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| F2 | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| Structures | | | | | | |
| Can I make verbal plans and material choices?  Can I develop a junk model?  Can I improve fine motor/scissor skills with a variety of materials?  Can I join materials in a variety of ways (temporary and permanent)?  Can I join different materials together?  Can I describe a junk model, and how I intend to put it together?  Can I give a verbal evaluation of my own and others’ junk models with adult support?  Can I check to see if my model matches my plan?  Can I consider what I would do differently if I were to do it again?  Can I describe my favourite and least favourite part of my model?  Can I understand that there are a range to different materials that can be used to make a model and that they are all slightly different?  Can I make simple suggestions to fix my junk model?  Can I design a junk model boat?  Can I use knowledge from exploration to inform design?  Can I make a boat that floats and is waterproof, considering material choices?  Can I make predictions about and evaluate different materials to see if they are waterproof?  Can I make predictions about and evaluate existing boats to see which floats best?  Can I test my design and reflect on what could have been done differently?  Can I investigate how the shapes and structure of a boat affect the way it moves?  Can I understand that ‘waterproof’ materials are those which do not absorb water?  Can I understand that some objects float and others sink?  Can I understand the different parts of a boat? | Can I learn the importance of a clear design criteria?  Can I include individual preferences and requirements in a design?  Can I make stable structures from card, tape and glue?  Can I learn how to turn 2D nets into 3D structures?  Can I follow instructions to cut and assemble the supporting structure of a windmill?  Can I make functioning turbines and axles which are assembled into a main supporting structure?  Can I understand that the shape of materials can be changed to improve the strength and stiffness of structures?  Can I understand that cylinders are a strong type of structure (e.g. the main shape used for windmills and lighthouses)?  Can I understand that axles are used in structures and mechanisms to make parts turn in a circle?  Can I begin to understand that different structures are used for different purposes?  Can I understand that a structure is something that has been made and put together?  Can I understand that a client is the person I am designing for?  Can I understand that design criteria is a list of points to ensure the product meets the clients’ needs and wants?  Can I understand that a windmill harnesses the power of wind for a purpose like grinding grain, pumping water or generating electricity?  Can I understand that windmill turbines use wind to turn and make the machines inside work?  Can I understand that a windmill is a structure with sails that are moved by the wind?  Can I understand that the three main parts of a windmill are the turbine, axle and structure? | Can I generate and communicate ideas using sketching and modelling?  Can I make a structure according to design criteria?  Can I create joints and structures from paper/card and tape?  Can I build a strong and stiff structure by folding paper?  Can I test the strength of my structure?  Can I identify the weakest part of a structure?  Can I evaluate the strength, stiffness and stability of my structure?  Can I understand that materials can be manipulated to improve strength and stiffness?  Can I understand that a structure is something which has been formed or made from parts?  Can I understand that a ‘stable’ structure is one which is firmly fixed and unlikely to change or move?  Can I understand that a ‘strong’ structure is one which does not break easily?  Can I understand that a ‘stiff’ structure or material is one which does not bend easily? | Can I design a castle with key features to appeal to a specific person/purpose?  Can I draw and label a castle design using 2D shapes, labelling-the 3D shapes that will create the features - materials needed and colours?  Can I construct a range of 3D geometric shapes using nets?  Can I create special features for individual designs?  Can I make facades from a range of recycled materials?  Can I evaluating my own work and the work of others based on the aesthetic of the finished product and in comparison to the original design?  Can I suggest points for modification of the individual designs?  Can I understand that wide and flat based objects are more stable?  Can I understand the importance of strength and stiffness in structures?  Can I understand the following features of a castle: flags, towers, battlements, turrets, curtain walls, moat, drawbridge and gatehouse - and their purpose?  Can I understand that a façade is the front of a structure?  Can I understand that a castle needed to be strong and stable to withstand enemy attack?  Can I understand that a paper net is a flat 2D shape that can become a 3D shape once assembled?  Can I understand that a design specification is a list of success criteria for a product? | Can I design a stable pavilion structure that is aesthetically pleasing and selecting materials to create a desired effect?  