Being a Designer

Year Group	National Curriculum	Sticky Knowledge	Vocabulary	Skills
EYFS	**Expressive arts and design:** The development of children's artistic and cultural awareness supports their imagination and creativity. It is important that children have regular opportunities to engage with the arts, enabling them to explore and play with a wide range of media and materials. The quality and variety of what children see, hear and participate in is crucial for developing their understanding, self-expression, vocabulary and ability to communicate through the arts. The frequency, repetition and depth of their experiences are fundamental to their progress in interpreting and appreciating what they hear, respond to and observe. **Early Learning Goal:** *Creating with Materials* Children at the expected level of development will: - Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function; - Share their creations, explaining the process they have used; - Make use of props and materials when role playing characters in narratives and stories.			
Developing, Planning and Communicating Ideas	Follow verbal instructions Explain what they are making and which materials they are using Name the tools they are using Describe what they need to do next Select materials from a limited range Select and name the tools Select appropriate technique explaining First, Next, Last Model ideas with kits Use pictures to convey what they want to design and make Describe their models and drawings	Use pictures to convey what they want to design and make	Material names Model Build Design Plan First Next Last	Follow verbal instructions Explain what they are making and which materials they are using Name the tools they are using Describe what they need to do next Select materials from a limited range Select and name the tools

	Talk about their work as it progresses			Select appropriate technique explaining First, Next, Last Model ideas with kits, reclaimed materials Describe their models and drawings Talk about their work as it progresses
Food	Develop a food vocabulary using taste ,smell, texture and feel Group familiar food products e.g. fruit and vegetables Manipulate and mix a range of ingredients Work safely and hygienically Measure food items, using spoons, cups	Group familiar food products e.g. fruit and vegetables	Measure Pour Mix Press Roll hygiene	Develop a food vocabulary using taste ,smell, texture and feel Manipulate and mix a range of ingredients Work safely and hygienically Measure food items, using spoons, cups
Textiles	Uses various construction materials Uses simple tools and techniques competently and appropriately. Selects appropriate resources and adapts work where necessary. Selects tools and techniques needed to shape, assemble and join materials they are using.	Join various materials to fabric using glue and tape.	Join Cut Stick Print Thread Tie	Colour fabrics using a range of techniques e.g. fabric paints, printing, painting Cut out shapes which have been created by drawing round a template onto the fabric Join fabrics by using glue, staples, tape Decorate fabrics with buttons, beads, sequins
Construction	Make vehicles with construction kits which contain free running wheels Join appropriately for different materials and situations e.g. glue, tape.	Join appropriately for different materials and situations e.g. glue, tape.	Stick Fix Strong Tape Join	Make vehicles with construction kits which contain free running wheels Join appropriately for different materials and situations e.g. glue, tape.

Sheet materials	Fold, tear and cut paper and card Roll paper to create tubes Cut along lines, straight and curved Use hole punch	Fold, tear and cut paper and card for purpose	Cut Roll Fold move	Roll paper to create tubes Cut along lines, straight and curved Use hole punch
Evaluation	Say what they like and do not like about items they have made. Talk about their designs as they develop Discuss how their design may change	Say what they like and do not like about items they have made.	Design Good Bad change	Talk about their designs as they develop Discuss how their design may change
YR1 **Developing, Planning and Communicating Ideas**	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	Communicate ideas and talk about it.	Material names Model Build Design Plan First Next Last Develop Tool names: scissors etc	Follow verbal instructions Explain what they are making and which materials they are using Name the tools they are using Describe what they need to do next Select materials from a limited range Select and name the tools Select appropriate technique explaining First, Next, Last Model ideas with kits, reclaimed materials Use pictures and words to convey what they want to design and make Describe their models and drawings Use kits/reclaimed materials to develop an idea Discuss their work as it progresses

