John Keble CE School

Design and Technology Curriculum

Rooted together in love, growing without limits.

Believing in the worth of every individual, we are a nurturing, Christian sanctuary of learning, where all can flourish. We aspire for everyone to achieve heights of success, to deepen courage and to experience breadth of creativity, knowing the joy of God's love.

Whole school curriculum intent
Our ambitious, knowledge-rich curriculum has been sequenced to equip our pupils with the knowledge and skills to ensure they are happy, healthy global citizens, ready to take their place in modern Britain. The broad and balanced curriculum is creative, coherent and inclusive and, together with our Christian values, enables the pupils to be self-motivated, independent learners.
Subject specific curriculum intent: design and technology
At John Keble, we aim 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. That they 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. Pupils should be given the opportunities to critique, evaluate and test their ideas and products and the work of others. Finally pupils should understand and apply the principles of nutrition and learn how to cook.
Implementation and impact:
Across key stage 1 and 2, a total of 18 units (3 per year) are taught. These cover a range of areas such as structure, mechanism, textiles, electrical systems and cooking and nutrition. The units are pitched so that pupils with different starting points can access them. Lessons within a unit are sequenced so that each one builds on prior learning. The activities are scaffolded so all children can succeed and they provide scope for all to be challenged. The units of work allow for both substantive and disciplinary knowledge to be taught. Substantive knowledge is organised into four interrelated disciplines designing, making, evaluating and technical knowledge to ensure that pupils' knowledge, skills and understanding are built upon through successive years towards clearly identified year group learning outcomes. Disciplinary knowledge in design and technology is the process of enabling children to use their substantive knowledge of products and materials around them to make links between and across different areas of the curriculum. At the end of each unit, pupils will be given an end of unit task. This will be an opportunity for the pupils to showcase their learning and what they have understood in a task. Class teachers will be able to use it as a tool to assess the pupils.

Introduction to John Keble's key stage 1 and 2 design technology

Year Group	Term	Unit Title	Year Group	Term	Unit Title
1	Autumn 1	Structures: Freestanding structures Something: create a range of different structures Someone: classmates Some purpose: Understand how to make strong structures	2	Autumn 2	Mechanical systems: Levers and linkages Something: create a movable Christmas card Someone: family Some purpose: to celebrate Christmas
	Spring 1	Mechanical systems: Moving vehicles Something: moving vehicle someone: Billy Goats Gruff Some purpose: To carry them across the bridge		Spring 2	Textiles: Joining materials Something: puppet Someone: visitors at a zoo Some purpose: to sell in the shop
	Summer 2	Cooking and nutrition - Preparing fruit and vegetables Something: sweet and savoury salad Someone: themselves Some purpose: to develop basic skills needed in cooking		Summer 2	Cooking and nutrition - Preparing fruit and vegetables Something: fruit smoothie Someone: themselves Some purpose: to show an understanding of a balanced diet
3	Spring 1	Structures: food container Something: food packaging Someone: themselves Some purpose: to store their oat bar they will create in DT	4	Autumn 1	Electrical systems: traffic lights Something: a child friendly traffic light Someone: young children Some purpose: encourage the children to be safe when crossing the road
	Spring 2	Cooking and nutrition: Healthy diet Something: snacks for a packed lunch Someone: themselves Some purpose: to further develop an understanding of a balanced diet		Spring 1	Structures: Bridges Something: a bridge Someone: people driving to the power station Some purpose: to allow vehicles to cross a river
	Summer 2	Textiles: Money containers Something: money container Someone: themselves Some purpose: store their money		Summer 1	Mechanical systems: Levers and linkages Something: persuasive poster Someone: ECO JLT Some purpose: to persuade people to recycle
5	Autumn 2	Cooking and nutrition: seasonality Something: soup Someone: themselves Some purpose: to make a seasonal and sustainable soup	6	Autumn 2	Textiles: Fabric mobile phone holder Something: phone case Someone: themselves Some purpose: to store their mobile phone in
	Spring 2	Mechanical systems: Cars Something: a moving vehicle for a fairy tale character Someone: a young child Some purpose: to be displayed in the class 'showroom'		Spring 2	Cooking and nutrition: Preparing a savoury dish Something: Burger Someone: themselves Some purpose: to make a meal that uses little waste and can be eaten as part of a balanced diet.
	Summer 2	Electrical systems: cams Something: a moving toy Someone: your children Some purpose: to retell a story		Summer 2	Structures WW2 shelters Something: a WW2 shelter Someone: a lego character Some purpose: to withstand a force

National Curriculum – Key Stage 1

Area	National Curriculum objectives	Where covered
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	Yr 1 A1 / Sp1 / Yr 2 A2 / Sp2 / Su2 Yr 1 A1 / Sp1 / Yr 2 A2 / Su2
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	Yr 1 A1 / Sp1 / Su1 / Yr 2 A2/ Sp2 / Su2 Yr 1 A1 / Sp1 / Su1 / Yr 2 A2 / Sp2 / Su2
Evaluate	● explore and evaluate a range of existing products ● evaluate their ideas and products against design criteria	Yr 1 Su1 / Yr 2 A2 / Su2 Yr 1 Sp1 / Yr 2 A2 / Su2
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	Yr 1 A1 Yr 1 Sp1/ Yr 2 A2
Cooking and nutrition	● use the basic principles of a healthy and varied diet to prepare dishes ● understand where food comes from.	Yr 1 Su1/ Yr 2 Sp2 Yr 2 Sp2

