Design and Technology Knowledge, Skills and Vocabulary Routeway

National Curriculum Requirements

The national curriculum for Design and Technology aims to ensure that all pupils:

- develop the creative, technical and practical expertise needed to perform everyday tasks confidently and to participate successfully in an increasingly technological world
- build and apply a repertoire of knowledge, understanding and skills in order to design and make high-quality prototypes and products for a wide range of users
- critique, evaluate and test their ideas and products and the work of others
- understand and apply the principles of nutrition and learn how to cook

By the end of Key Stage 1

Pupils should be taught to:

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 and school, gardens and playgrounds, the local community, industry and the wider environment].

When designing and making, pupils should be taught to:

Design

- design purposeful, functional, appealing products for themselves and other users based on design criteria
- generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

Make

- select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Evaluate

- explore and evaluate a range of existing products
- evaluate their ideas and products against design criteria

Technical knowledge

- build structures, exploring how they can be made stronger, stiffer and more stable explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products

By the end of Key Stage 2

Pupils should be taught to: 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.

Year Group	Autumn	Spring	Summer

Year 1	Autumn - Structures Free standing structures- A chair for Baby Bear	Spring- Mechanisms Levers and sliders- Making a moving story book.	**Summer – Food** **Preparing Fruit and Vegetables- Fruit kebabs**
	Knowledge and Skills • Identify natural and man- made structures. (Know that natural has been made in nature and man-made has been made by a person.)(Know that a structure is something that has been formed or made from parts, building, bridge, chair.) • Explore the features of structures (To know that shapes and structures with wide, flat bases or legs are the most stable.) (Know that the three features to a stable freestanding structure are low height, wide base and flat base.) • Compare the stability of different shapes. (To understand that the shape of structure affects its strength.) (Know that shapes with flat faces are most stable and that a cylinder is strong because it has no corners.) • Identify the weakest part of the structure. (To know that weak is the opposite of strong and that the corners are the weakest part.) • Make a structure according to design criteria. (know that the chair must be able to stand without falling over. The chair must be strong so it does not break when it is sat upon. The structure should be stiff and not bend easily.) • Create joints and structures from paper, card and tape (Know that a joint is where they fix their structure together.) (Know how to make a link joint, pipe cleaner joint and slot joint and to secure it with tape for added strength.) • Build a strong and stiff structure by folding paper. (Know that overlapping the paper improves the stiffness of the structure as it thickens the walls by layering.) (Know that a strong structure is one that does not break easily. (To know that a stiff structure or material is one which does not bend easily.) • Test the strength of own structure. (Know that if their structure is strong it should not collapse. • Evaluate the strength, stiffness and stability of own structure. (Know if their structure is strong, stiff and stable.)	Knowledge and Skills • Explore moving picture books. (Know which direction the pictures move in.) • Identify mechanisms in moving picture books. (Know that a mechanism is the parts of an object that move together.) (Know that a slider mechanism moves an object from side to side.) • Design a moving story book for a given audience. (know what makes a story book appealing to children.)(Know that in DT we call a plan a design. • Explain how to adapt mechanisms, using bridges or guides to control the movement. (Know that bridges are guides that bridges and guides are bits of card that purposefully restrict the movement of the slider.) • Follow a design to create moving models that use levers and sliders. (Know what a lever and slider is.) (Know that objects can be moved in different directions e.g. up, down, right, left, forwards, backwards.) (Know that a slider mechanism has a slider, slot, guides and an object.) • Test a finished product, seeing whether it moves as planned and if not; explain why and how it can be fixed. (Know how levers and sliders move successfully) • Review the success of a product by testing it with its intended audience. (Know who the intended audience are and what the design criteria is.)	Knowledge and Skills • Identify if a food is a fruit or vegetable (know the difference between fruits and vegetables.) (Know that a fruit has seeds and a vegetable does not.) • Identify where plants grow and which parts we eat. (Know that fruits grow on vines and trees.) (Know that vegetables can grow either above or below the ground.) (Know that vegetables can come from different parts of the plant e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). • Taste and compare different fruits and vegetables (Know and use the vocabulary appearance, smell and taste.) • Make a fruit and vegetable smoothie safely. (Know to wash hands and prepare the work surface before chopping. (Know to wait for an adult to be present before pressing buttons on the blender. • Chop fruit and vegetable safely. (Know how to use the claw grip to hold food safely.) • Design a smoothie carton packaging. (Know the ingredients in their smoothie. • Suggest information to be included on the packaging. (Know the importance of the information on packaging.) (Know what is on packaging they have seen before.)
	Vocabulary and Definitions **Function**- How something works. **Man-made**- Made by people. **Mould-** To form different shapes out of soft, squishy materials. **Natural-** Found in nature e.g. spider's web, sheep's wool. **Stable-** Object does not easily topple over. **Stiff-** A material or object that does not bend easily (e.g. wood)	Vocabulary and Definitions **Assemble**- To fix all parts together. **Design**- To make draw or write plans for something. **Evaluation**- When you look at the good or bad points for something and then think about how you could improve it. **Mechanism**- A system of parts working together. **Model**- A practise version, often on a smaller scale, that lets you test out your idea and see how it will look and work. **Sliders**- Something that can move from side to side or up and down. **Stencil**- A shape, which you can draw around. **Target audience**- A personal or particular group of people at whom a product is aimed. **Template**- A stencil, which you can use to help you draw a shape more easily onto different materials. **Test**- To find out if something works as it should.	Vocabulary and Definitions **Blender**- A machine that mixes ingredients together into a smooth liquid. **Carton**- A container made out of card, which holds liquid products such as milk and orange juice. **Fruit-** The part of a plant that contains seeds. **Healthy-** When everything in your body and head feels good. **Ingredients-** Items that make up a mixture, for example, foods that make a recipe. **Peel-** The tough skin around certain fruits and vegetables, such as oranges. **Peeler-** A tool, which helps you to remove the tough skin off fruits and vegetables. **Recipe**- A set of instructions for making or preparing a food item or dish. Slice (Verb) - To cut pieces off something with a knife. **Smoothie**- A combination of fruits and vegetables blended to make a smooth drink. **Stencil**- A shape, which you draw around. **Template-** A stencil, which you can use to help you to draw a shape more easily on to different materials.