Food	Use the basic principles of a healthy and varied diet to prepare dishes Understand where food comes from.	Cut food safely	Food group names Measure Pour Mix Press Roll Hygiene Cut Chop safe	Develop a food vocabulary using taste ,smell, texture and feel Group familiar food products e.g. fruit and vegetables Cut and chop a range of ingredients Work safely and hygienically Understand the need for a variety of foods in a diet Measure and weigh food items, using spoons, cup
Textiles	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	Join various materials to fabric using glue, tape and movable pins.	Join Cut Stick Print Thread Tie Safe Assemble measure	Join fabrics with glue. Colour fabrics using a range of techniques e.g. fabric paints, printing and painting. Decorate fabrics with buttons, beads, sequins, braids and ribbons. Make their design using appropriate techniques, With help measure, mark out, cut and shape a range of materials Use tools eg scissors and a hole punch safely Assemble, join and combine materials and components together using a variety of temporary methods e.g. glues or masking tape Thread objects (beads on string/begin to weave in fabric)
Construction	**Build structures, exploring how they can be made stronger, stiffer and more stable**	Construct a product that moves. (Kit)	Stick Fix Strong	Make vehicles with construction kits which contain free running wheels

	Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.		Tape Join Wheel Axel Reel move	Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels Join appropriately for different materials and situations e.g. glue, tape. Mark out materials to be cut using a template See glue gun used by an adult
Sheet Materials	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	Model paper into different shaped to create an effect: Card folding	Cut Roll Fold Move Tear Curl Link fasten	Fold, tear and cut paper and card Roll paper to create tubes Cut along lines, straight and curved Curl paper Use hole punch Insert paper fasteners for card linkages
Evaluation	Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria	Say what they like and do not like about items they have made. Talk about their designs as they develop Discuss how their design may change	Design Good Bad Change Develop product	Say what they like and do not like about items they have made and attempt to say why Talk about their designs as they develop and identify good and bad points Discuss how closely their finished products meet their design criteria
YR2	Design purposeful, functional, appealing products for	Think of an idea and plan what to do next	Material names Model Build	Follow verbal instructions

Developing, Planning and Communicating Ideas	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		Design Plan First Next Last Develop Tool names: scissors etc Intention idea	Explain what they are making and which materials they are using Name the tools they are using Describe what they need to do next Select materials from a limited range that will meet the design criteria Select and name the tools needed to work the materials Select appropriate technique explaining First, Next, Last Explore ideas by rearranging materials Model ideas with kits, reclaimed materials Select pictures to help develop ideas Use pictures and words to convey what they want to design and make Describe their models and drawings of ideas and intentions Use kits/reclaimed materials to develop an idea Use drawings to record ideas as they are developed Discuss their work as it progresses Add notes to drawings to help explanations

Food	Use the basic principles of a healthy and varied diet to prepare dishes Understand where food comes from.	Weigh ingredients (non standard)	Food group names Measure Pour Mix Press Roll Hygiene Cut Chop grate safe	Develop a food vocabulary using taste ,smell, texture and feel Group familiar food products e.g. fruit and vegetables Cut, peel, grate, chop a range of ingredients Work safely and hygienically Understand the need for a variety of foods in a diet Measure and weigh food items, non-statutory measures e.g. spoons, cups
Textiles	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	Join fabrics with a running stitch.	Join Cut Stick Print Thread Sew stitch Tie Safe Assemble Measure combine	Create a simple pattern. Cut out shapes which have been created by drawing around a template onto the fabric. Join fabrics by using a running stitch, staples, over sewing and tape. Measure, cut and score with some accuracy Use hand tools safely and appropriately Assemble, join and combine materials in order to make a product Cut, shape and join fabric to make a simple garment. + Year 1 skills
Construction	**Build structures, exploring how they can be made stronger, stiffer and more stable**	Use components to construct a moving part (axel)	Stick Fix Strong Tape	Make vehicles with construction kits which contain free running wheels

	Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.		Join Wheel Axel Reel Move Chassis Template Material names	Use a range of materials to create models with wheels and axles e.g. tubes, dowel, cotton reels Attach wheels to a chassis using an axle Join appropriately for different materials and situations e.g. glue, tape. Mark out materials to be cut using a template Cut strip wood/dowel using hacksaw and bench hook See glue gun used by an adult
Sheet materials	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	Model paper into different shaped to create an effect with more than one component: Card folding/pop up Strengthen design	Cut Roll Fold Move Tear Curl Link Fasten Strengthen Fixed Moveable	Fold, tear and cut paper and card Roll paper to create tubes Cut along lines, straight and curved Curl paper Use hole punch Insert paper fasteners for card linkages Create hinges Use simple pop ups Investigate strengthening sheet materials Investigate joinings temporary, fixed and moving