Can I build frame structures designed to support weight?  Can I create a range of different shaped frame structures?  Can I make a variety of free standing frame structures of different shapes and sizes?  Can I select appropriate materials to build a strong structure and cladding?  Can I reinforce corners to strengthen a structure?  Can I create a design in accordance with a plan?  Can I learn to create different textural effects with materials?  Can I evaluate structures made by the class?  Can I describe what characteristics of a design and construction made it the most effective?  Can I consider effective and ineffective designs?  Can I understand what a frame structure is?  Can I understand that a ‘free-standing’ structure is one which can stand on its own?  Can I understand that a pavilion is a decorative building or structure for leisure activities?  Can I understand that cladding can be applied to structures for different effects?  Can I understand that aesthetics are how a product looks?  Can I understand that a product’s function means its purpose?  Can I understand that the target audience means the person or group of people a product is designed for?  Can I understand that architects consider light, shadow and patterns when designing? | Can I design a stable structure that is able to support weight?  Can I create a frame structure with a focus on triangulation?  Can I make a range of different shaped beam bridges?  Can I use triangles to create truss bridges that span a given distance and support a load?  Can I build a wooden bridge structure?  Can I independently measuring and marking wood accurately?  Can I select appropriate tools and equipment for particular tasks?  Can I use the correct techniques to saws safely?  Can I identify where a structure needs reinforcement and using card corners for support?  Can I explain why selecting appropriating materials is an important part of the design process?  Can I understand basic wood functional properties?  Can I adapt and improve my own bridge structure by identifying points of weakness and reinforcing them as necessary?  Can I suggest points for improvements for my own bridges and those designed by others?  Can I understand some different ways to reinforce structures?  Can I understand how triangles can be used to reinforce bridges?  Can I understand that properties are words that describe the form and function of materials?  Can I understand why material selection is important based on properties?  Can I understand the material (functional and aesthetic) properties of wood?  Can I understand the difference between arch, beam, truss and suspension bridges?  Can I understand how to carry and use a saw safely? | Can I design a playground featuring a variety of different structures, giving careful consideration to how the structures will be used, considering effective and ineffective designs?  Can I build a range of play apparatus structures drawing upon new and prior knowledge of structures?  Can I measure, mark and cut wood to create a range of structures?  Can I use a range of materials to reinforce and add decoration to structures?  Can I improve a design plan based on peer evaluation?  Can I test and adapt a design to improve it as it is developed?  Can I identify what makes a successful structure?  Can I understand that structures can be strengthened by manipulating materials and shapes?  Can I understand what a 'footprint plan' is?  Can I understand that in the real world, design, can impact users in positive and negative ways?  Can I understand that a prototype is a cheap model to test a design idea? |
| Mechanisms | | | | | | |
|  | Can I design a vehicle that includes wheels, axles and axle holders, that when combined, will allow the wheels to move?  Can I create clearly labelled drawings that illustrate movement?  Can I adapt mechanisms, when they do not work as they should, to fit their vehicle design?  Can I improve how they work after testing my vehicle?  Can I test wheel and axle mechanisms, identifying what stops the wheels from turning, and recognising that a wheel needs an axle in order to move?  Can I understand that wheels need to be round to rotate and move?  Can I understand that for a wheel to move it must be attached to a rotating axle?  Can I understand that an axle moves within an axle holder which is fixed to the vehicle or toy?  Can I understand that the frame of a vehicle (chassis) needs to be balanced?  Can I recall some real-life items that use wheels such as wheelbarrows, hamster wheels and vehicles? | Can I create a class design criteria for a moving monster?  Can I design a moving monster for a specific audience in accordance with a design criteria?  Can I make linkages using card for levers and split pins for pivots?  Can I experiment with linkages adjusting the widths, lengths and thicknesses of card used?  Can I cut and assembling components neatly?  Can I evaluate my own designs against design criteria?  Can I use peer feedback to modify a final design?  Can I understand that mechanisms are a collection of moving parts that work together as a machine to produce movement?  Can I understand that there is always an input and output in a mechanism?  Can I understand that an input is the energy that is used to start something working?  Can I understand that an output is the movement that happens as a result of the input?  