National Curriculum – Key Stage 2

Area	National Curriculum objectives	Where covered
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	Yr 3 Sp1 / Yr 3 Sp2 / Yr 3 Su2 / Yr 4 Su 1 / Yr 5 A2 / Yr 5 Sp2 / Yr 5 Su2 / Yr 6 A2 / Yr 6 Sp 2 / Yr 6 Su2 Yr 3 Sp1/ Yr 3 Su2 / Yr 4 A / Yr 4 Sp1 / Yr 5 A2 / Yr 5 Sp2 / Yr 5 Su2 / Yr 6 A2 / Yr 6 Sp 2 / Yr 6 Su2 Computing Yr 6 Su 1 / Yr 5 Sp 1
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	Yr 3 Sp1 / Yr 3 Sp2 / Yr 3 Su2 / Yr 4 A1 / Yr 4 Sp1 / Yr 4 Su 1 / Yr 5 Sp2 / Yr 5 Su2 / Yr 6 A2/ Yr 6 Su2 Yr 3 Sp2 / Yr 3 Su2 / Yr 4 A1 / Yr 4 Su 1 / Yr 5 A2 / Yr 5 Sp2 / Yr 5 Su2 / Yr 6 Sp 2 / Yr 6 Su2
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	Yr 3 Sp1 / Yr 3 Su2 / Yr 4 Su 1 / Yr 5 A2 / Yr 6 Sp 2 Yr 3 Sp1 / Yr 3 Sp2 / Yr 3 Su2 / Yr 4 A1 / Yr 4 Sp1 / Yr 4 Su 1/ Yr 5 A2 / Yr 5 Sp2 / Yr 5 Su2 / Yr 6 A2 / Yr 6 Sp 2 / Yr 6 Su2 Yr 4 A1 / Yr 4 Su 1 / Yr 6 Su2
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	Yr 3 Sp1 / Yr 4 A1 / Yr 4 Su 1 / Yr 5 Su2 / Yr 6 Su2 Yr 4 Sp1 / Yr 5 Sp2 / Yr 5 Su2 Yr 4 A1 / Yr 5 Sp2 Covered in Yr 5 Spring 1 and 6 computing
Cooking and nutrition	• 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.	Yr 3 Sp2 / Yr 5 A2/ Yr 6 Sp2 Yr 3 Sp2 / Yr 5 A2/ Yr 6 Sp2 Yr 3 Sp2 / Yr 5 A2/ Yr 6 Sp2

Nursery

Term	Learning area	Pupils will	Vocabulary
Autumn 1	Design Make Evaluate	● Explore different materials in or to develop their ideas about how to use them and what to make	
Autumn 2	Design Make Technical knowledge	● Develop their own ideas ● Choose materials for their own specific purpose ● Explore collections of materials with similar and/ or different properties	
Spring 1	Make Technical knowledge	● Join different materials ● Explore different textures	
Summer 1	Make Technical knowledge	● Join different materials to create 3D models	
Throughout the year	Cooking and Nutrition	As part of the cross curricular adult led activities, children will have the opportunity to cook a variety of savoury and sweet dishes. ● use a range of tools and equipment safely ● Talk about if a dish is healthy	

Reception

Term	Learning area	Pupils will	Vocabulary
Autumn 1	Design Make	● Say what they are making	
Autumn 2	Design Make Evaluate	● Say what they are making ● Explain how they made it ● Say what they like and don't like about it	
Spring 1	Design Make Evaluate	● Discuss how to join things ● Consider the best resources for this ● When given limited range of resources, discuss what they are going to make before they make it	
Summer 1	Design Make Technical Knowledge Evaluate	● Join things in different ways ● Verbally plan and evaluate their creations - discussing how they achieved their aims ● To use materials, tools and ideas to invent ● Create a 3D structure	
Summer 2	Design Make Technical Knowledge Evaluate	● Able to plan for a purpose and talk through any problems that arise. ● Evaluate the outcome	
Throughout the year	Cooking and Nutrition	As part of the cross curricular adult led activities, children will have the opportunity to cook a variety of savoury and sweet dishes. ● use a range of tools and equipment safely ● Talk about if a dish is healthy ● To know if a dish is sweet or savoury	

Year 1 - Structures - Materials

- NC objectives: D: design purposeful, functional, appealing products for themselves and other users based on design criteria
- D: generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- M: select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- M: select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- M: build structures, exploring how they can be made stronger, stiffer and more stable

