Design and Technology Curriculum: Year 4

What are the aims and intentions of this curriculum?

That by the end of KS2, children:

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

- 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.

Term	**Topic**	**Knowledge** **Technical Knowledge*	**Skills** **Design *Make *Evaluate*	**Vocabulary**

Design and Technology Curriculum: Year 4

1	**Mechanical systems: Making a slingshot car**	To understand that all moving things have kinetic energy To understand that kinetic energy is the energy that something (object/person) has by being in motion To know that air resistance is the level of drag on an object as it is forced through the air To understand that the shape of a moving object will affect how it moves due to air resistance To understand that products change and evolve over time To know that aesthetics means how an object or product looks in design and technology To know that a template is a stencil you can use to help you draw the same shape accurately To know that a birds-eye view means a view from a high angle (as if a bird in flight) To know that graphics are images which are designed to explain or advertise something To know that it is important to assess and evaluate design ideas and models against a list of design criteria	Designing a shape that reduces air resistance Drawing a net to create a structure from Choosing shapes that increase or decrease speed as a result of air resistance Personalising a design Measuring, marking, cutting and assembling with increasing accuracy Making a model based on a chosen design Evaluating the speed of a final product based on: the effect of shape on speed and the accuracy of workmanship on performance	Aesthetic, Air resistance, Chassis, Design, Design criteria, Function, Graphics, Kinetic energy, Mechanism, Net, Structure, Stencil, Template
2	**Textiles: Fastenings**	To know that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and Velcro To know that different fastening types are useful for different purposes To know that creating a mock up (prototype) of their design is useful for checking ideas and proportions	Writing design criteria for a product, articulating decisions made Designing a personalised book sleeve Making and testing a paper template with accuracy and in keeping with the design criteria Measuring, marking and cutting fabric using a paper template Selecting a stitch style to join fabric, working neatly sewing small neat stitches Incorporating fastening to a design Testing and evaluating an end product against the original design criteria	Aesthetic, Assemble, Book sleeve, Design criteria, Evaluation, Fabric, Fastening, Mock-up, Net, Running-stitch, Stencil, Target audience, Target customer, Template

			Deciding how many of the criteria should be met for the product to be considered successful Suggesting modifications for improvement Articulating the advantages and disadvantages of different fastening types	
3	**Structures: Pavilions**	To understand what a frame structure is To know that a 'free-standing' structure is one which can stand on its own To know that a pavilions is a decorative building or structure for leisure activities To know that cladding can be applied to structures for different effects To know that aesthetics are how a product looks To know that a product's function means its purpose To understand that the target audience means the person or group of people a product is designed for To know that architects consider light, shadow and patterns when designing	Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect Building frame structures designed to support weight Creating a range of different shaped frame structures Making a variety of free-standing frame structures of different shapes and sizes Selecting appropriate materials to build a strong structure and for the cladding Reinforcing corners to strengthen a structure Creating a design in accordance with a plan Learning to create different textural effects with materials Evaluating structures made by the class Describing what characteristics of a design and construction made it the most effective Considering effective and ineffective designs	Aesthetic, Cladding, Design criteria, Evaluation, Frame structure, Function, Inspiration, Pavilion, Reinforce, Stable, Structure, Target audience, Target customer, Texture, Theme
4	**Food: Adapting a recipe**	To know that the amount of an ingredient in a recipe is known as the 'quantity' To know that it is important to use oven gloves when removing hot food from an oven To know the following cooking techniques: sieving, creaming, rubbing method, cooling To understand the importance of budgeting while planning ingredients for biscuits	Designing a biscuit within a given budget, drawing upon previous taste testing Following a baking recipe Cooking safely, following basic hygiene rules Adapting a recipe Evaluating a recipe, considering: taste, smell, texture and appearance Describing the impact of the budget on the selection of ingredients Evaluating and comparing a range of products Suggesting modifications	Adapt, Budget, Cooling rack, Creaming, Equipment, Evaluation, Flavour, Ingredients, Method, Net, Packaging, Prototype, Quantity, Recipe, Rubbing, Sieving, Target audience, Unit of

				measurement, Utilities
5	**Electrical systems: Torches**	To understand that electrical conductors are materials which electricity can pass through To understand that electrical insulators are materials which electricity cannot pass through To know that a battery contains stored electricity that can be used to power products To know that an electrical circuit must be complete for electricity to flow To know that a switch can be used to complete and break an electrical circuit To know the features of a torch: case, contacts, batteries, switch, reflector, lamp, lens To know facts from the history and invention of the electric light bulb(s) - by Sir Joseph Swan and Thomas Edison	Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas Making a torch with a working electrical circuit and switch Using appropriate equipment to cut and attach materials Assembling a torch according to the design and success criteria Evaluating electrical products Testing and evaluating the success of a final product against success criteria	Battery, Bulb, Buzzer, Cell, Component, Conductor, Copper, Design criteria, Electrical item, Electricity, Electronic item, Function, Insulator, Series circuit, Switch, Test, Torch, Wire