LAUREL LANE
Primary School

DESIGN AND TECHNOLOGY AT LAUREL LANE
Whole School Overview

	Autumn	Spring	Summer
Year 1	Textiles: Puppets	Mechanisms: Wheels and axis	Construction: Constructing a windmill Food Technology: Fruit and vegetables
Year 2	Structures: Baby bear's chair	Mechanisms: Fairground wheel	Construction: Making a moving monster
Year 3	Structures: Constructing a castle	Mechanisms: Pneumatic toys	Textiles: Egyptian collars Food Technology: Eating seasonally
Year 4	Electrical systems: Torches	Textiles: Fastenings	Structures: Pavilions Food Technology: Adapting a recipe
Year 5	Textiles: Stuffed toys Food Technology: Adapting a recipe	Mechanical Systems: Pop up books	Structures: Bridges
Year 6	Mechanisms: Mechanical systems	Structures: Playgrounds	Electrical systems Food Technology: Come dine with me

	Autumn Term	Spring Term	Summer Term	Summer Term
Year 1	**Textiles** **Puppets**	**Mechanism** **Wheels and Axis**	**Structures** **Construction a windmill**	**Food Technology** **Smoothies**
	Skills Developed: Design • Using a template to create a design for a puppet. Make • Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing steps for construction. Evaluate • Reflecting on a finished product and comparing to their design. **Knowledge Developed:** • To know that a design is a way of planning our idea before we start. • To know that threading is putting one material through an object.	**Skills Developed:** Design • Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. • Creating clearly labelled drawings that illustrate movement. Make Adapting mechanisms, when: - they do not work as they should. - to fit their vehicle design. -to improve how they work after testing their vehicle. Evaluate • Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move. **Knowledge Developed:** • To know that wheels need to be round to rotate and move. • To understand that for a wheel to	**Skills Developed:** Design • Learning the importance of a clear design criteria. • Including individual preferences and requirements in a design. Make • Making stable structures from card. • Following instructions to cut and assemble the supporting structure of a windmill. • Making functioning turbines and axles which are assembled into a main supporting structure. • Finding the middle of an object. • Puncturing holes. • Adding weight to structures. • Creating supporting structures. • Cutting evenly and carefully. Evaluate • Evaluating a windmill according to the design criteria, testing whether the structure is strong and stable and altering it if it isn't. • Suggest points for improvements.	**Skills Developed:** Design • Designing smoothie carton packaging by-hand. Make • Chopping fruit and vegetables safely to make a smoothie. • Juicing fruits safely to make a smoothie Evaluate • Tasting and evaluating different food combinations. • Describing appearance, smell and taste. • Suggesting information to be included on packaging. • Comparing their own smoothie with someone else's. **Knowledge Developed:** • To know that a blender is a machine which mixes ingredients together into a smooth liquid. • To know that a fruit has seeds. • To know that fruits grow on trees or vines. • To know that vegetables can grow either above or below ground.

			move it must be attached to a rotating axle. • To know that an axle moves within an axle holder which is fixed to the vehicle or toy. • To know that the frame of a vehicle (chassis) needs to be balanced.	**Knowledge Developed:** • To understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses). • To understand that axles are used in structures and mechanisms to make parts turn in a circle. • To begin to understand that different structures are used for different purposes. • To know that a structure is something that has been made and put together. • To know that the sails or blades of a windmill are moved by the wind. • To know that a structure is something built for a reason. • To know that stable structures do not topple. • To know that adding weight to the base of a structure can make it more stable.	• To know that vegetables is any edible part of a plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber).