	Strong- Something that is not easily broken (e.g. wood, brick, building). **Structure**- Something that has been made and put together and can usually stand on its own (e.g. a building, a bridge, a chair). **Test-** To find out whether something works as it should. **Weak**- Something that is easily broken (e.g. paper, eggshells).		**Vegetable**- Parts of plants that can be eaten by people as food. The parts may be the leaves, roots or stem. Vegetables do not contain any seeds.
Year 2	Autumn- Textiles Templates and Joining- Christmas puppet. Knowledge and Skills • Use a template to create a design for a puppet. (Know that drawing a design idea is useful to see how an idea will look.)(Know that a template or fabric pattern is used to cut out the same shape multiple times.) • Cut fabric neatly with scissors. • Use joining methods to decorate a puppet. (Know that 'joining technique' means connecting two pieces of material together.) (Know that there are various temporary methods of joining fabric by using staples, glue or pins.) • Join fabric together using different methods. (Know how to join fabric by pinning, stapling or glueing) • Join two fabrics together accurately (Know to align the pieces of fabric.) (Know how to use a template.) (Know that they need to fit their hand inside the puppet.) • Embellish the puppet for decoration. (Know that products should look appealing.) (Know the joining methods to decorate.) • Sequence the steps taken during construction. • Reflect on a finished product, explaining likes and dislikes. (Know and look at existing products.) Vocabulary and Definitions **Decorate**- To add details to a design to improve its appearance. **Design**- To make, draw or write plans for something. **Fabric**- A natural or man-made woven or knitted material that is made from plant fibres, animal fur or synthetic material. **Glue-** A sticky liquid that can join two things together. **Model** - A practise version, often on a smaller scale, that lets you test out your idea and see how it will look and work. **Hand puppet-** A toy that you can make move by putting your hand inside it.	Spring- Mechanisms Wheels and Axles- Moving vehicle Knowledge and Skills • Design a vehicle that includes wheels, axles and axle holders, which will allow the wheels to move. (Know some real-life items that use wheels.) (Know how vehicles move.) • Create clearly labelled drawings that illustrate movement.(Know the parts of a the mechanism that make the vehicle move. Chassis, wheel, axle. Axle holder.) • Adapt mechanisms (.Know what stops wheels from moving. Know that if the axle is stuck to the chassis or axle holder it cannot rotate.) (Know what stops the mechanism from working.) • Test mechanisms, identifying what stops wheels from turning and knowing that a wheel needs an axle in order to move. (Know that wheels need to be round to rotate and move.) (Know that for a wheel to move it must be attached to a rotating axle.)(Know that an axle moves within an axle holder, which is fixed, to the vehicle or toy.)(Know that the frame of a vehicle (chassis) needs to be balanced.) Vocabulary and Definitions **Accurate-** Neat, correct shape, size and pattern with no mistakes. **Axle-** A long, straight rod with connects to a rotating part (e.g. the wheels of a car.) **Axle holder-** The part of a mechanism, which holds the axle steady. **Chassis-** The body of a car. **Design-** To make, draw or write plans for something.	Summer- Food A balanced diet- Healthy wrap Knowledge and Skills • Design a healthy wrap based on a food combination that works well together. • Slice food safely using the bridge or claw grip. • Construct a wrap that meets a design brief. • Describe the taste, texture and smell of fruit and vegetables. • Taste test food combinations and final products. • Describe the information that should be included on a label. • Evaluate which grip was most effective. • To know that 'diet' means the food and drink that a person or animal usually eats. • To understand what makes a healthy diet. • To know where to find the nutritional information on packaging. • To know that the five main food groups are: Carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar. • To understand the importance of eating a range of different foods from each food group, and roughly how much of each food group. • To know that nutrients are substances in food that all living things need to make energy, grow and develop. • To know that ingredients means the items in a mixture or recipe. • To know the maximum amount of sugar to have a day is five teaspoons to stay healthy. • To know that many food and drinks we do not expect to contain sugar do; we call these' hidden sugars'.

