> <p><b>Evaluate</b></p> <p>Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.</p> <p>Understand how key events and individuals in design and technology have helped shape the world Technical knowledge.</p> <p>Apply their understanding of how to strengthen, stiffen and reinforce complex structures.</p> <p>Understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]</p> <p>Understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors].</p> | <p>their previously learnt skills in Year 2.</p> <p>Learn how to use 2D templates and turn them into 3D shapes.</p> <p>Use IT programme to mock-up a design.</p> <p>Gain knowledge of sewing techniques including how to create curved edges.</p> | <p>Use mock ups and available patterns to create 3D pieces - use problem-solving skills throughout to make adjustments.</p> <p>Be able to thread a needle and complete a range of stitches.</p> <p>Cross stitch and blanket stitch.</p> |  |
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|                                                              | Apply their understanding of computing to program, monitor and control their products.                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                              |
| Year 3<br>Summer<br><b>Cooking and nutrition;</b>            | <p>Understand and apply the principles of a healthy and varied diet.</p> <p>Prepare and cook a variety of predominantly savory dishes using a range of cooking techniques.</p> <p>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p>                             | <p>Investigate and compare our modern diet and the foods available during the Battle of Hastings.</p> <p>Develop knowledge of a balanced diet and the importance of a healthy lifestyle.</p> <p>Learn how to identify between fresh and processed foods.</p> <p>Understand where food is grown/sourced/reared.</p> <p>Know and use technical vocabulary.</p> | <p>Use knowledge and understanding to design healthy savoury dishes.</p> <p>Use food preparation skills like cutting, shredding and grating to prepare ingredients.</p> <p>Know how to combine ingredients to create a meal.</p> <p>Know the different methods for cooking a variety of foods.</p> <p>Know how to prepare food safely and hygienically.</p> | <p>Vocabulary associated with the appearance of food</p> <p>Texture</p> <p>Sensory evaluation</p> <p>Preference test</p> <p>Processed food</p> <p>Food origin</p> <p>Nutrition</p> <p>Sugar/fat contents</p> <p>Boil</p> <p>Cook</p> <p>Fry</p> <p>Roast</p> |
| Year 3<br>Skills<br>Builder                                  | <p><b>Aiming high - I work with pride when I am being successful.</b></p> <p><b>Creativity - I generate ideas when I've been given a clear brief.</b></p> <p><b>Speaking - I speak effectively by making points in a logical order.</b></p> <p><b>Problem Solving - I complete tasks by finding information I need myself.</b></p> |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                              |
| Year 4<br>Autumn<br><b>Mechanical systems;</b><br>pneumatics | <p><b>Design</b></p> <p>Use research and develop design criteria to inform the design of innovative, functional, appealing</p>                                                                                                                                                                                                     | <p>Learn how to gather information about the needs and wants of a particular group to ensure their product is appealing.</p>                                                                                                                                                                                                                                 | <p>Articulate how pneumatic systems function and be able to use the correct vocabulary associated with components.</p>                                                                                                                                                                                                                                      | <p>Input</p> <p>Output</p> <p>Compressed</p> <p>Pivot</p> <p>Lever</p>                                                                                                                                                                                       |



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|                                                         | <p>products that are fit for purpose, aimed at particular individuals or groups.</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches and prototypes.</p> <p><b>Make</b></p> <p>Select from and use range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</p> <p>Select from and use a wide range of materials and components, including construction materials, according to their functional properties and aesthetic qualities.</p> | <p>Children learn about pneumatic systems that use air to work.</p> <p>Learn how to set up a simple pneumatic system (prototype) using a balloon, tubing and a bottle.</p> <p>Create a design criteria based on a user in mind.</p> <p>Design and make a working pneumatic system.</p> <p>Be able to generate a step by step guide to follow.</p> <p>Reflect on their design criteria, the making process and the final product to evaluate it's effectiveness.</p> <p>Evaluate their product and record ways to improve it.</p> | <p>Be able to create a working model using a pneumatic system.</p> <p>Organise and prepare the necessary materials.</p> <p>Develop written and verbal communication skills to effectively communicate ideas with others.</p> <p>Select and use the appropriate materials and equipment when creating.</p> | <p>Pneumatic<br/>Hydraulic<br/>Inflate<br/>Deflate<br/>Syringe<br/>System</p> |
| <p>Year 4<br/>Spring<br/><b>Electrical systems;</b></p> | <p><b>Evaluate</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Research how key events in design and technology have shaped the world.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>Is able to name and label the parts of an electrical system.</p>                                                                                                                                                                                                                                       | <p>Circuit<br/>Conductor<br/>Insulator<br/>Prototype</p>                      |