Lesson number	Learning objective	Pupils will	Vocabulary	Equipment
1	Design products based on a design criteria	● explore types of structures ● use simple design criteria to help develop their ideas generate ideas by drawing on their own experiences ● generate ideas by drawing on their own experiences ● use knowledge of existing products to help come up with ideas	Structure hollow Freestanding wall pattern	Paper, scissors, tape, gluestick
2	Select from and use a range of tools and equipment to perform practical tasks	● plan by suggesting what to do next ● select from a range of tools and equipment, explaining their choices	structure stability Freestanding	Join Frame
3	Select from and use a range of tools and equipment to perform practical tasks	● use a range of materials and components, including construction materials and kits, textiles, food ingredients and mechanical components ● measure, mark out, cut and shape materials and components ● assemble, join and combine materials and components	Fix Freestanding Join	Base Stability
4	Build structures, exploring how they can be made stronger, stiffer and more stable	● about the simple working characteristics of materials and components ● assemble, join and combine materials and components	Stability Base Centre of Gravity Buttress	
5	Build structures, exploring how they can be made stronger, stiffer and more stable	● to measure, mark out, cut and shape materials and components ● to assemble, join and combine materials and components	Replicate User Function	
6	Build structures, exploring how they can be made stronger, stiffer and more stable	● explore how freestanding structures can be made stronger, stiffer and more stable ● Share what they like and dislike about products	Evaluate Sturdy Fit for Purpose	Shell structure

Year 1 - Moving vehicles

- NC objectives:D: design purposeful, functional, appealing products for themselves and other users based on design criteria
- D: generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- M: select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- M: select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- E: evaluate their ideas and products against design criteria
- TK: build structures, exploring how they can be made stronger, stiffer and more stable
- TK: explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To create a shared design criteria	● explore types of vehicles and their purpose. ● create a shared design criteria for the unit: e.g. design and make a vehicle to carry the three goats over the trolls bridge.	vehicle purpose movement	
2	To investigate how a vehicle moves	● explore a range of toy cars to investigate how they move ● label a simple diagram of the key parts of a vehicle: wheels, axles and chassis ● follow a set of simple instructions ● experiment with pegs vehicles and axles to move	wheels axles	chassis
3	To design a vehicle	● design their vehicle using the design criteria ● label the key parts of the design: wheels, axles and chassis	wheels axles	chassis design criteria
4	To use a construction kit to build a vehicle	● use a construction kit to make the main body of a vehicle ● evaluate their vehicle to see if it meets the needs of the design criteria ● plan how to improve their vehicle	wheels axles	chassis construction kit
5	To use previous skills taught to make a vehicle strong and stable	● be given a range of materials to make a carrier to add to the vehicle (this could be as a carrier on top or a trailer connected to the vehicle. ● use the skills taught in the previous unit to make their vehicle's carrier strong and stable.	improve strengthen buttress	join base stability
6	To evaluate a design against the design criteria	● evaluate their ideas and products against design criteria	evaluate improve	successful

Year 1 – Cooking

- NC objectives: C&N: use the basic principles of a healthy and varied diet to prepare dishes
- C&N: understand where food comes from.
- M: select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- M: select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To explain what I like or dislike about a product	• work confidently within a range of contexts, such as imaginary, story-based, home, school, gardens, playgrounds, local community, industry and the wider environment • share what they like and dislike about products	investigate fruit vegetable evaluate	
2	To develop ideas for a fruit salad	• learn about what products are • identify who products are for • explain what products are for • use simple design criteria to help develop their ideas	food products criteria purpose	ideas user
3	To follow procedures for safety and hygiene when cooking	• select from a range of tools and equipment, explaining their choices • follow procedures for safety and hygiene • use a range of food ingredients • cut ingredients • assemble food ingredients	prepare peel cut combine chop	
4	To design a savoury salad	• say whether their products are for themselves or other users • use knowledge of existing products to help come up with ideas • develop and communicate ideas by talking and drawing	savoury investigate sweet	design criteria
5	To plan how to make a savoury salad	• say how products work and are used • say where products might be used • state what products they are designing and making	ingredients safety equipment	method hygiene
6	To follow procedures for safety and hygiene when cooking	• learn that food ingredients should be combined according to their sensory characteristics • the correct technical vocabulary for the projects they are undertaking	Ingredients grate equipment	drain cut