Can I understand that a lever is something that turns on a pivot?  Can I understand that a linkage mechanism is made up of a series of levers?  Can I recall some real-life objects that contain mechanisms? | Can I design a toy which uses a pneumatic system?  Can I develop design criteria from a design brief?  Can I generate ideas using thumbnail sketches and exploded diagrams?  Can I learn that different types of drawings are used in design to explain ideas clearly?  Can I create a pneumatic system to create a desired motion?  Can I build secure housing for a pneumatic system?  Can I use syringes and balloons to create different types of pneumatic systems to make a functional and appealing pneumatic toy?  Can I select materials due to their functional and aesthetic characteristics?  Can I manipulate materials to create different effects by cutting, creasing, folding and weaving?  Can I use the views of others to improve designs?  Can I test and modify the outcome, suggesting improvements?  Can I understand how pneumatic systems work?  Can I understand that pneumatic systems can be used as part of a mechanism?  Can I understand that pneumatic systems operate by drawing in, releasing and compressing air?  Can I understand how sketches, drawings and diagrams can be used to communicate design ideas?  Can I understand that exploded-diagrams are used to show how different parts of a product fit together?  Can I understand that thumbnail sketches are small drawings to get ideas down on paper quickly? | Can I design a shape that reduces air resistance?  Can I draw a net to create a structure from?  Can I choose shapes that increase or decrease speed as a result of air resistance?  Can I personalise a design?  Can I measure, mark and cut assembling with increasing accuracy?  Can I make a model based on a chosen design?  Can I evaluate the speed of a final product based on the effect of shape on speed and the accuracy of workmanship on performance?  Can I understand that resistance is the level of drag on an object as it is forced through the air?  Can I understand that the shape of a moving object will affect how it moves due to air resistance?  Can I understand that aesthetics means how an object or product looks in design and technology?  Can I understand that a template is a stencil you can use to help you draw the same shape accurately?  Can I understand that a birds-eye view means a view from a high angle (as if a bird in flight)?  Can I understand that graphics are images which are designed to explain or advertise something?  Can I understand that it is important to assess and evaluate design ideas and models against a list of design criteria? | Can I design a pop-up book which uses a mixture of structures and mechanisms?  Can I name each mechanism, input and output accurately?  Can I storyboard ideas for a book?  Can I follow a design brief to make a pop- up book, neatly and with focus on accuracy?  Can I make mechanisms and/or structures using sliders, pivots and folds to produce movement?  Can I use layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result?  Can I understand that mechanisms control movement?  Can I understand that mechanisms can be used to change one kind of motion into another?  Can I understand how to use sliders, pivots and folds to create paper-based mechanisms?  Can I understand that a design brief is a description of what I am going to design and make?  Can I understand that designers often want to hide mechanisms to make a product more aesthetically pleasing? | Can I experiment with a range of cams, creating a design for an automata toy based on a choice of cam to create a desired movement?  Can I understand how linkages change the direction of a force?  Can I make things move at the same time?  Can I understand and drawing cross-sectional diagrams to show the inner-workings of my design?  Can I measure, mark and check the accuracy of the jelutong and dowel pieces required?  Can I measure mark and cut components accurately using a ruler and scissors.?  Can I assemble components accurately to make a stable frame?  Can I understand that for the frame to function effectively the components must be cut accurately and the joints of the frame secured at right angles?  Can I select appropriate materials based on the materials being joined and the speed at which the glue needs to dry/set?  Can I evaluate the work of others and receive feedback on my own work?  Can I apply points of improvement to my toys?  Can I describe changes they would make/do if they were to do the project again?  Can I understand that the mechanism in an automata uses a system of cams, axles and followers?  Can I understand that different shaped cams produce different outputs?  Can I understand that an automata is a hand powered mechanical toy?  Can I understand that a cross-sectional diagram shows the inner workings of a product?  Can I understand how to use a bench hook and saw safely? |
| Textiles | | | | | | |
