

Design and Technology

KS2	Autumn	Spring	Summer
Year 3	<p><b><u>Making Mini Greenhouses</u></b> Design, make and evaluate a mini greenhouse fit for purpose.</p> <p>Skills: Make stable structures Identify suitable materials Identify ways of joining two materials together Work safely and sensibly with a range of materials and tools Follow specific design criteria</p>	<p><b><u>Moving Monsters</u></b> Design, make and evaluate a monster with moving parts involving pneumatic systems.</p> <p>Skills: Create simple pneumatics systems Different techniques for joining and fixing components Construct an effective pneumatic system to control movement Work safely and effectively with a range of tools and techniques</p>	<p><b><u>Sandwich Snacks</u></b> Design, make, eat and evaluate a healthy sandwich snack.</p> <p>Skills: Taste and describe different foods Choose a purpose for their sandwich design design a healthy sandwich Work safely and appropriately with food Present their sandwich in an appealing way</p>
Year 4	<p><b><u>Seasonal Stockings</u></b> Design, make and evaluate a seasonal stocking</p> <p>Skills: Identify different sewing stitches Thread a needle and secure a knot Join two pieces of fabric together using a sewing stitch use stitching for decorative purposes Sew a button/bead/sequin/ribbon onto fabric accurately Use appropriate sewing stitches to join and decorate fabric Work safely and sensibly with a range of materials and tools</p>	<p><b><u>Light up Signs</u></b> Design, make and evaluate a decorative light box with illuminated words or letters using a variety of materials.</p> <p>Skills: Construct a circuit with an LED Identify potential audiences and purposes for a product design Select appropriate tools and materials for construction of their design Identify ways in which they can work safely while constructing their design Recall how to create a simple series circuit with a light Select and use appropriate tools, materials and components to construct a circuit Make algorithms with simple sets of instructions which describe how a flashing LED is controlled Write or edit programs to control an LED</p>	<p><b><u>American Foods</u></b> Design, make, eat and evaluate a variety of American foods.</p> <p>Skills: Measure and mix ingredients Cut out, shape and mould pastry Modify simple recipe Use safe knife techniques Measure, sift, mix and pour when following a recipe Snip, cut and shred food safely, using appropriate apparatus With support and supervision, use a hob to heat food</p>

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<b>Year 5</b>	<p><b>Moving Toys</b></p> <p>Design, make and evaluate a moving toy with a cam mechanism.</p> <p><b>Skills:</b> Investigate cam mechanisms and how different shaped cams can alter the movement of the follower. Experiment with a variety of materials, tools and techniques Identify ways of strengthening a structure Work safely with a variety of materials and tools</p>	<p><b>Building Bridges</b></p> <p>Design, make and evaluate bridge models after exploring ways in which forces act on bridge structures, how they are constructed and how they are strengthened.</p> <p><b>Skills:</b> Build and test models to find a strong bridge design Build a model suspension bridge that will support a given weight Write design criteria according to a given brief Design a prototype model according to design criteria Work collaboratively to produce a prototype according to an agreed design Develop ways to strength, stiffen or reinforce models.</p>	<p><b>Burgers</b></p> <p>Design, make, eat and evaluate a burger.</p> <p><b>Skills:</b> Follow a recipe to prepare and cook Measure and mix ingredients Make informed decisions about the type of ingredients to use Choose appropriate ingredients Use cooking utensils and equipment correctly Combine flavours to produce tasty, healthy meal</p>
<b>Year 6</b>	<p><b>Fashion and Textiles</b></p> <p>Design, make and evaluate a stylish drawstring bag after looking at how textiles are used within the fashion industry.</p> <p><b>Skills:</b> Identify different sewing stitches on items made using textiles Distinguish between functional and decorative sewing stitches on items made using textiles Draw pattern pieces, adding details such as seam allowances Use pattern pieces to mark fabric for cutting and sewing Cut fabric according to a pattern Thread a needle by themselves Join fabric pieces using a simple hand-sewing stitch Tie threads to ensure seams do not unravel Use simple stitches to sew hems on an item made using textiles</p>	<p><b>Great British Dishes</b></p> <p>Explore sweet and savoury national dishes from England, Scotland and Wales. Practise the life skill of how to plan, shop for a meal.</p> <p><b>Skills:</b> Cut and chop vegetables safely Combine ingredients and follow a recipe Understand RDA for sugar and how to identify the sugar content on food packaging Understand the seasonality of different British fruits Design/follow a simple recipe Follow and adapt a given recipe Understand how to plan and cost a meal Give general kitchen health and safety advice</p>	<p><b>Programming Pioneers</b></p> <p>Design, develop and test a prototype computer-controlled electronic system for rooms such as motion-sensor, activated alarms, door buzzer entry systems or even 'smart home' automatic lights.</p> <p><b>Skills:</b> Communicate and develop their ideas by discussing, annotating diagrams and writing instructions Develop prototypes of a computer-controlled electrical system Incorporate one or more different electrical components in their system Improve their prototype designs by 'debugging' their software and/or hardware Develop a design brief for a product Incorporate electrical systems in their product design Make prototype models to communicate their ideas Control their prototypes using electronic components and computers</p>

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### End of KS2 Knowledge

Through a variety of creative and practical activities, pupils should be taught the knowledge, understanding and skills needed to engage in an iterative process of designing and making. They should work in a range of relevant contexts [for example, the home, school, leisure, culture, enterprise, industry and the wider environment].

#### **When designing and making, pupils should be taught to:**

##### **Design**

- 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
- generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design

##### **Make**

- select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- 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

##### **Evaluate**

- investigate and analyse a range of existing products
- evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- understand how key events and individuals in design and technology have helped shape the world

##### **Technical knowledge**

- apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]
- apply their understanding of computing to program, monitor and control their products.

##### **Cooking and nutrition**

As part of their work with food, pupils should be taught how to cook and apply the principles of nutrition and healthy eating. Instilling a love of cooking in pupils will also open a door to one of the great expressions of human creativity. Learning how to cook is a crucial life skill that enables pupils to feed themselves and others affordably and well, now and in later life.

#### **Pupils should be taught to: Key stage 2**

- understand and apply the principles of a healthy and varied diet
- prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.