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Structures

		EYFS (Boats)	Year 1/2 (Constructing a windmill)	Year 1/2 (Constructing a windmill) (Year B)	Y2/3 (Constructing a Castle)	Y3/4 (Pavilions)
Skills	Design	<ul style="list-style-type: none"> • Designing a junk model boat. • Using knowledge from exploration to inform design. 	<ul style="list-style-type: none"> • Learning the importance of a clear design criteria including individual preferences and requirements in a design. 	Generating and communicating ideas using sketching and modelling.	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Designing a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect. • Building frame structures designed to support weight.



		EYFS (Boats)	Year 1/2 (Constructing a windmill)	Year 1/2 (Constructing a windmill) (Year B)	Y2/3 (Constructing a Castle)	Y3/4 (Pavilions)
Make		<ul style="list-style-type: none"> • Making a boat that floats and is waterproof, considering material choices. 	Making stable structures from card, tape and glue. <ul style="list-style-type: none"> • Learning how to turn 2D nets into 3D structures. • 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 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Constructing a range of 3D geometric shapes using nets. • Creating special features for individual designs. • Making facades from a range of recycled materials. 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Making predictions about, and evaluating different materials to see if they are waterproof. • Making predictions about, and evaluating existing boats to see which floats best. • Testing their design and reflecting on what could have been done differently. • Investigating the how the shapes and structure of a boat affect the way it moves. 		<ul style="list-style-type: none"> • Testing the strength of own structure. • Identifying the weakest part of a structure. • Evaluating the strength, stiffness and stability of own structure. 	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.	<ul style="list-style-type: none"> • Evaluating structures made by the class. • Describing what characteristics of a design and construction made it the most effective. • Considering effective and ineffective designs.



		EYFS (Boats)	Year 1/2 (Constructing a windmill)	Year 1/2 (Constructing a windmill) (Year B)	Y2/3 (Constructing a Castle)	Y3/4 (Pavilions)
Knowledge	Technical	<ul style="list-style-type: none"> • To know that 'waterproof' materials are those which do not absorb water. 	<ul style="list-style-type: none"> • To understand that the shape of materials can be changed to improve the strength and stiffness of structures. • 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. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • To understand that wide and flat based objects are more stable. • To understand the importance of strength and stiffness in structures. 	<ul style="list-style-type: none"> • To understand what a frame structure is. • To know that a 'free-standing' structure is one which can stand on its own



		EYFS (Boats)	Year 1/2 (Constructing a windmill)	Year 1/2 (Constructing a windmill) (Year B)	Y2/3 (Constructing a Castle)	Y3/4 (Pavilions)
Additional		<ul style="list-style-type: none"> • To know that some objects float and others sink. • To know the different parts of a boat. 	<ul style="list-style-type: none"> • To know that a client is the person I am designing for. • To know that design criteria is a list of points to ensure the product meets the clients' needs and wants. • To know that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity. • To know that windmill turbines use wind to turn and make the machines inside work. • To know that a windmill is a structure with sails that are moved by the wind. • To know the three main parts of a windmill are the turbine, axle and structure. 		<p>To know the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose.</p> <ul style="list-style-type: none"> • To know that a façade is the front of a structure. • To understand that a castle needed to be strong and stable to withstand enemy attack. • To know that a paper net is a flat 2D shape that can become a 3D shape once assembled. • To know that a design specification is a list of success criteria for a product. 	<ul style="list-style-type: none"> • To know that a pavilion 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.