	Autumn Term	Spring Term	Summer Term	Summer Term
Year 2	**Structures** **Baby Bears' Chair**	**Mechanism** **Fairground wheel**	**Mechanism** **Making a moving monster**	**Food Technology** **Balanced Diet**
	Skills Developed: Design • Generating and communicating ideas using sketching and modelling. • Learning about different types of structures, found in the natural world and in everyday objects. Make • Making a structure according to design criteria. • Creating joints and structures from paper/card and tape. • Building a strong and stiff structure by folding paper. Evaluate • Exploring the features of structures. • Comparing the stability of different shapes. • Testing the strength of own structures. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure.	**Skills Developed:** Design • Selecting a suitable linkage system to produce the desired motion. • Designing a wheel. Make • Selecting materials according to their characteristics. • Following a design brief. Evaluate • Evaluating different designs. • Testing and adapting a design. **Knowledge Developed:** • To know that different materials have different properties and are therefore suitable for different uses.	**Skills Developed:** Design • Creating a class design criteria for a moving monster. • Designing a moving monster for a specific audience in accordance with a design criteria. Make • Making linkages using card for levers and split pins for pivots. • Experimenting with linkages adjusting the widths, lengths and thicknesses of card used. • Cutting and assembling components neatly. Evaluate • Evaluating own designs against design criteria. • Using peer feedback to modify a final design. **Knowledge Developed:** • To know that mechanisms are a collection of moving parts that work together as a machine to produce movement. • To know that there is always an input and output in a mechanism.	**Skills Developed:** Design • Designing three wrap ideas based on a food combination which work well together. Make • Chopping foods safely to make a wrap. • Constructing a wrap that meets a design brief. • Grating foods to make a wrap. • Snipping smaller foods instead of cutting. Evaluate • Describing the taste, texture and smell of fruit and vegetables. • Taste testing food combinations and final products. • Describing the information that should be included on a label. •Evaluating food by giving a score. **Knowledge Developed:** • To know that 'diet' means the food and drink that a person or animal usually eats. • To understand what makes a balanced diet.

	Knowledge Developed:		• To know that an input is the energy that is used to start something working. • To know that an output is the movement that happens as a result of the input. • To know that a lever is something that turns on a pivot. • To know that a linkage mechanism is made up of a series of levers.	• To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • To understand that I should eat a range of different foods from each food group, and roughly how much of each food group. • To know that 'ingredients' means the items in a mixture or recipe.
	• To know that shapes and structures with wide, flat bases or legs are the most stable. • To understand that the shape of a structure affects its strength. • To know that materials can be manipulated to improve strength and stiffness. • To know that a structure is something which has been formed or made from parts. • To know that a 'stable' structure is one which is firmly fixed and unlikely to change or move. • To know that a 'strong' structure is one which does not break easily. • To know that a 'stiff' structure or material is one which does not bend easily			

LAUREL LANE
Primary School

	Autumn Term	Spring Term	Summer Term	Summer Term
Year 3	**Structures** **Constructing a castle**	**Mechanism** **Pneumatic toys**	**Textiles** **Egyptian collars**	**Food Technology** **Eating seasonally**
	Skills Developed: Design • Designing a castle with key features to appeal to a specific person/purpose. • Drawing and labelling a castle design using 2D shapes, labelling: -the 3D shapes that will create the features - materials needed and colours. • Designing and/or decorating a castle tower on CAD software. Make • Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. Evaluate • Evaluating own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggesting points for modification of the individual designs.	**Skills Developed:** Design • Designing a toy which uses a pneumatic system. • Developing design criteria from a design brief. • Generating ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly. Make • Creating a pneumatic system to create a desired motion. • Building secure housing for a pneumatic system. • Using syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Selecting materials due to their functional and aesthetic characteristics. • Manipulating materials to create different effects by cutting, creasing, folding and weaving.	**Skills Developed:** Design • Designing and making a template from an existing cushion and applying individual design criteria. Make • Following design criteria to create a Egyptian collar. • Selecting and cutting fabrics with ease using fabric scissors. • Threading needles with greater independence. • Tying knots with greater independence. • Sewing cross stitch to join fabric. • Decorating fabric using appliqué. • Completing design ideas with embellishing the collars based on design ideas. Evaluate • Evaluating an end product and thinking of other ways in which to create similar items. Knowledge • To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.	**Skills Developed:** Design • Designing a recipe for a savoury tart. Make • Following the instructions within a recipe. • Tasting seasonal ingredients. • Selecting seasonal ingredients. • Peeling ingredients safely. • Cutting safely with a vegetable knife. Evaluate • Establishing and using design criteria to help test and review dishes. • Describing the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggesting points for improvement when making a seasonal tart **Knowledge Developed:** • To know that not all fruits and vegetables can be grown in the UK. • To know that climate affects food growth. • To know that vegetables and fruit grow in certain seasons.

| **Knowledge Developed:**
 • To understand that wide and flat based objects are more stable.
 • To understand the importance of strength and stiffness in structures. | Evaluate
 • Using the views of others to improve designs.
 • Testing and modifying the outcome, suggesting improvements.
 • Understanding the purpose of exploded-diagrams through the eyes of a designer and their client.