Year 2 - Mechanisms: sliders and levers

- NC objectives: D design purposeful, functional, appealing products for themselves and other users based on design criteria
- D: generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- M: select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- M select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- E: explore and evaluate a range of existing products
- E: evaluate their ideas and products against design criteria
- KN: explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To explore a range of sliders and levers	• measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • learn about the movement of simple mechanisms such as levers, sliders, wheels and axles • use knowledge of existing products to help come up with ideas • develop and communicate ideas by talking and drawing what they like and dislike about products	Mechanism slider slot movement rotate	Lever straight line pivot backwards / forwards
2	To investigate the properties of everyday materials	• generate ideas by drawing on their own experiences • select from a range of materials and components according to their characteristics • plan by suggesting what to do next • select from a range of tools and equipment, explaining their choices	Flexible rigid stiff squash twist bend	stretch materials properties choices suitability
3	To investigate and evaluate cards that include a variety of mechanisms and moving parts	• explore what products are for • discuss who products are for • discuss where products might be used • discuss how products work, • discuss how products are used • explore what materials products are made from	User function purpose	appearance pop up
4	To generate design ideas for a Christmas card	• generate ideas by drawing on their own experiences • state what products they are designing and making • describe what their products are for • say how they will make their products suitable for their intended users	slider lever pop up	design generate
5	To apply a chosen mechanism to a celebration card	• measure, mark out, cut and shape materials and components • assemble, join and combine materials and components	mechanism slot function	pivot card strip functional
6	To evaluate your congratulations card	• learn the correct technical vocabulary for the projects they are undertaking • make simple judgements about their products and ideas against design criteria • suggest how their products could be improved	criteria evaluate	judgements vocabulary

Year 2 – Textiles

- NC objectives: D: design purposeful, functional, appealing products for themselves and other users based on design criteria
- D:generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology
- M: select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- M: select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics
- E: evaluate their ideas and products against design criteria

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To explore a range of existing products	• discuss what products are what products are for • discuss who products are for • discuss how products are used where products might be used • explore what materials products are made from • say what they like and dislike about products	evaluating existing purpose user	
2	To experiment with different joining techniques	• say how their products will work • say how they will make their products suitable for their intended users • learn about the simple working characteristics of materials and components • understand a 3-D textiles product can be assembled from two identical fabric shapes	template sew running stitch	mock up staple
3	To use design criteria to develop ideas	• say whether their products are for themselves or other users • use simple design criteria to help develop their ideas • develop and communicate ideas by talking and drawing • talk about their design ideas and what they are making • state what products they are designing and making • model ideas by exploring materials, components and construction kits and by making templates and mockups • use information and communication technology, where appropriate, to develop and communicate their ideas	criteria template design	mock up communicate
4	To explore how to make accurate templates and pattern pieces	• select from a range of tools and equipment, explaining their choices • select from a range of materials and components according to their characteristics • understand that a 3-D textiles product can be assembled from two identical fabric shapes	template pattern piece mark out	seam allowance
5	To explore finishing techniques	• measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design	template pattern piece mark out	seam allowance
6	To make a final and evaluate a puppet product	• measure, mark out, cut and shape materials and components • assemble, join and combine materials and components • use finishing techniques, including those from art and design • say what they like and dislike about products • suggest how their products could be improved • make simple judgements about their products and ideas against design criteria	template finishing techniques pattern piece	joining techniques

Year 2 - cooking

- NC objectives: C&N: use the basic principles of a healthy and varied diet to prepare dishes
- C&N: understand where food comes from.
- D: design purposeful, functional, appealing products for themselves and other users based on design criteria
- M: select from and use a range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing]
- M: select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

Lesson number	Learning objective	Pupils will	Vocabulary	
1	Introduction: exploring delicious fruits and vegetables	● revisit what they know about fruits and vegetables from work done in year 3 ● share what they like and dislike about products	investigate fruit vegetable evaluate	
2	Where do our fruit and vegetables come from?	● understand that all food comes from plants or animals ● that food has to be farmed, grown elsewhere (e.g.home) or caught	plants animals grown	farmed caught
3	Exploring the Eatwell Guide: investigating how to make a smoothie	● name and sort foods into the five groups in The Eatwell Guide ● understand that everyone should eat at least five portions of fruit and vegetables every day ● know how to prepare simple dishes safely and hygienically, without using a heat source ● use techniques such as cutting, peeling and grating ● select from a range of tools and equipment, explaining their choices; follow procedures for safety and hygiene	ingredients blend fruits vegetables healthy	
4	Exploring ideas for a fruit or vegetable smoothie	● use knowledge of existing products to help come up with ideas ● develop and communicate ideas by talking and drawing ● create a design criteria using their knowledge of the Eatwell Guide	ingredients plan equipment	design method
5	Making a fruit or vegetable smoothie	● say what they like and dislike about products ● prepare simple dishes safely and hygienically, without using a heat source ● use techniques such as cutting, peeling and grating ● follow procedures for safety and hygiene	ingredients cut taste	combine blend
6	Evaluate my product	● evaluate their ideas and products against design criteria ● say what they like or dislike about their product	ingredients healthy	describe taste