	Safety pin- A 'U' shaped pin with a cap where the needle slots in securely after fastening. **Staple-** a piece of thin wire with two short right-angled end pieces, which are driven by a stapler through sheets of paper to fasten them together. **Stencil-** A shape that you can draw around. **Template-** A stencil, which you use to help you draw a shape more easily on to different materials. **Technique-** A way of doing something to complete a task.	**Evaluation-** When you look at the good or bad points for something and then think about how you could improve it. **Fix-** To mend something so that it will work properly again. **Mechanic-** A person who can build or mend vehicles or other machines. **Mechanism-** parts of an object that work together to make something work. **Model-** A practise version that lets you test out your idea and **see** how it will look and work. **Test-** To find out if something works as it should. **Wheel-** A circular objects that turns round. It can fixed to a vehicle like a car or bicycle to allow the vehicle to move easily over the ground.	
Year 3	Autumn - Mechanical systems Pneumatic toys Knowledge and Skills • Design a toy, which uses a pneumatic system. • Develop design criteria from a design brief. • Generate ideas using thumbnail sketches and exploded diagrams. • Learning that different types of drawings are used in design to explain ideas clearly. • Create a pneumatic system to create a desired motion. • Build secure housing for a pneumatic system. • Use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy. • Select materials due to their functional and aesthetic characteristics. • Manipulate materials to create different effects by cutting creasing, folding and weaving. • Use the views of others to improve designs • Test and modify the outcome, suggesting improvements. • Understand the purpose of exploded-diagrams through the eyes of a designer and their client • Understand how a pneumatic systems work. • Understand that pneumatic systems can be used as part of a mechanism. • Know that pneumatic systems operate by drawing in, releasing and compressing air. • Understand how sketches, drawings and diagrams can be used to communicate design ideas. • Know that exploded diagrams are used to show how different parts of a product fit together.	Spring- Food Eating seasonally- savoury tart Knowledge and Skills • Create a healthy and nutritious recipe for a savoury tart sing seasonal ingredients, considering the taste, texture, smell and appearance of the dish. • Know how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination. • Follow the instructions within a recipe. • Establish and use design criteria to help test and review dishes. • Describe the benefits of seasonal fruits and vegetables and the impact on the environment. • Suggest points for improvement when making a seasonal tart. • 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. • 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 is sent to another country. • To understand that imported foods travel from far away and this can negatively impact the environment.	Summer- Structures Constructing a castle Knowledge and Skills • Design a castle with key features to appeal to a specific person/purpose. • Draw and label a castle design using 2D shapes. Label the 3D shapes that will create the features- materials needed and colours. • Design and/or decorate a castle tower on CAD software. • Construct a range of 3D geometric shapes using nets. • Create special features for individual designs. • Make facades from a range of recycled materials. • Evaluate own work and the work of others based on the aesthetic of the finished product and in comparison to the original design. • Suggest points for modification of the individual designs. • Understand that wide and flat based objects are more stable. • Understand the importance of strength and stiffness in structures. • Know the following features of a castle, flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse- and their purpose. • Know that a façade is the front of the structure. • Understand that a castle needed to be strong and stable to withstand enemy attack. • Know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • Know that a design specification is a list of success criteria for a product.