Evaluation	Explore and evaluate a range of existing products. Evaluate their ideas and products against design criteria	Talk about their designs as they develop Discuss how their design may change explaining why.	Design Good Bad Change Develop Product criteria	Say what they like and do not like about items they have made and attempt to say why Talk about their designs as they develop and identify good and bad points Talk about changes made during the making process Discuss how closely their finished products meet their design criteria

YR3 **Developing, Planning and Communicating Ideas**	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	Design an idea that has suitability	Material names Model Build Design Plan First Next Last Develop Tool names: scissors etc Intention Idea Sketch Sequence	Investigate similar products to the one to be made to give starting points for a design Draw/sketch products to help analyse and understand how products are made Think ahead about the order of their work and decide upon tools and materials Plan a sequence of actions to make a product.

Food	Understand and apply the principles of a healthy and varied diet Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.	Weigh ingredients (standard)	Food group names Measure Pour Mix Press Roll Hygiene Cut Chop Grate Tear Shred safe	Press Garlic press Peel Swivel peeler (with supervision) Spread Evenly over another food Shape and Mould Create pleasing to the eye: plait Mix/ Stir Any ingredients, use of hand whisk Spoon Ingredients between containers, increasing accuracy minimal spillage Measure Increasing accuracy and use of measuring jug and digital scales Cut out Accurate with minimal waste Tear Shred lettuce/cabbage for salad Grate Hard foods, carrot and apple Cut Medium resistance foods with vegetable knife secure using fork or claw grip

				Use bridge hold: half a tomato into quarter Snip lettuce/cabbage for salad Thread Medium resistance foods, mushrooms, courgettes
Textiles	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	Join fabrics with a back stitch.	Join Cut Stick Print Thread Sew stitch Tie Safe Assemble Measure Combine Pattern Fabric pin	Join fabrics using running stitch, over sewing and back stitch. Use appropriate decoration techniques Understand the need for patterns. Select tools and techniques for making their product Measure, mark out, cut, score and assemble components with more accuracy Work safely and accurately with a range of simple tools Measure, tape or pin, cut and join fabric with some accuracy Use finishing techniques strengthen and improve the appearance of their product using a range of equipment including ICT

Construction	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	Make a model with mechanical components	Stick Fix Strong Tape Join Wheel Axel Reel Move Chasiss Template Material names Protype	Create shell or frame structures, strengthen frames with diagonal struts Make structures more stable by giving them a wide base Prototype frame and shell structures Use glue gun with close supervision (one to one)
Sheet materials	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	Create a net for a product, identify specific nets	Cut Roll Fold Move Tear Curl Link Fasten Strengthen Fixed Moveable Net	Cut slots Cut internal shapes Use and explore complex pop ups Create nets

Evaluation	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	Discuss how well the finished product meets the design criteria and how well it meets the needs the needs of the user	Design Good Bad Change Develop Product criteria	Identify the strengths and weaknesses of their design ideas Decide which design idea to develop Consider and explain how the finished product could be improved Discuss how well the finished product meets the design criteria and how well it meets the needs the needs of the user. Understand how key events and individuals in design and technology have helped shape the world

Y4 **Developing, Planning and Communicating Ideas**	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	Annotate a design appropriately	Material names Model Build Design Plan First Next Last Develop Tool names: scissors etc Intention Idea Sketch Sequence Adapt explain	Investigate similar products to the one to be made to give starting points for a design Draw/sketch products to help analyse and understand how products are made Think ahead about the order of their work and decide upon tools and materials Plan a sequence of actions to make a product Record the plan by drawing (labelled sketches) or writing Develop more than one prototype or adaptation of an initial design Propose realistic suggestions as to how they can achieve their design ideas Add notes to drawings to help explanations