Textiles

		EYFS Bookmarks	Year 1/2 Puppets	Y2/3 Pouches	Y3/4 Cross-stitch and appliqué Cushions
Skills	Design	<ul style="list-style-type: none"> • Discussing what a good design needs. • Designing a simple pattern with paper. • Designing a bookmark. • Choosing from available materials. 	<ul style="list-style-type: none"> • Using a template to create a design for a puppet. 	<ul style="list-style-type: none"> • Designing a pouch 	<ul style="list-style-type: none"> • Designing and making a template from an existing cushion and applying individual design criteria.
	Make	<ul style="list-style-type: none"> • Developing fine motor/cutting skills with scissors. • Exploring fine motor/threading and weaving (under, over technique) with a variety of materials. • Using a prepared needle and wool to practise threading. 	<ul style="list-style-type: none"> • Cutting fabric neatly with scissors. • Using joining methods to decorate a puppet. • Sequencing the steps taken during construction. 	<ul style="list-style-type: none"> • Selecting and cutting fabrics for sewing. • Decorating a pouch using fabric glue or running stitch. • Threading a needle. • Sewing running stitch, with evenly spaced, neat, even stitches to join fabric. • Neatly pinning and cutting fabric using a template. 	<ul style="list-style-type: none"> • Following design criteria to create a cushion • 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 stuffing and sewing the edges
	Evaluate	<ul style="list-style-type: none"> • Reflecting on a finished product and comparing to their design. 	<ul style="list-style-type: none"> • Reflecting on a finished product, explaining likes and dislikes. 	<ul style="list-style-type: none"> • Troubleshooting scenarios posed by the teacher. • Evaluating the quality of the stitching on others' work. • Discussing as a class the success of their stitching against the success criteria. • Identifying aspects of their peers' work that they particularly like and explaining why. 	<ul style="list-style-type: none"> • Evaluating an end product and thinking of other ways in which to create similar items.



		EYFS Bookmarks	Year 1/2 Puppets	Y2/3 Pouches	Y3/4 Cross-stitch and appliqué Cushions
Knowledge	Technical	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> To know that 'joining technique' means connecting two pieces of material together. To know that there are various temporary methods of joining fabric by using staples, glue or pins. To understand that different techniques for joining materials can be used for different purposes. To understand that a template (or fabric pattern) is used to cut out the same shape multiple times. To know that drawing a design idea is useful to see how an idea will look 	<ul style="list-style-type: none"> To know that sewing is a method of joining fabric. To know that different stitches can be used when sewing. To understand the importance of tying a knot after sewing the final stitch. To know that a thimble can be used to protect my fingers when sewing. 	<p>To know that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces.</p> <ul style="list-style-type: none"> 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.



Mechanisms/ Mechanical systems

		Year 1/2 Moving storybook	Year 1/2 Wheels and axles Year B	Y2/3 Fairground wheel	Y2/3 Moving monsters Year B	Y3/4 Pneumatic toys
Skills	Design	<ul style="list-style-type: none"> Explaining how to adapt mechanisms, using bridges or guides to control the movement. Designing a moving story book for a given audience. 	Designing a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move. <ul style="list-style-type: none"> Creating clearly labelled drawings that illustrate movement 	<ul style="list-style-type: none"> Creating a class design criteria for a moving monster. Designing a moving monster for a specific audience in accordance with a design criteria. 	<ul style="list-style-type: none"> Creating a class design criteria for a moving monster. Designing a moving monster for a specific audience in accordance with a design criteria. 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Following a design to create moving models that use levers and sliders. 	<ul style="list-style-type: none"> Adapting mechanisms, when: <ul style="list-style-type: none"> they do not work as they should. to fit their vehicle design to improve how they work after testing their vehicle. 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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.
	Evaluate	<ul style="list-style-type: none"> Testing a finished product, seeing whether it moves as planned and if not, explaining why and how it can be fixed. Reviewing the success of a product by testing it with its intended audience. 	<ul style="list-style-type: none"> Testing wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move. 	<ul style="list-style-type: none"> Evaluating own designs against design criteria. Using peer feedback to modify a final design. 	<ul style="list-style-type: none"> Evaluating own designs against design criteria. Using peer feedback to modify a final design 	<ul style="list-style-type: none"> 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