 Knowledge Developed:

 • To understand how pneumatic systems work.

 • To understand that pneumatic systems can be used as part of a mechanism.

 • To know that pneumatic systems operate by drawing in, releasing and compressing air. | •To know that when two edges of fabric have been joined together it is called a seam.
 •To know that it is important to leave space on the fabric for the seam.
 •To understand that some products are turned inside out after sewing so the stitching is hidden. | • To know that cooking instructions are known as a 'recipe'.
 • To know that imported food is food which has been brought into the country.
 • To know that exported food is food which has been sent to another country.
 •To know that eating seasonal foods can have a positive impact on the environment.
 • To know that similar coloured fruits and vegetables often have similar nutritional benefits.
 • To know that the appearance of food is as important as taste. |

	Autumn Term	Spring Term	Summer Term	Summer Term
Year 4	**Electrical systems** **Torches**	**Textiles** **Fastenings**	**Structure** **Pavilions**	**Cooking and nutrition** **Adapting a recipe**
	Skills Developed: Design • Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas. Make • 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. Evaluate • Evaluating electrical products. • Testing and evaluating the success of a final product. **Knowledge Developed:** • 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.	**Skills Developed:** Design • Writing design criteria for a product, articulating decisions made. • Designing a personalised book sleeve. Make • 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 by sewing small, straight stitches. • Incorporating a fastening to a design. Evaluate • Testing and evaluating an end product against the original design criteria. • Deciding how many of the criteria should be met for the product to be considered successful. • Suggesting modifications for improvement.	**Skills Developed:** Design • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight. Make • 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 cladding. • Reinforcing corners to strengthen a structure. • Creating a design in accordance with a plan. • Learning to create different textural effects with materials. Evaluate • Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective.	**Skills Developed:** Design • Designing a biscuit within a given budget, drawing upon previous taste testing judgements. • Designing packaging for a biscuit that targets a specific group Make • Following a baking recipe, including the preparation of ingredients. • Cooking safely, following basic hygiene rules. • Adapting a recipe to meet the requirements of a target audience. • Using a cuboid net to create packaging. Evaluate • 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 food products. • Suggesting modifications to a recipe (e.g. This biscuit has too many raisins, and it is falling apart, so next time I will use less raisins).

• 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.	• Articulating the advantages and disadvantages of different fastening types. **Knowledge Developed:** • 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.	• Considering effective and ineffective designs. **Knowledge Developed:** • To understand what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own.	**Knowledge Developed:** • To know that the amount of an ingredient in a recipe is known as the 'quantity.' • To know that safety and hygiene are important when cooking. • To know the following cooking techniques: sieving, measuring, stirring, cutting out and shaping. •To understand the importance of budgeting while planning ingredients for biscuits. • To know that products often have a target audience.

	Autumn Term	Spring Term	Summer Term	Summer Term
Year 5	**Textiles** **Stuff toys**	**Mechanical systems** **Pop-up book**	**Structure** **Bridges**	**Food Technology** **Developing a recipe**
	Skills Developed: Design • Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components. Make • Creating a 3D stuffed toy from a 2D design. • Measuring, marking and cutting fabric accurately and independently . • Creating strong and secure blanket stitches when joining fabric. • Threading needles independently. • Using appliqué to attach pieces of fabric decoration. • Sewing blanket stitch to join fabric. • Applying blanket stitch so the spaces between the stitches are even and regular. Evaluate • Testing and evaluating an end product and giving point for further improvements.	**Skills Developed:** Design • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • To understand that it is easier to finish simpler designs to a high standard. • To know that soft toys are often made by creating appendages separately and then attaching them to the main body. • To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely. Make • Following a design brief to make a pop-up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. Evaluate • Evaluating the work of others and receiving feedback on own work.	**Skills Developed:** Design • Designing a stable structure that is able to support weight. • Creating a frame structure with a focus on triangulation. Make • Making a range of different shaped beam bridges. • Using triangles to create truss bridges that span a given distance and support a load. • Building a wooden bridge structure. • Independently measuring and marking wood accurately. • Selecting appropriate tools and equipment for particular tasks. • Using the correct techniques to saws safely. • Identifying where a structure needs reinforcement and using card corners for support. • Explaining why selecting appropriating materials is an important part of the design process. • Understanding basic wood functional properties.	Skills Design • Adapting a traditional recipe, understanding that the nutritional value of a recipe alters if you remove, substitute or add additional ingredients. • Writing an amended method for a recipe to incorporate the relevant changes to ingredients. • Designing appealing packaging to reflect a recipe. • Researching existing recipes to inform ingredient choices. Make • Cutting and preparing vegetables safely. • Using equipment safely, including knives, hot pans and hobs. • Knowing how to avoid cross-contamination. • Following a step by step method carefully to make a recipe. Evaluate • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups.