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| simple circuits and switches | <p>Investigate and analyse a range of existing products.</p> <p>Evaluate their ideas and products against their own design criteria and consider how to improve their work.</p> | <p>Gather information about the needs and wants of individuals to ensure the product is appealing.</p> <p>Develop a design criteria and use this to inform their choices.</p> <p>Share and clarify ideas in discussion and during the design process.</p> <p>Use diagrams to communicate ideas.</p> <p>Understand and use electrical systems in their products, such as series circuits incorporating switches, bulbs and buzzers.</p> <p>Know and use technical vocabulary relevant to the project.</p> <p>Using annotated sketches, cross-sectional and exploded diagrams, as appropriate, ask the children to develop, model and communicate ideas.</p> | <p>Understands the function of the different elements in an electrical system.</p> <p>Can use a simple electrical circuit to create a functioning project.</p> <p>Can work safely with electrical components and associated tools.</p> <p>Use and develop creative skills to generate ideas that consider the user, purpose and safety features.</p> | <p>Push-to-break switch</p> <p>Push-to-make switch</p> <p>Reed switch</p> <p>Toggle switch</p> <p>System</p> <p>Output device</p> <p>Input device</p> |
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|                                                                        |                                                                                                                                                                                                                                                                                                                  | Evaluate the final products against the intended purpose and with the intended user, drawing on the design criteria.                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                    |
| Year 4<br>Summer<br><b>Structures;</b><br>Shell<br>structures          |                                                                                                                                                                                                                                                                                                                  | <p>Gather information about the needs and wants of the intended user to ensure their product is appealing.</p> <p>Investigate and analyse existing products and their effectiveness.</p> <p>Develop a design criteria to meet the design criteria and use this to inform design choices.</p> <p>Share and clarify ideas through discussions, drawings, exploded diagrams or mock-ups.</p> | <p>Name and label parts of a real structure - using key vocabulary.</p> <p>Learn how to accurately measure and cut a range of materials to create a 3D structure.</p> <p>Gain the skills to reinforce a shell structure.</p> <p>Know and use appropriate joining techniques.</p> | <p>Cuboid</p> <p>Edge</p> <p>Face</p> <p>Font</p> <p>Net</p> <p>Prism</p> <p>Scoring</p> <p>Shell structures</p> <p>Vertex</p> <p>Laminating</p> <p>Ribbing</p> <p>Corrugating</p> |
| Year 4<br>Skills<br>Builder                                            | <p>Aiming High - I work with a positive approach to new challenges.</p> <p>Creativity - I generate ideas to improve something.</p> <p>Speaking - I speak effectively by thinking about what my listeners already know.</p> <p>Problem Solving - I explore problems by creating different possible solutions.</p> |                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                    |
| Year 5<br>Autumn<br><b>Mechanical Systems:</b><br>Pulleys and<br>gears | <p><b>Design</b></p> <p>Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for</p>                                                                                                                                                         | <p>Through research, be able, to identify the needs of a group.</p> <p>Develop a simple design brief to me the needs of others.</p>                                                                                                                                                                                                                                                       | <p>Can name, label and use parts of a mechanical system.</p> <p>Can make changes to suit problems as they arise.</p>                                                                                                                                                             | <p>Rotatory movement</p> <p>Oscillating movement</p> <p>Reciprocating movement</p> <p>Cam</p> <p>Follower</p> <p>Lever</p>                                                         |