	• To know that thumbnail sketches are small drawings to get ideas down on paper quickly. Vocabulary and Definitions **Exploded diagram** - A diagram which shows all of the parts of a product, including the internal and external parts. **Function-** How something works. **Input-** input is the motion used to start a mechanism. **Linkage-** lengths of material (for example metal or card) that are joined together by pivots, so that the links can move as part of a mechanism. **Mechanism-** The parts of an object that move together as part of a machine. **Motion-** The movement an object makes when controlled by an input or output (e.g. left, right, up or down) **Net-** A 2D flat shape that can become a 3D shape once assembled. **Output-** output is the motion that happens as a result of starting the input. **Pivot-** The central point, pin, or shaft on which a mechanism turns or swings. **Pneumatic system-** A mechanism that runs off air or compressed gas. **Thumbnail sketch-** Small drawings to get ideas down on paper quickly.	• To know that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre. • To understand that vitamins, minerals and fibre are important for energy, growth and maintaining health. • To know safety rules for using, storing and cleaning a knife safely. • To know that similar coloured fruits and vegetables often have similar nutritional benefits. Vocabulary and Definitions **Climate-** The weather and temperature in each country in the world, depends on which climate group that country is located. There are five climate groups: polar, temperature, dry, tropical and Mediterranean. **Dry climate-** Less than 250mm of rain, fog, sleet or snow in total across a whole year. **Exported**- when products or produce, such as fruit and vegetables, are brought into a country. **Imported**- when products or produce, such as fruit and vegetables, are brought into the country. **Mediterranean climate**- hot dry summers and cooler wetter winters. **Nationality**- belonging to a particular country, (e.g. a person with Italian nationality comes from Italy.) **Nutrients**-substances in food that all living things need to make energy, grow and develop. **Polar climate**- long periods of extreme cold. **Recipe**- A set of instructions for making or preparing a food item or dish. **Seasonal food**- Food that can be harvested and is ready to eat in a particular season. **Seasons**- The seasons of the year are Spring, Summer, Autumn and Winter. **Temperate climate**- Mild temperatures, where the summers are not too hot and the winters are not too cold. **Tropical climate**- High temperatures and a lot of rain. This is where you will find the world's rainforests.	Vocabulary and Definitions **2D shapes**- flat objects with 2- dimensions, such as square, rectangle and circle. **3D shapes-** solid objects with 3- dimensions, such as cube, oblong and sphere. **Castle-** A type of building that used to be built hundreds of years ago to defend land and be a home for kings and queens and other very rich people. **Design Criteria-** A set of rules to help designers focus their ideas and test the success of them. **Evaluation-** When you look at the good and bad points about something, and then think about how you can improve it. **Façade-** The front of a structure**.** **Feature-** A specific part of something. **Flag-** A piece of cloth used for decoration or to represent a country or symbol **Net-** A 2D flat shape that can become a 3D shape when assembled. **Recyclable-** material or an object that, when no longer wanted or needed, can be made into something else new **Scoring -** scratching a line with a sharp object into card to make the card easier to bend **Stable -** object does not easily topple over **Strong-** it does not break easily **Structure-** something which stands usually on its own **Tab-** the small tabs on the bet template that are bent and glued down to hold the shape together **weak -** it breaks easily
Year 4	Autumn- Electrical systems Simple circuits- Torch Knowledge and Skills • Design a torch, giving consideration to the target audience. • Create both design and success criteria focusing on features of individual design ideas. • Make a torch with a working electrical circuit and switch.	Spring- Textiles Fastenings- book case Knowledge and Skills • Write a design criteria for a product, articulating decisions made. • Design a personalised book sleeve. • Make and test a paper template with accuracy and in keeping with the design criteria. • Measure, mark and cut fabric using a paper template. • Select a stitch style to join fabric.	Summer- Food Adapting a recipe. Knowledge and Skills • Design a biscuit within a given budget, drawing upon previous taste testing. • Follow a baking recipe. • Cook safely, following basic hygiene rules. • Adapt a recipe.