		Year 1/2 Moving storybook	Year 1/2 Wheels and axles Year B	Y2/3 Fairground wheel	Y2/3 Moving monsters Year B	Y3/4 Pneumatic toys
Knowledge	Technical	<ul style="list-style-type: none"> • To know that a mechanism is the parts of an object that move together. • To know that a slider mechanism moves an object from side to side. • To know that a slider mechanism has a slider, slots, guides and an object. • To know that bridges and guides are bits of card that purposefully restrict the movement of the slider. 	<ul style="list-style-type: none"> • To know that wheels need to be round to rotate and move. • To understand that for a wheel to 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. 	<ul style="list-style-type: none"> • 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. • 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. 	<ul style="list-style-type: none"> • 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. • 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 	<ul style="list-style-type: none"> • 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.
	Additional	<ul style="list-style-type: none"> • To know that in Design and technology we call a plan a 'design'. 	<ul style="list-style-type: none"> • To know some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles. 	<ul style="list-style-type: none"> • To know some real-life objects that contain mechanisms. 	<ul style="list-style-type: none"> • To know some real-life objects that contain mechanisms. 	<ul style="list-style-type: none"> To understand how sketches, drawings and diagrams can be used to communicate design ideas. • To know that exploded-diagrams are used to show how different parts of a product fit together. • To know that thumbnail sketches are small drawings to get ideas down on paper quickly.



Food

		Y1/2 Fruit and vegetable smoothies Year B	Y2/3 A balanced diet	Y2/3 A balanced diet Year B	Y3/4 Adapting a recipe	Y3/4 Eating seasonally Year B
Skills	Design	<ul style="list-style-type: none"> Designing smoothie carton packaging by-hand or on ICT software. 	Designing a healthy wrap based on a food combination which works well together		Designing a biscuit within a given budget, drawing upon previous taste testing judgements.	<ul style="list-style-type: none"> Creating a healthy and nutritious recipe for a savoury tart using seasonal ingredients, considering the taste, texture, smell and appearance of the dish.
	Make	<ul style="list-style-type: none"> Chopping fruit and vegetables safely to make a smoothie. Identifying if a food is a fruit or a vegetable. Learning where and how fruits and vegetables grow. 	<ul style="list-style-type: none"> Slicing food safely using the bridge or claw grip. Constructing a wrap that meets a design brief. 		<ul style="list-style-type: none"> Following a baking recipe, from start to finish, including the preparation of ingredients. Cooking safely, following basic hygiene rules. Adapting a recipe to improve it or change it to meet new criteria (e.g. from savoury to sweet). 	<ul style="list-style-type: none"> Knowing how to prepare themselves and a work space to cook safely in, learning the basic rules to avoid food contamination Following the instructions within a recipe.
	Evaluate	<ul style="list-style-type: none"> Tasting and evaluating different food combinations. Describing appearance, smell and taste. Suggesting information to be included on packaging. 	<ul style="list-style-type: none"> 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 which grip was most effective. 		<ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> 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.



		Y1/2 Fruit and vegetable smoothies Year B	Y2/3 A balanced diet	Y2/3 A balanced diet Year B	Y3/4 Adapting a recipe	Y3/4 Eating seasonally Year B
Knowledge		<ul style="list-style-type: none"> Understanding the difference between fruits and vegetables. To understand that some foods typically known as vegetables are actually fruits (e.g. cucumber). To know that a blender is a machine which mixes ingredients together into a smooth liquid. To know that a fruit has seeds and a vegetable does not. To know that fruits grow on trees or vines. To know that vegetables can grow either above or below ground. To know that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber). 	<p>To know that 'diet' means the food and drink that a person or animal usually eats.</p> <ul style="list-style-type: none"> To understand what makes a balanced 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 that I should eat 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 that I should only have a maximum of five teaspoons of sugar a day to stay healthy. To know that many food and drinks we do not expect to contain sugar do; we call these 'hidden sugars'. 		<ul style="list-style-type: none"> 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. 	<p>To know that not all fruits and vegetables can be grown in the UK.</p> <ul style="list-style-type: none"> 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 has been sent to another country. To understand that imported foods travel from far away and this can negatively impact the environment. 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.



Electrical Systems

		Y3/4 Torches Year B
Skills	Design	<ul style="list-style-type: none">• Designing a torch, giving consideration to the target audience and creating both design and success criteria focusing on features of individual design ideas
	Make	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Evaluating electrical products.• Testing and evaluating the success of a final product.
Knowledge	Technical	<ul style="list-style-type: none">• 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.
	Additional	<ul style="list-style-type: none">• 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