Food	. Understand and apply the principles of a healthy and varied diet Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed	Increasing accuracy and use of measuring jug and digital scales	Food group names Measure Pour Mix Press Roll Hygiene Cut Chop Grate Tear Shred Safe Resistance zest	Peel Swivel peeler, adult support, create ribbons to be used in a dish Mix/ Stir Fold ingredients together Spoon Be able to gauge quantities to ensure equal amount in each container Measure Measure using jug, digital and analogue scales independently and accurately Grate Zesting and use a nutmeg grater Thread Higher resistance foods, peppers, onions Cut higher resistance foods with vegetable knife use claw grip or use bridge hold

Textiles	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	Join a decoration using a stitch add a fastener (bead/sequin)	Join Cut Stick Print Thread Sew stitch Tie Safe Assemble Measure Combine Pattern Fabric Pin Weave Accurate Technique	Understand seam allowance. Explore fastenings and recreate some e.g. sew on buttons and make loops. Prototype a product using j cloths. Use appropriate decoration techniques (appliqué or simple stitches). Select appropriate tools and techniques for making their product Measure, mark out, cut and shape a range of materials, using appropriate tools, equipment and techniques Join and combine materials and components accurately in temporary and permanent ways Sew using a range of different stitches, weave and knit Measure, tape or pin, cut and join fabric with some accuracy Use simple graphical communication techniques + Year 3 skills.

Construction	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		Stick Fix Strong Tape Join Wheel Axel Reel Move Chassis Template Material names Protype Structure Strut Frame4	Incorporate a circuit with a bulb or buzzer into a model Create shell or frame structures, strengthen frames with diagonal struts Make structures more stable by giving them a wide base Prototype frame and shell structures Measure and mark square selection, strip and dowel accordingly to 1cm Use glue gun with close supervision (one to one)

Sheet Materials	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		Cut Roll Fold Move Tear Curl Link Fasten Strengthen Fixed Moveable Net	Cut slots Cut internal shapes Use lolly sticks/card to make levers and linkages Use linkages to make movement larger or more varied. Use and explore complex pop ups Create nets

Evaluation	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		Design Strength Weakness Change Develop Product criteria	Identify the strengths and weaknesses of their design ideas Decide which design idea to develop Consider and explain how the finished product could be improved Discuss how well the finished product meets the design criteria and how well it meets the needs of the user.

YR5 **Developing, Planning and Communicating Ideas**	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	Explain how a product would appeal to specific audience	Material names Model Build Design Plan First Next Last Develop Tool names: scissors etc Intention Idea Sketch Sequence Adapt Explain pattern	Investigate products/images to collect ideas Sketch and model alternative ideas Develop one idea in depth Plan the sequence of work using a storyboard Record ideas using annotated cross-sectional diagrams Use models, kits and drawings to help formulate prototypes & pattern pieces
Food	Understand and apply the principles of a healthy and varied diet Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed	Begin to measure using jug, digital and analogue scales independently and accurately	Food group names Measure Pour Mix fold Press Roll Hygiene Cut Chop Grate Tear Shred Safe Resistance zest	Peel Swivel peeler, adult support, create ribbons to be used in a dish Mix/ Stir Fold ingredients together Spoon Be able to gauge quantities to ensure equal amount in each container Measure Measure using jug, digital and analogue scales independently and accurately Grate Zesting and use a nutmeg grater Thread

				Higher resistance foods, peppers, onions Cut higher resistance foods with vegetable knife use claw grip or use bridge hold
Textiles	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	Join fabrics with a blanket stitch.	Join Cut Stick Print Thread Sew Stitch: different style names, blanket etc Tie Safe Assemble Measure Combine Pattern Fabric Pin Weave Accurate Technique quality	Create 3D products using pattern pieces and seam allowance. Understand pattern layout. Understand seam allowance. Explore fastenings and recreate some e.g. sew on buttons and make loops. Join fabrics using over sewing, back stitch and blanket stitch. Select appropriate materials, tools and techniques Measure and mark out accurately Use skills in using different tools and equipment safely and accurately Cut and join with accuracy to ensure a good-quality finish to the product
Construction	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]	Incorporate motor and a switch into a model	Stick Fix Strong Tape Join Wheel Axel Reel Move	Use bradawl to mark hole positions Use hand drill to drill tight and loose fit holes Cut strip wood, dowel, square section wood accurately to 1mm Join materials using appropriate methods