	• Use appropriate equipment to cut and attach materials. • Assemble a torch according to the design and success criteria. • Evaluate electrical products. • Test and evaluate the success of a final product. • Understand that electrical conductors are materials which electricity can pass through. • Understand that electrical insulators are materials which electricity cannot pass through. • Know that a battery contains stored electricity that can be used to power products. • Know that an electrical circuit must be complete for electricity to flow. • Know that a switch can be used to complete and break an electrical circuit. Vocabulary and Definitions **Battery-** Two or more cells put together to provide electrical energy to power a circuit. **Bulb-** A circuit part, made from glass or plastic, which gives out light when electricity passes through it. **Buzzer-** A circuit part, which will make a buzzing noise when electricity is passed through it. **Cell-** A single unit that provides electrical energy to power a circuit. **Conductor-** A material that allows electricity to flow through it. e.g. metal **Copper**- A reddish metal material that is good at letting heat and electricity flow through it. It is often used to make wires and pipes. **Design criteria-** A set of rules to help designers focus their ideas and test the success of them. **Electrical item-** Objects that need electricity to work such as hair dryers, toasters and kettles. **Electricity-** A type of energy, that is usually invisible, that can be made or stored and used to make objects work (for example to move things or to heat them up). **Electronic item-** Electrical items that have an element of computer processing in them such as mobile phones and laptops. **Insulator- A** material that does not allow electricity to flow through it. e.g. plastic. **Series circuit-** A closed circuit where the current flows one path. **Switch-** A circuit part that you can open or close to allow electricity to flow through or to stop it flowing through. (for example, in a house, an electrical light switch lets you turn the lights on or turn the lights off.) **Test** - To find out whether something works as it should.	• Sew neatly using small regular stitches. • Incorporate a fastening to a design. • Test and evaluate an end product against the original design criteria • To know that a fastening is something that holds two pieces of material together. • 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. Vocabulary and Definitions **Aesthetic**- How an object or product looks. **Assemble**- To put parts together **Book sleeve**- A protective cover for a book to keep it from getting damaged. **Design criteria-** To help designers focus their ideas and test the success of them. **Evaluation**- When you look at the good and bad points about something, and then think about how you could improve it. **Fabric**- A natural or man-made, woven or knitted material that is made from plant fibres, animal fur or synthetic material. Fastening- something that holds two pieces of material together securely or shuts something, such as buttons, zips and press-studs. **Prototype**- A simple model that lets you test out your idea, how it will look and work. **Net-** A flat 2D shape, that can become a 3D shape once assembled. **Running stitch**- A simple style of sewing in a straight lie with no overlapping. **Stencil**- A shape that you can draw around. **Target audience**- A person or particular group of people at whom a product is aimed. **Target customer**- A person or particular group of people who you expect to but the product. **Template**- A stencil you use to help you draw the same shape more easily on to different materials.	• Evaluate a recipe, considering the taste, smell, texture and appearance. • Describe the impact of the budget on the selection of ingredients. • Evaluate and compare a range of products. • Suggest modifications. • Know that the amount of an ingredient in a recipe is known as the 'quantity'. • Know that it is important to use oven gloves when removing hot food from an oven. • Know the following cooking techniques: sieving, creaming, rubbing method, cooling. • Understand the importance of budgeting while planning ingredients for biscuits. Vocabulary and Definitions **Adapt-** To change or alter something to fit a given purpose, or to improve it. **Budget-** To set an amount of money that can be used for something or for a project and then making sure that you record what you spend and don't spend more than the amount you set. **Building hire-** To pay to use a particular building such as a factory or a particular building such as a factory or a professional kitchen to use its facilities. **Equipment-** Items and objects which are needed to complete a task. **Evaluation-** when you look at the good and bad points about something, then think about how you could improve it. **Flavour-** How food or drink tastes (for example, sour, sweet, bitter, salty). **Ingredients-** Items that make up a mixture, for example foods that make recipe. **Method-** Following a process or list of instructions. **Net-** A flat 2D shape, that become a 3D shape once assembled. **Packaging-** The packet or container that holds a product safe, ready to be sold and has information on about the product. **Prototype-** A simple model that lets you test out your idea, showing how it will look and work. **Quantity-** An amount of an item. **Recipe-** A set of instructions for making or preparing a food item or dish. **Target audience-** A person or particular group of people at whom a product is aimed.