| Can I discuss what a good design needs?  Can I design a simple pattern with paper?  Can I design a bookmark?  Can I choose from available materials?  Can I develop fine motor/cutting skills with scissors?  Can I explore fine motor/threading and weaving (under, over technique) with a variety of material?  Can I use a prepared needle and wool to practise threading?  Can I reflect on a finished product and compare it to my design?  Can I understand that a design is a way of planning our idea before we start?  Can I understand that threading is putting one material through an object? | Can I use a template to create a design for a puppet?  Can I cut fabric neatly with scissors?  Can I use joining methods to decorate a puppet?  Can I sequence steps for construction?  Can I reflect on a finished product, explaining likes and dislikes?  Can I understand that ‘joining technique’ means connecting two pieces of material together?  Can I understand that there are various temporary methods of joining fabric by using staples, glue or pins?  Can I understand that different techniques for joining materials can be used for different purposes?  Can I understand that a template (or fabric pattern) is used to cut out the same shape multiple times?  Can I understand that drawing a design idea is useful to see how an idea will look? | Can I design a pouch?  Can I select and cut fabrics for sewing?  Can I decorate a pouch using fabric, glue or running stitch?  Can I thread a needle?  Can I sew running stitch, with evenly spaced, neat, even stitches to join fabric?  Can I neatly pin and cut fabric using a template?  Can I evaluate the quality of the stitching on others’ work?  Can I discuss the success of my stitching against the success criteria, with the class?  Can I identify aspects of my peers’ work that I particularly like and why?  Can I understand that sewing is a method of joining fabric?  Can I understand that different stitches can be used when sewing?  Can I understand the importance of tying a knot after sewing the final stitch? | Can I design and make a template from an existing cushion and applying individual design criteria?  Can I follow a design criteria to create a cushion?  Can I select and cut fabrics with ease using fabric scissors?  Can I thread needles with greater independence?  Can I try to tie knots with greater independence?  Can I sew cross stitch to join fabric?  Can I decorate fabric using appliqué?  Can I complete design ideas with stuffing and sewing the edges?  Can I evaluate my end product and think of other ways in which to create similar items?  Can I understand that applique is a way of mending or decorating a textile by applying smaller pieces of fabric to larger pieces?  Can I understand that when two edges of fabric have been joined together it is called a seam?  Can I understand that it is important to leave space on the fabric for the seam?  Can I understand that some products are turned inside out after sewing so the stitching is hidden? | Can I write a design criteria for a product, articulating decisions made?  Can I design a personalised book sleeve?  Can I make and test a paper template with accuracy and in keeping with the design criteria?  Can I measure, mark and cut fabric using a paper template?  Can I select a stitch style to join fabric, working neatly by sewing small, straight stitches?  Can I incorporate fastening to a design?  Can I test and evaluate an end product against the original design criteria?  Can I decide how many of the criteria should be met for the product to be considered successful?  Can I suggest modifications for improvement?  Can I articulate the advantages and disadvantages of different fastening types?  Can I understand that a fastening is something which holds two pieces of material together for example a zipper, toggle, button, press stud and Velcro?  Can I understand that different fastening types are useful for different purposes?  Can I understand that creating a mock up (prototype) of my design is useful for checking ideas and proportions? | Can I design a stuffed toy, considering the main component shapes required and creating an appropriate template?  Can I consider the proportions of individual components?  Can I create a 3D stuffed toy from a 2D design?  Can I measure, mark and cut fabric accurately and independently?  Can I create strong and secure blanket stitches when joining fabric?  Can I thread needles independently?  Can I use appliqué to attach pieces of fabric decoration?  Can I sew using blanket stitch to join fabric?  Can I apply blanket stitch so the spaces between the stitches are even and regular?  Can I test and evaluate an end product and give point for further improvements?  Can I understand that blanket stitch is useful to reinforce the edges of a fabric material or join two pieces of fabric?  Can I understand that it is easier to finish simpler designs to a high standard?  Can I understand that soft toys are often made by creating appendages separately and then attaching them to the main body?  Can I understand that small, neat stitches which are pulled taut, are important to ensure that the soft toy is strong and holds the stuffing securely? | Can I design a waistcoat in accordance to a specification linked to set of design criteria?  Can I annotate designs to explain my decisions?  Can I use a template when cutting fabric to ensure I achieve the correct shape?  Can I use pins effectively to secure a template to fabric without creases or bulges?  Can I make and cut fabric accurately, in accordance with my design?  Can I sew a strong running stitch, making small, neat stitches and following the edge?  Can I tie strong knots?  Can I decorate waistcoat, attaching features (such as appliqué) using thread?  Can I finish the waistcoat with a secure fastening (such as buttons)?  Can I learn different decorative stitches?  Can I sew accurately with evenly spaced, neat stitches?  Can I reflect on my work continually throughout the design, make and evaluate process?  Can I understand that it is important to design clothing with the client/ target customer in mind?  Can I understand that using a template (or clothing pattern) helps to accurately mark out a design on fabric?  Can I understand the importance of consistently sized stitches? |