	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		Chasiss Template Material names Protype Structure Strut Frame	Control a model using an ICT control programme Use glue gun with close supervision
Sheet materials	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	Choose an appropriate sheet material for the purpose	Cut Roll Fold Move Tear Curl Link Fasten Strengthen Fixed Temporary Moveable Net	Cut slots Cut accurately and safely to a marked line Join and combining materials with temporary, fixed or moving joinings Use craft knife, cutting mat and safety ruler under one to one supervision if appropriate
Evaluation	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	Reflect on their work using design criteria stating how well the design fits the needs of the user	Design Strength Weakness Change Develop Product Criteria Justify	Use the design criteria to inform their decisions about ways to proceed Justify their decisions about materials and methods of construction Identify what does and does not work in the product. Make suggestions as how their design could be improved
YR6	Use research and develop design criteria to inform the design of innovative, functional, appealing	Use market research to inform plans and ideas	Material names Model Build	Investigate products/images to collect ideas

Developing, Planning and Communicating Ideas	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		Design Plan First Next Last Develop Tool names: scissors etc Intention Idea Sketch Sequence Adapt Explain pattern	Sketch and model alternative ideas Develop one idea in depth Combine modelling and drawing to refine ideas Plan the sequence of work using a storyboard Record ideas using annotated cross-sectional and exploded diagrams Use models, kits and drawings to help formulate design ideas Make prototypes & pattern pieces Use found information to inform decisions Use a computer to model ideas Draw plans which can be read/followed by someone else Give a report using correct technical vocabulary
Food	Understand and apply the principles of a healthy and varied diet Prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques Understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed	Measure using jug, digital and analogue scales independently and accurately	Food group names Measure Pour Mix fold Press Roll Hygiene Cut Chop Grate Tear Shred	Prepare food products taking into account the properties of ingredients and sensory characteristics Work safely and hygienically Select and prepare foods for a particular purpose Taste a range of ingredients, food items to develop a sensory food vocabulary for use when designing. Weigh and measure using scales

			Safe Resistance zest	Cut and shape ingredients using appropriate tools and equipment e.g. grating Join and combine food ingredients appropriately e.g. beating, rubbing in Decorate appropriately Work safely and hygienically Show awareness of a healthy diet from an understanding of a balanced diet
Textiles	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	Pin and tac fabric together	Join Cut Stick Print Thread Sew Stitch: different style names, blanket etc Tie Safe Assemble Measure Combine Pattern Fabric Pin Weave Accurate Technique quality	Create 3D products using pattern pieces and seam allowance Understand pattern layout Decorate textiles appropriately often before joining components Pin and tack fabric pieces together Join fabrics using over sewing, back stitch, blanket stitch or machine stitching (closer supervision) Combine fabrics to create more useful properties Make quality products
Construction	Apply their understanding of how to strengthen, stiffen and reinforce more complex structures	Explain why specific tools are best for specific action	Stick Fix Strong Tape	Use bradawl to mark hole positions Use hand drill to drill tight and loose fit holes

	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		Join Wheel Axel Reel Move Chassis Template Material names Protype Structure Strut Frame	Cut strip wood, dowel, square section wood accurately to 1mm Join materials using appropriate methods Incorporate motor and a switch into a model Control a model using an ICT control programme Use a cam to make an up and down mechanism. Build frameworks using a range of materials e.g. wood, card corrugated plastic to support mechanisms Use glue gun with close supervision
Sheet materials	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	Choose an appropriate sheet material for the purpose, explaining why this was the chosen method.	Cut Roll Fold Move Tear Curl Link Fasten Strengthen Fixed Temporary Moveable Net	Cut slots Cut accurately and safely to a marked line Join and combining materials with temporary, fixed or moving joinings Use craft knife, cutting mat and safety ruler under one to one supervision if appropriate
Evaluation	Investigate and analyse a range of existing products	Reflect on their work using design criteria stating how well the design fits the needs of the user	Design Strength Weakness Change	Use the design criteria to inform their decisions about ways to proceed

	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	Identify what does and does not work in the product.	Develop Product Criteria Justify	Justify their decisions about materials and methods of construction Make suggestions as how their design could be improved