	Torch- A battery- powered electrical lamp. **Wire-** A thin piece of copper thread which conducts electricity to connect circuit components together.		**Unit of measurement**- The unit which you use to measure a quantity. (for example, grams, centimetres, litres). **Utilities-** Services such as water, electricity gas and internet.
Year 5	Autumn- Food What could be healthier? Knowledge and Skills • 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. • Cutting and preparing recipes 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. • Identifying the nutritional differences between different products and recipes. • Identifying and describing healthy benefits of food groups. • To understand where meat comes from – learning that beef is from cattle and how beef is reared and processed, including key welfare issues. • To know that I can adapt a recipe to make it healthier by substituting ingredients. • To know that I can use a nutritional calculator to see how healthy a food option is. • To understand that 'cross-contamination' means that bacteria and germs have been passed onto ready-to-eat foods and it happens when these foods mix with raw meat or unclean objects. Vocabulary and Definitions **Beef-** meat that comes from a cow**.** **Reared-** bring up or care for a child or animal until they are fully-grown.	Spring- Structure Frame structure- Bridges Knowledge and Skills • Design a stable structure that is able to support weight. • Create a frame structure with focus on triangulation. • Make a range of different shaped beam bridges. • Use triangles to create truss bridges that span a given distance and support a load. • Build a wooden bridge structure. • Independently measure and mark wood accurately. • Select appropriate tools and equipment for particular tasks. • Use the correct techniques to saw safely. • Identify where a structure needs reinforcement and using card corners for support. • Explain why selecting appropriate materials is an important part of the design process. • Understand basic wood functional properties. • Adapt and improve own bridge structure by identifying points of weakness and reinforcing them as necessary. • Suggest points for improvements for own bridges and those designed by others. • 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 their properties. • To understand the material (functional and aesthetic) properties of wood. Vocabulary and Definitions **Accurate**- Neat, correct shape, size and pattern with no mistakes.	Summer- Mechanical systems Levers and sliders Knowledge and Skills • Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book. • 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. • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement. • 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. • To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing. Vocabulary and Definitions **Aesthetic-** How an object or product looks. **CAD-** Computer- Aided-Design. To use the computer to design a product, diagram or drawing.