Year 3 –Construction shell

- NC objectives: D: 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
- D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- E: investigate and analyse a range of existing products
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- TK: apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To investigate structures	• explore how well products have been designed why materials have been chosen • investigate what methods of construction have been used • investigate how well products work • investigate how well products meet user needs and wants	structure shell structure corrugated prism	ribbed laminated cuboid cylinder
2	To construct nets to create 3D shapes	• make strong, stiff shell structures • measure, mark out, cut and shape materials and components with some accuracy assemble • join and combine materials and components with some accuracy	net cuboid	prism scoring
3	To evaluate existing structures	• explore who designed and made existing products • investigate where products were designed and made • learn when products were designed and made	product analysis function	shell structure solid structure combination structure
4	To develop a design brief and to sketch ideas for the product	• develop their own design criteria and use these to inform their idea • generate realistic ideas, focusing on the needs of the user • model their ideas using prototypes • use annotated sketches to develop and communicate their ideas	design brief purpose product	user sketch annotate
5	To design, make and evaluate structures	• refer to their design criteria as they design and make • consider the views of others, including intended users, to improve their work	structure design specification	making evaluating
6	To measure, mark out, cut and shape materials	• use annotated sketches and cross-sectional drawings to develop and communicate their ideas • measure, mark out, cut and shape materials and components with some accuracy • assemble, join and combine materials and components with some accuracy	assembling measuring	shaping accuracy

Year 3 - cooking

- NC objectives: D 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
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- M 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
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- C&N: understand and apply the principles of a healthy and varied diet
- C&N: prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- C&N: understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To use research to develop design criteria	• learn how well products meet user needs and wants • understand why ingredients have been chosen that food ingredients can be fresh, pre-cooked and processed • gather information about the needs and wants of particular individuals and groups • develop their own design criteria and use these to inform their idea	Target market market research Design criteria analysis	questionnaire nutrients processed pre-cooked fresh
2	To design a product for a target market	• describe the purpose of their products the correct technical vocabulary for the projects they are undertaking • select tools and equipment suitable for the task select materials and components suitable for the task • make design decisions that take account of the availability of resources • order the main stages of making • indicate the design features of their products that will appeal to intended users	target market ingredients nutrients design brief	
3	To prepare and cook savoury dish	• assemble, join and combine materials and components with some accuracy • follow procedures for safety and hygiene use a wider range of materials and components than Key Stage 1, including construction materials and kits, textiles, food ingredients, mechanical components and electrical components • use their design criteria to evaluate their completed products • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work	design criteria evaluation product bias hygiene ingredients	claw grate bridge
4	To explore food and where it comes from	• understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world • understand that a healthy diet is made up from a variety and balance of different food and drink, as depicted in the 'Eatwell Guide' • understand that to be active and healthy, food and drink are needed to provide energy for the body	Grown reared fresh	pre-cooked caught processed
5	To evaluate a product develop ideas further	• indicate the design features of their products that will appeal to intended users • select tools and equipment suitable for the task select materials and components suitable for the task • make design decisions that take account of the availability of resources order the main stages of making	design criteria evaluation	product dried fruit
6	To prepare and cook savoury dish	• assemble, join and combine materials and components with some accuracy follow procedures for safety and hygiene use a wider range of materials and components than Key Stage 1, including food ingredients • use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking • understand that food ingredients can be fresh, pre-cooked and processed • use the correct technical vocabulary for the projects they are undertaking	hygiene ingredients blend dried fruit processed	claw grate bridge pre-cooked fresh

Year 3 -Textiles

- NC objectives: D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- D: 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
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- M: 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
- E: investigate and analyse a range of existing products
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Lesson number	Learning objective	Pupils will learn	Vocabulary	
1	To explore a range of existing products	● discuss what products are what products are for ● discuss who products are for ● discuss how products are used where products might be used ● explore what materials products are made from ● say what they like and dislike about products ● Create a class design criteria	evaluating existing purpose user	
2	To experiment with different joining techniques	● learn about the simple working characteristics of materials and components ● understand a 3-D textiles product can be assembled from two identical fabric shapes ● practise joining materials using different stitching techniques ● Decide what will be the most suitable stitch for joining materials	running stitch over stitch back stitch	
3	To create a flow chart, identifying steps	● design their money container using annotated drawings ● Discuss the process of making their money container ● Create a flow chart, identifying what they will do, step by step	Flow chart step by step	instructions
4	To use a wider range of tools and equipment to perform practical tasks	● measure, mark out, cut and shape materials and components ● assemble, join and combine materials and components ● use accurate measurements when cutting out	running stitch over stitch back stitch	template measurement
5	To explore finishing techniques	● measure, mark out, cut and shape materials and components ● assemble, join and combine materials and components ● use finishing techniques, including those from art and design	applique appealing	finishing techniques
6	To evaluate a finished product	● say what they like and dislike about products ● suggest how their products could be improved ● make simple judgements about their products and ideas against design criteria	evaluating purpose user	design criteria design brief