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|                                           | <p>purpose, aimed at particular individuals or groups.</p> <p>Generate, develop, model and communicate their ideas through discussion, annotated sketches and prototypes.</p> <p><b>Make</b><br/>Select from and use range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</p> <p>Select from and use a wide range of materials and components, including construction materials, according to their functional properties and aesthetic qualities.</p> <p><b>Evaluate</b><br/>Investigate and analyse a range of existing products.</p> | <p>Can talk about how pulleys and gears function in the real world.</p> <p>Generate innovative ideas to meet a design brief.</p> <p>Use cross-sectional drawings to communicate ideas and inform design choices.</p> <p>Explain their choices of materials and components using the correct technical vocabulary.</p> <p>Create a step-by-step guide to follow.</p> <p>Critically evaluate the quality of their product and make changes to improve the final item.</p> <p>Research and understand how engineering history has shaped our world.</p> | <p>Measure, cut and join materials using a range of tools and methods.</p> <p>Know how to work safely.</p> <p>Understand the making process.</p> | <p>Slider<br/>Guide<br/>Spacer<br/>axle</p>                  |
| <p>Year 5<br/>Spring<br/><b>Food;</b></p> | <p>Evaluate their ideas and products against their own design criteria and consider how to improve their work.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Develop a simple design brief to meet the needs of others.</p> <p>Generate innovative ideas to meet a design brief.</p>                                                                                                                                                                                                                                                                                                                                                                                                                           | <p>Understand the relationship between the seasons and the food produced.</p>                                                                    | <p>Finishing<br/>Rubbing in<br/>Knead<br/>Bran<br/>Dough</p> |



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| Celebrating culture & seasonality                      | <p><b>Cooking and nutrition</b></p> <p>Understand and apply the principles of a healthy and varied diet.</p> <p>Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques.</p> <p>Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.</p> | <p>Explain their choices of flavours.</p> <p>Understand the processes occurring when yeast is added as an ingredient.</p> <p>Create a product that tastes, smells and looks good.</p>                                                                                                                                            | <p>Be able to accurately measure ingredients.</p> <p>Follow a recipe to create a finished product.</p> <p>Name and use a range of utensils and processes to create bread.</p> <p>Can work with food safely and hygienically.</p>                                                                                                | <p>Germ</p> <p>Yeast</p> <p>Unleavened bread</p>                                                                                      |
| Year 5<br>Summer<br><b>Mechanical systems;</b><br>Cams |                                                                                                                                                                                                                                                                                                                                             | <p>Generate innovative ideas by carrying out research using surveys, interviews, questionnaires and web-based resources.</p> <p>Create a simple design specification to guide the process.</p> <p>Develop and communicate ideas through discussion, annotated drawings, exploded drawings and drawings from different views.</p> | <p>Name, label and a mechanical system that uses cams to produce movement.</p> <p>Accurately cut, shape, join and strengthen materials to create a functioning product.</p> <p>Make design decisions taking into account time and the resources needed.</p> <p>Develop the skills required to solve problems as they arise.</p> | <p>Pulleys</p> <p>Gears</p> <p>Drive belt</p> <p>Mechanical system</p> <p>Driver</p> <p>Follower</p> <p>Mesh</p> <p>Motor spindle</p> |



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|                                                                                           |                                                                                                                                                                                                                                                                                                         | <p>Understand that mechanical systems have an input, process and an output.</p> <p>Understand how cams can be used to produce different types of movement and change the direction of movement.</p> <p>Know and use technical vocabulary relevant to the project.</p> <p>Critically evaluate their own and existing products.</p> |                                                                                                                                                                                                                                                 |                                                                                                                                                                                      |
| Year 5<br>Skills<br>Builder                                                               | <p>Aiming High - I set goals for myself.</p> <p>Creativity - I generate idea by combining different concepts.</p> <p>Speaking - I speak effectively by using appropriate language.</p> <p>Problem solving - I explore complex problems by identifying when there are no simple technical solutions.</p> |                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                 |                                                                                                                                                                                      |
| Year 6<br>Autumn<br>Electrical<br>systems;<br>More<br>complex<br>switches and<br>circuits | <p><b>Design</b></p> <p>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.</p> <p>Generate, develop, model and communicate their ideas through</p>                        | <p>Understand the components of electrical systems and their uses in the real world.</p> <p>Research and understand the impact electrical systems have had in modern society.</p> <p>Research the needs of the intended user through surveys, interviews</p>                                                                      | <p>Develop the skills necessary to use electrical systems in their products; tools, wiring and controls.</p> <p>Develop design skills to communicate ideas.</p> <p>Create and follow a plan to make a product that meets a set of criteria.</p> | <p><b>Modelling</b></p> <p>Open switch</p> <p>Closed switch</p> <p>Normally open</p> <p>Normally closed</p> <p>Computer control input</p> <p>Output devices</p> <p>Input devices</p> |