	Processed-perform a series of mechanical or chemical operations on (something) in order to change or preserve it. **Ethical-** avoiding activities or organizations that do harm to people or the environment. **Diet-** food and drink regularly provided or consumed. **Ingredients-** Items that make up a mixture, for example foods that make recipe. **Supermarket-** a self-service shop offering a wide variety of food, beverages and household products, organized into sections**.** **Farm-** land or water used to produce crops or raise animals for food. **Balanced-** (especially of food) having different elements in the correct proportions **Cross contamination**- cross contamination is how bacteria can spread. It happens when liquid from raw meats or germs from unclean objects touch cooked or ready to eat foods. **Method-** following a process or list of instructions. **Research-**The collecting of information about a subject**.** **Packaging-** The packet which holds a product safe, ready to be sold and has information on about the product. **Welfare-** The health and happiness of a person or animal.	**Arch Bridge**- A bridge that is built with a curved arch. **Beam Bridge**- A bridge, which is built with horizontal beams and vertical pillars. **Bench Hook**- A tool, which hooks onto the edge of a workbench. It is used to hold woodwork still when sawing. **Compressio**n-A squashing force caused when parts of a structure are pushed together. **Coping saw**-A saw with a narrow D-shaped metal blade, used for cutting curves in wood. **File**- A tool used to smooth down rough edges on wood or metal materials. **Mark out**- To measure and mark where a piece of material needs to be cut or shaped. **Reinforce**- To make a structure or material stronger, especially by adding a material or element to it. **Sand paper**- strong paper with sand on one side to smooth or polish woodwork. **Set square or Try square**- A right angle triangular plate, wood or metal tool used for drawing lines. **Shape-** The form of an object **Structure**- something that stands, usually on its own. **Suspension bridge**-A bridge which is supported by vertical cables and suspended by cables which run between pillars that are connected onto either end of the bridge. **Tenon saw**-A saw with a flat blade, used for cutting wood in straight lines or angles. **Tension**- A stretching force caused by two parts of a structure being pulled apart. **Truss Bridge**- A bridge which is built from a series of triangular beams.	**Caption**- A short piece of writing under a picture that describes or explains the picture. **Exploded diagram-** A diagram that shows all the parts of a product, including the internal and external parts. **Function-** How an object or product operates or works. **Linkage**- A set of bars linked together to form a mechanism. **Pivots**- A shaft or pin on which something turns. **Prototype-** A simple model that lets you test out your idea, showing how it will look and work. **Sliders-** A part of a mechanism which allows an object to move from side to side (e.g. left to right.) **Structure**- Something, which stands usually on its own. **Template-** A stencil made of metal, plastic or paper, used for making many copies of a shape or to help cut material accurately (e.g. biscuit cutter.) **Design**- To make, draw or write plans for something. **Design brief**- A description of what you're going to design and make and how it will work. **Input-** input is the motion used to start a mechanism. **Output**- output is the motion that happens as a result of starting the input. **Motion-** The movement an object makes when controlled by an input or output (e.g. left, right, up and down.) **Mechanism-** A system of parts working together. **Design Criteria**- A set of rules to help designers focus their ideas and test the success of them. **Research**- The collecting of information about a subject **Reinforce**- strengthen or support (an object or substance), especially with additional material. **Model-** a usually miniature representation of something a pattern of something to be made.
Year 6	Autumn 1- textiles Combining different fabric shapes- stuffed toys Knowledge and Skills • Designing a stuffed toy considering the main component shapes required and creating an appropriate template. • Considering the proportions of individual components. • 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.	Spring- Electrical Systems Steady hand game. Knowledge and Skills • Design a steady hand game, identifying and naming the components required. • Draw a design from three different perspectives. • Generate ideas through sketching and discussion. • Model ideas through prototypes. • Understand the purpose of products (toys), including what is meant by 'fit for purpose' and 'form over function'. • Construct a stable base for a game. • Accurately cut, fold and assemble a net. • Decorate the base of the game to a high-quality finish. • Make and test a circuit. • Incorporate a circuit into a base. • Test their own and others' finished games, identifying what went well and making suggestions for improvement.	Summer- Food Three course meal- come dine with me. Knowledge and Skills • Writing a recipe, explaining the key steps, method and ingredients. • Including facts and drawings from research undertaken. • 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. • 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 in productions.