Year 4 - circuits

- NC objectives: D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- M: 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
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- E: understand how key events and individuals in design and technology have helped shape the world
- TK: apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To learn how electrical products meet the needs of users	• learn that mechanical and electrical systems have an input, process and output • evaluate how well products achieve their purposes • explore how well products meet user needs and wants • gather information about the needs and wants of particular individuals and groups • explore how simple electrical circuits and components can be used to create functional products	electricity input devices output devices	user sustainability
2	To understand how key individuals in design and technology have helped shape the world	• Learn about Garrett Morgan • Discuss his achievements with traffic lights	Garrett Morgan	achievement developments
3	To develop a design criteria	• develop their own design criteria • use these to inform their idea	LED user	purpose
4	To use learning from science to help design and make working electrical products	• Design a traffic light that can make crossing the road safe for pupils • use learning from science to help design and make products that work • measure, mark out, cut and shape materials and components with some accuracy	prototype pros	cons symbol
5	To select components to assemble electrical systems	• use learning from science to help design and make products that work • measure, mark out, cut and shape materials and components with some accuracy	prototype assembling	joining finishing
6	To evaluate how well products meet user needs and wants	• explain how particular parts of their products work • use the correct technical vocabulary for the projects they are undertaking • explain how well products meet user needs and wants	Questionnaire product analysis	

Year 4 - levels and linkages

- NC objectives: D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- TK: understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

Lesson number	Learning objective	Pupils will learn	Vocabulary	
1	To understand how a range of mechanisms create movement	• understand how mechanical systems such as levers and linkages or pneumatic systems create movement • use the correct technical vocabulary for the projects they are undertaking • understand how mechanical systems such as levers and linkages or pneumatic systems create movement	mechanism lever slot pivot design brief	recycle
2	To design a product criteria, meeting the needs of the user	• generate realistic ideas, focusing on the needs of the user share and clarify ideas through discussion • use the correct technical vocabulary for the projects they are undertaking • understand how mechanical systems such as levers and linkages or pneumatic systems create movement	mechanism persuasive design brief recycle	lever bridge loose pivot fixed pivot
3	To use a range of techniques to create a prototype	• measure, mark out, cut and shape materials and components with some accuracy assemble • join and combine materials and components with some accuracy	mechanism lever linkages	design brief prototype sketch
4	To generate and develop design ideas	• indicate the design features of their products that will appeal to intended users • explain how particular parts of their products work • use annotated sketches to develop and communicate their ideas • order the main stages of making • use exploded diagrams to develop and communicate their ideas • refer to their design criteria as they design and make	mechanism exploded diagram design brief	bridge loose pivot fixed pivot
5	Use a range of techniques to begin to make a final idea	• measure, mark out, cut and shape materials and components with some accuracy assemble • join and combine materials and components with some accuracy • apply a range of finishing techniques, including those from art and design, with some accuracy • use a wider range of materials and components than Key Stage 1, including mechanical components • use their design criteria to evaluate their completed products	mechanism lever linkages	adaptation design brief prototype
6	To evaluate the final product, considering the views of others	• use the correct technical vocabulary for the projects they are undertaking • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work	design criteria evaluation	product mechanical system

Year 4 – Construction - solid

- NC objectives: D: 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
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- M: 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
- E: investigate and analyse a range of existing products
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- E: understand how key events and individuals in design and technology have helped shape the world
- TK: apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To explore ways in which pillars and beams are used to span gaps.	● learn about how simple bridges are constructed using beams, pillars or piers, ● make and test beam bridge designs.	engineers beam pillars	piers
2	To explore ways in which trusses can be used to strengthen bridges.	● learn how trusses are used in bridge design to spread out compression forces. ● build and test model truss bridges	engineers truss compression force	
3	To explore ways in which arches are used to strengthen bridges.	● learn how arches are used to spread and redirect compression forces acting on bridges. ● build and test model arch bridges.	engineering stone bridge arch bridge abutments	iron steel compression force
4	To understand how suspension bridges are able to span long distances.	● learn about how suspension bridges use tension to support bridge decks spanning large distances. ● learn about Brunel and his achievements with bridge development	Brunel suspension bridge distribute	compression force vertical anchored
5	To develop criteria and design a prototype bridge for a purpose.	● develop criteria for a bridge design that will meet the terms of the brief. ● design a bridge according to their criteria	prototype design criteria	
6	To analyse and evaluate products according to design criteria.	● consider ways in which they might test their bridge design ● build and test their designs.	prototype evaluate	

Year 5 – cooking

- NC objectives: D: 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
- M: 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
- E: 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
- C&N: understand and apply the principles of a healthy and varied diet
- C&N: prepare and cook a variety of predominantly savoury dishes using a range of cooking techniques
- C&N: understand seasonality, and know where and how a variety of ingredients are grown, reared, caught and processed.

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To explore where food comes from	• understand that food is grown (such as tomatoes, wheat and potatoes), reared (such as pigs, chickens and cattle) and caught (such as fish) in the UK, Europe and the wider world • learn how food is processed into ingredients that can be eaten or used in cooking	grown reared caught processed seasonality	source fresh pre-cooked
2	To explore how sustainable a product is	• understand the journey food goes on • explore what foods are grown locally • evaluate how sustainable a product is	manufacturer mass-produced	food miles sustainable sustainability
3	To understand the needs of a healthy varied diet	• work confidently within a range of contexts, such as the home, school, leisure, culture, enterprise, industry and the wider environment that a recipe can be adapted by adding or substituting one or more ingredients the correct technical vocabulary for the projects they are undertaking	healthy varied values nutrition	preferences wants needs diet
4	To consider the views of others to improve a product	• understand that different food and drink contain different substances - nutrients, water and fibre - that are needed for health • critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make • identify the strengths and areas for development in their ideas and products • consider the views of others, including intended users, to improve their work	evaluate sensory inform	
5	To design a dish based on a design brief	• how sustainable the materials in products are about chefs and manufacturers who have developed ground-breaking products	design specification user	
6	To prepare and cook savoury dish	• how to prepare and cook a variety of predominantly savoury dishes safely and hygienically including, where appropriate, the use of a heat source how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking • why materials have been chosen • how well products achieve their purposes • how well products meet user needs and wants	cooking food hygiene cross contamination	claw bridge combining