Knowledge Developed: • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • To understand that it is easier to finish simpler designs to a high standard. • To know that soft toys are often made by creating appendages separately and then attaching them to the main body. • To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely.	• Suggesting points for improvement. **Knowledge Developed:** • To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms.	<u>Evaluate</u> • Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary. • Suggesting points for improvements for own bridges and those designed by others. **Knowledge Developed:** • To understand some different ways to reinforce structures. • To understand how triangles can be used to reinforce bridges. • To know that properties are words that describe the form and function of materials. • To understand why material selection is important based on properties. • To understand the material (functional and aesthetic) properties of wood.	**Knowledge Developed:** • To understand where meat comes from - learning that beef is from cattle and how beef is reared and processed. • To know that recipes can be adapted to suit nutritional needs and dietary requirements. • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. • To know that coloured chopping boards can prevent cross-contamination. • To know that nutritional information is found on food packaging. • To know that food packaging serves many purposes.

	Autumn Term	Spring Term	Summer Term	Summer Term
Year 6	**Mechanical systems** **Automata toys**	**Structures** **Playground**	**Electrical systems** **Steady hand game**	**Food Technology** **Come dine with me**
	Skills Developed: Design • Designing a stuffed toy, considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components. Make • Creating a 3D stuffed toy from a 2D design. • Measuring, marking and cutting fabric accurately and independently . • Creating strong and secure blanket stitches when joining fabric. • Threading needles independently. • Using appliqué to attach pieces of fabric decoration. • Sewing blanket stitch to join fabric. • Applying blanket stitch so the spaces between the stitches are even and regular. Evaluate • Testing and evaluating an end product and giving point for further improvements.	**Skills Developed:** Design • Designing a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs. Make • Building a range of play apparatus structures drawing upon new and prior knowledge of structures. • Measuring, marking and cutting wood to create a range of structures. • Using a range of materials to reinforce and add decoration to structures. Evaluate • Improving a design plan based on peer evaluation. • Testing and adapting a design to improve it as it is developed. • Identifying what makes a successful structure. **Knowledge Developed:** • To know that structures can be strengthened by manipulating materials and shapes.	**Skills Developed:** Design • Designing a steady hand game - identifying and naming the components required. • Drawing a design from three different perspectives. • Generating ideas through sketching and discussion. • Modelling ideas through prototypes. • Understanding the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'. Make • Constructing a stable base for a game. • Accurately cutting, folding and assembling a net. • Decorating the base of the game to a high quality finish. • Making and testing a circuit. • Incorporating a circuit into a base. Evaluate • Testing own and others finished games, identifying what went well and making suggestions for improvement.	**Skills Developed:** Design • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken. Make • Following a recipe, including using the correct quantities of each ingredient. • Adapting a recipe based on research. • Working to a given timescale. • Working safely and hygienically with independence. Evaluate • Evaluating a recipe, considering: taste, smell, texture and origin of the food group. • Taste testing and scoring final products. • Suggesting and writing up points of improvements when scoring others' dishes, and when evaluating their own throughout the planning, preparation and cooking process. • Evaluating health and safety in production to minimise cross contamination.

Knowledge Developed: • To know that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric. • To understand that it is easier to finish simpler designs to a high standard. • To know that soft toys are often made by creating appendages separately and then attaching them to the main body. • To know that small, neat stitches which are pulled taut are important to ensure that the soft toy is strong and holds the stuffing securely.		• Gathering images and information about existing children's toys. • Analysing a selection of existing children's toys. **Knowledge Developed:** • To know that batteries contain acid, which can be dangerous if they leak. • To know the names of the components in a basic series circuit, including a buzzer	**Knowledge Developed:** • To know that 'flavour' is how a food or drink tastes. • To know that many countries have 'national dishes' which are recipes associated with that country. • To know that 'processed food' means food that has been put through multiple changes in a factory. • To understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides. • To understand what happens to a certain food before it appears on the supermarket shelf (Farm to Fork).