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|                                                                                | <p>discussion, annotated sketches and prototypes.</p> <p><b>Make</b></p> <p>Select from and use range of tools and equipment to perform practical tasks (for example cutting, shaping, joining and finishing) accurately.</p> <p>Select from and use a wide range of materials and components, including construction materials, according to their functional properties and aesthetic qualities.</p> | <p>Use technical drawings to communicate ideas and the processes required to make a product.</p> <p>Apply their understanding of computing to program, monitor and control their products.</p> <p>Know and use technical vocabulary relevant to the project.</p> <p>Test the system to evaluate the effectiveness.</p> | <p>Measure, cut and assemble a working product.</p> <p>Programme a basic electrical system including switches/buzzers.</p>                                                                                                                                   |                                                                                                               |
| <p>Year 6<br/>Spring<br/>Textiles;<br/>Combining<br/>different<br/>fabrics</p> | <p><b>Evaluate</b></p> <p>Investigate and analyse a range of existing products.</p> <p>Evaluate their ideas and products against their own design criteria and consider how to improve their work.</p>                                                                                                                                                                                                 | <p>Research by taking a part already existing products to understand the processes involved in it's manufacture.</p> <p>Research the needs and wants of a group to create a design brief.</p> <p>Design a product that meets the criteria and is aesthetically pleasing.</p>                                           | <p>Develop design skills when generating and communicating ideas.</p> <p>Use a range of stitches to secure fabrics together.</p> <p>Accurately draw, cut and use pattern pieces.</p> <p>Use problem-solving skills to overcome challenges as they arise.</p> | <p>Mock up<br/>Pattern<br/>Template<br/>Seam allowance<br/>Specifications<br/>Tacking<br/>Working drawing</p> |



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|                                                                   |  | <p>Understand that A 3-D textile product can be made from a combination of accurately made pattern pieces, fabric shapes and different fabrics.</p> <p>Fabrics can be strengthened, stiffened and reinforced where appropriate.</p>                                                                                                                                                                                                                         | <p>Select materials based on their properties to ensure the design brief is met.</p>                                                                                                                                                                                                                                                                                                  |                                                                                                                                               |
| <p>Year 6<br/>Summer<br/>Structures;<br/>Frame<br/>structures</p> |  | <p>Research the needs and wants of a group to create a design brief.</p> <p>Research key events and individuals relevant to frame structures.</p> <p>Understand the constraints of resources, time and cost when planning and designing.</p> <p>Understand the processes involved in creating a frame structure that is sturdy, aesthetically pleasing and that meets the design criteria.</p> <p>Generate, develop and model innovative ideas, through</p> | <p>Design an innovative product that meets the needs of the consumer and is aesthetically pleasing.</p> <p>Clearly communicate ideas through sketches and verbal presentation.</p> <p>Use mock ups to evaluate the design, materials and adjust the plan to overcome challenges.</p> <p>Accurately measure and cut materials to ensure the finished product is of a high quality.</p> | <p>Modelling<br/>Compression<br/>Strut<br/>Tension<br/>Tie<br/>Diagonal<br/>Horizontal<br/>Vertical<br/>Triangulation<br/>Frame structure</p> |



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|                                      |                                                                                                                                                                                                                                                                                                                                                          | <p>discussion, prototypes and annotated sketches.</p> <p>Understand how to strengthen, stiffen and reinforce 3-D frameworks.</p> <p>Know and use technical vocabulary relevant to the project.</p> |  |  |
| <b>Year 6<br/>Skills<br/>Builder</b> | <p>Aiming High – I set goals informed by an understanding of what is needed.</p> <p>Creativity – I use creativity in the context of work.</p> <p>Speaking – I speak effectively by using appropriate tone, expressions and gesture.</p> <p>Problem solving – I explore complex problems by identifying when there are no simple technical solutions.</p> |                                                                                                                                                                                                    |  |  |