Year 5 - Cars

- NC objectives: D: 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
- D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- M: 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
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- TK: understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]
- TK: understand and use electrical systems in their products [for example, series circuits incorporating switches, bulbs, buzzers and motors]

Lesson number	Learning objective	Pupils will	Vocabulary
1	To record my findings through labelled drawings	● be provided with some examples of controllable toy vehicles to investigate e.g. models made from construction kits. (ones kept from Yr 1 and previous Yr 6) ● discuss how the models work e.g. Where does the power come from? How are the wheels driven? What are their similarities and differences? observe carefully how the model is constructed, how it works and how the components are joined together. ● record their findings through labelled drawings e.g. drawings from different views, exploded diagrams.	exploded diagrams, labelled drawings, improvements construction kits, modify
2	To select from and use a wider range of tools and equipment to perform practical tasks	● explore the use of tools, equipment and components that pupils might need to use eg wire strippers, connector strip, motor mounting clips. ● observe how to make a wooden frame from square section wood joined with card triangles or diagonals and how to add wheels and axles. ● create a basic frame for their car.	chassis, secure connections, pressure switch, speed, motor spindle, pulley, wheel, axle, motor, mounting clip
3	To understand and use electrical systems in their products	● revise circuits from year 4 science ● incorporate a motor into the circuit and investigate– Which way does it turn? How can the direction be changed? – add a small pulley to the motor spindle. Use an elastic band to make a belt drive. Place the belt around another pulley fixed to an axle secured in a box. Is the belt turning quickly or slowly? What happens if you change the size of the pulley? ● add switches to control the circuit.	circuit, series and parallel circuits, control, motor, switch/short circuit,
4	To communicate ideas through discussion and computer-aided design	● understand the task outcome - design a moving vehicle for a fairy tale character of their choice ● discuss the possibilities for different sorts of toy vehicles, eg moon buggies, lorries, circus vehicles. ● discuss how these might be made from a basic chassis with cladding. ● discuss how the design should reflect the needs and/or style of the person who will use it. Who are you designing for? How will you make the vehicle appear to say 'I belong to...'? ● work in pairs to discuss their ideas, to set their own design criteria ● design their vehicle using CAD (vector drawing) and label to show how they would construct their toy vehicle, including how the electrical components would be incorporated.	cutting jig, cladding, finishing technique, assembling, components, design criteria, CAD
5	To select from and use a wider range of tools and equipment to perform practical tasks	● make their toy vehicle ● test their models during development and to adapt where necessary. What do the users think about it? What could you do to make it better?	cutting jig, cladding, finishing technique, assembling, components, chassis, secure connections, pressure switch, speed, motor spindle, pulley, wheel, axle, motor, mounting clip
6	To evaluate products against a design criteria	● showcase their car in the class 'showroom' ● evaluate their finished models against their design criteria ● suggest improvements.	evaluate, successful, improvements, achieved.

Year 5 - Cams

- NC objectives: D: 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
- D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: 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
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- TK: apply their understanding of how to strengthen, stiffen and reinforce more complex structures
- TK:understand and use mechanical systems in their products [for example, gears, pulleys, cams, levers and linkages]

Lesson number	Learning objective	Pupils will	Vocabulary
1	To investigate toys with moving cam mechanisms.	● investigate different moving toys. ● learn about cam mechanisms and explore different toys that use them	cam, follower, dowel, linkage system, rotary movement, linear movement
2	To investigate different types of cam mechanisms.	● explore and investigate different types of cam mechanisms ● think about the shapes they will produce. ● test different shaped cams to see how they affect the linear movement of the follower.	cam, follower, dowel, linkage system, rotary movement, linear movement
3	To investigate ways of strengthening structures for a moving toy.	● explore materials and investigate different ways of strengthening moving toy structures. ● make suggestions for how they could make a sturdy structure for a moving toy	structure, base, Stability Base, Centre of Gravity Buttress, sturdy
4	To be able to design a moving toy with a cam mechanism.	● use their previously learnt knowledge to design a moving toy with a cam mechanism. ● think about who the toy is for, what shape the cam will be, the structure, decoration and materials needed to construct it.	design criteria, appealing, sequence, annotated diagram, sketch, decision, choice, prototype, model, communicate
5	To be able to follow a design to create a moving toy with a cam mechanism.	● refer to their designs from the previous lesson to create their moving toys.	shape, assemble, accurate, saw, mark out cam, mechanism, movement, linear motion, rotary motion, pivot, off-centre, axle, force, framework, follower, guide, offset, shaft
6	To be able to evaluate a finished moving toy.	● demonstrate their finished moving toys, ● evaluate both their process and their finished product, either individually or with a partner.	evaluate, successful, improvements, achieved.