| Food and Nutrition | | | | | | |
| Can I chop plasticine safely?  Can I chop some vegetables with support?  Can I describe some of the following when tasting food: look, feel, smell and taste?  Can I understand that vegetables are grown?  Can I recognise and name some common vegetables?  Can I understand that different vegetables taste different?  Can I understand that eating vegetables is good for us? | Can I chop fruit and vegetables safely?  Can I taste and evaluate different food combinations?  Can I describe appearance, smell and taste?  Can I understand the difference between fruits and vegetables?  Can I understand that some foods typically known as vegetables are actually fruits (e.g. cucumber)?  Can I understand that a blender is a machine which mixes ingredients together into a smooth liquid?  Can I understand that a fruit has seeds and a vegetable does not?  Can I understand that fruits grow on trees or vines?  Can I understand that vegetables can grow either above or below ground?  Can I understand that vegetables can come from different parts of the plant (e.g. roots: potatoes, leaves: lettuce, fruit: cucumber)? | Can I slice food safely?  Can I describe the taste, texture and smell of fruit and vegetables?  Can I taste test food combinations and final products?  Can I understand that ‘diet’ means the food and drink that a person or animal usually eats?  Can I understand what makes a balanced diet?  Can I understand where to find the nutritional information on packaging?  Can I understand that the five main food groups are carbohydrates, fruits and vegetables, protein, dairy and foods high in fat and sugar?  Can I understand that I should eat a range of different foods from each food group, and roughly how much of each food group?  Can I understand that nutrients are substances in food that all living things need to make energy, grow and develop?  Can I understand that ‘ingredients’ means the items in a mixture or recipe?  Can I understand that I should only have a maximum of five teaspoons of sugar a day to stay healthy? | Can I recall how to prepare myself and a work space to cook safely in, learning the basic rules to avoid food contamination?  Can I follow the instructions within a recipe?  Can I understand that not all fruits and vegetables can be grown in the UK?  Can I understand that climate affects food growth?  Can I understand that vegetables and fruit grow in certain seasons?  Can I understand that cooking instructions are known as a ‘recipe’?  Can I understand that imported food is food which has been brought into the country?  Can I understand that exported food is food which has been sent to another country?  Can I understand that imported foods travel from far away and this can negatively impact the environment?  Can I understand that each fruit and vegetable gives us nutritional benefits because they contain vitamins, minerals and fibre?  Can I understand that vitamins, minerals and fibre are important for energy, growth and maintaining health? | Can I follow a baking recipe, from start to finish, including the preparation of ingredients?  Can I cook safely, following basic hygiene rules?  Can I evaluate a recipe, considering: taste, smell, texture and appearance?  Can I understand that the amount of an ingredient in a recipe is known as the ‘quantity’?  Can I understand that it is important to use oven gloves when removing hot food from an oven?  Can I understand the following cooking techniques: sieving, creaming, rubbing method and cooling? | Can I cut and prepare vegetables safely?  Can I use equipment safely, including knives, hot pans and hobs?  Can I understand that I need to avoid cross-contamination?  Can I follow a step by step method carefully to make a recipe?  Can I identify the nutritional differences between different products and recipes?  Can I identify and describe healthy benefits of food groups?  Can I understand where meat comes from - learning that beef is from cattle and how beef is reared and processed, including key welfare issues?  Can I understand that I can adapt a recipe to make it healthier by substituting ingredients?  Can I 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? | Can I work to a given timescale?  Can I evaluate health and safety in production to minimise cross contamination?  Can I work safely and hygienically with independence?  Can I evaluate a recipe, considering taste, smell, texture and origin of the food group?  Can I understand that ‘flavour’ is how a food or drink tastes?  Can I understand that many countries have ‘national dishes’ which are recipes associated with that country?  Can I understand that ‘processed food’ means food that has been put through multiple changes in a factory?  Can I understand that it is important to wash fruit and vegetables before eating to remove any dirt and insecticides? |