	• Testing and evaluating an end product and giving points for further improvements. • 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. Vocabulary and Definitions **Accurate**- neat, correct shape, size and pattern with no mistakes **Annotate**- to add notes to explain your plan or design **Appendage**- something attached to a larger or more important thing. **Blanket-stitch**- A sewing technique that joins two pieces of fabric together. **Design criteria**- to help designers focus their ideas and test the success of them. **Detail-** the small features of an object **Evaluation-** when you look at the good and bad points about something, then think about how you could improve it. **Fabric**- A natural or man- made woven or knitted material, that is made from plant fibres, animal fur or synthetic material. **Sew-** To join or fasten by stitches made using a needle and thread. Shape- The form of an object **stuffed toy**- A shape of outer fabric sewn together and filled with flexible material. They are also known as plush toys or stuffed animals. **Stuffing**- soft material used to fill cushions and soft toys. **Template**- A stencil made of metal, plastic, or paper used for making many copies of a shape or to help cut material accurately.	• Gather images and information about existing children's toys. • Analyse a selection of existing children's toys. • To know that 'form' means the shape and appearance of an object. • To know the difference between 'form' and 'function'. • To understand that 'fit for purpose' means that a product works how it should and is easy to use. • To know that 'form over purpose' means that a product looks good but does not work very well. • To know the importance of 'form follows function' when designing: the product must be designed primarily with the function in mind. • To understand the diagram perspectives 'top view', 'side view' and 'back'. Vocabulary and Definitions **Backboard**- A background designed for the steady hand game. **Battery**- A cell or connected group of cells which store electrical energy. **Bulb**- A component, which gives light when electricity passes through it. **Buzzer**- A component which makes a loud noise as electricity passes through. **Circuit**- A collection of components which make an electrical system. **Conductor**-A material that allows electricity to flow through it. e.g.. metal. **Copper**-A metal material that is one of the best conductors of heat and electricity. It is often used to make wires and pipes. **Function**- How an object or product operates or works. **Insulator**- A material that does not allow electricity to flow through it e.g. plastic. **LED-** A light emitting diode which lights up as electricity passes through. **Magnetic field-** The area around a magnet where there is magnetic force. **Net**- A 2D flat shape that can become a 3D shape when assembled. **Pliers**- A metal tool used for holding, cutting and twisting wire. **Prototype**- A simple model that lets you test out your idea, how it will look and work.	• Evaluating health and safety in production to minimise cross contamination. • 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). Vocabulary and Definitions **Accompaniment**- Something, which goes well together with food and drinks. **Equipment-**items and objects which are needed to complete a task. **Flavours-** How food or drink tastes (e.g. sour, sweet, bitter and salty.) **Ingredients-** Items that make up a mixture, for example foods that make recipe. **Method-** A way of carrying out a certain process, following a list of instructions. **Recipe-** A set of instructions for making or preparing a food item or dish. **Bridge method** **cookbook-** A book which contains recipes to make various dishes or food. **cross-contamination-** how bacteria can spread. It happens when liquids from raw meats or germs from unclean objects touch cooked or ready to eat foods. farm to fork- **preparation-** The process of getting ready to make something.

		Series circuit- A closed circuit where the current only follows one path. **Side view drawing**- An engineering diagram that shows the dimensions (width, depth, length) of the side (left or right) of a product. **Test-** To find out whether something works as it should. **Top view drawing**- An engineering diagram which shows the dimensions (width, length, depth) of the top of a product.	