Year 6 – Textiles

- NC objectives: D: 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
- D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- E:evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Lesson number	Learning objective	Pupils will	Vocabulary	
1	To explore what impact products have beyond their intended purpose	● learn that materials have both functional properties and aesthetic qualities ● use the correct technical vocabulary for the projects they are undertaking ● discuss what impact products have beyond their intended purpose, the negative impact of the textiles industry	modern smart materials fabric	natural fibres synthetic fibres
2	To explore fast fashion	● explore what is meant by fast fashion ● discuss ways of being more sustainable with clothing	Sustainable Recycle	
3	To use a wider range of tools and equipment to perform practical tasks	● explore different types of stitches, consolidating work from year 2 and 3	Thread Stich Running stitch	Cross stitch Back stitch
4	To generate and develop design ideas	● write a design brief for the project based on a set of requirements ● use annotated sketches to develop and communicate their ideas ● use the correct technical vocabulary for the projects they are undertaking ● critically evaluate the quality of the design, manufacture and fitness for purpose of their products as they design and make ● formulate step-by-step plans as a guide to making accurately	Development Function	Sketch Form
5	To use a wider range of tools and equipment to perform practical tasks	● mark out and cut templates / pattern pieces ● tac and pin pattern pieces ● select tools and equipment suitable for the task ● select materials and components suitable for the task ● apply a range of finishing techniques,	Temporary Quality control Fastoning	Manufacture Pattern piece Finish Embroidery
6	To evaluate a final product against a design criteria	● evaluate their ideas and products against their original design specification ● explain what impact products have beyond their intended purpose	Evaluate Sustainability	

Year 6 -cooking

- NC objectives: D: 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
- D: generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design
- M: 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
- E: investigate and analyse a range of existing products
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- C & N: investigate and analyse a range of existing products
- C&N: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work

Lesson number	Learning objective	Pupils will	Vocabulary
1	To discuss what influences our food choices	● discuss the factors that influence our decisions. ● explore how to adapt and use their own recipes ● taste a range of different products and share thoughts / likes / dislikes e.g. bread types, burgers, toppings, sauces. ● explore ingredients in types of food.	factor, function, nutrition, Consume, impact, diet, healthy
2	To conduct research to influence design choice	● conduct market research to influence decision ● unpick a design brief ● work as a group to plan out a selection of recipes including toppings in burgers	adapt, design specification, costing, innovative, manufacturing resources
3	To conduct research to influence design choice	● explore how to actively minimise food waste such as composting fruit and vegetable peelings and recycling food packaging ● use these investigation to influence their recipe design	food waste, microorganisms, environment
4	To work out the cost of a product to influence design choice	● be given a budget to spend on food ● cost their ingredients and record using a spreadsheet ● explore how to make their products in the most effective ways e.g reduce the amount of meat and include vegetables such as grated carrot to bulk their burgers. ● create a final shopping list	adapt, design specification, innovative, manufacturing, resources, costing
5	To generate and develop design ideas	● create their final design of their completed burger using, annotated sketches, cross-sectional and exploded diagrams	adapt, design specification, annotated sketches, cross-sectional, exploded diagrams, innovative, manufacturing, resources, costing
6	Health and safety: preparation and hygiene	● prepare and cook a savoury dish safely and hygienically including, where appropriate, the use of a heat source how to use a range of techniques such as peeling, chopping, slicing, grating, mixing, spreading, kneading and baking ● evaluate how well products achieve their purposes ● evaluate how well products meet user needs and wants	preparation techniques, cooking techniques, utensils, procedures, safety, hygiene

Year 6 - Structures - combination

- NC objectives: D: 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
- M: select from and use a wider range of tools and equipment to perform practical tasks [for example, cutting, shaping, joining and finishing], accurately
- M: 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
- E: evaluate their ideas and products against their own design criteria and consider the views of others to improve their work
- E: understand how key events and individuals in design and technology have helped shape the world
- TK: apply their understanding of how to strengthen, stiffen and reinforce more complex structures

Lesson number	Learning objective	Pupils will	Vocabulary
1	To explore contexts and purposes of structures	● revisit what they already know about structures ● investigate a range of shelters including eg bus shelters, playground shelters, tents, garden shelters, gazebos, canopies, umbrellas, historic shelters ● identify which parts support and strengthen simple structures	Structure, context, purpose, developing
2	To research existing structures and evaluate them	● discuss the task of designing and making a model of an air raid shelter investigate different types of bomb shelters and their purpose ● evaluate the pros and cons to each type	Morrison shelter, Brick built shelter, Anderson shelter, purpose, evaluate
3	To experiment with strengthening structures	● understand the task requirements: each shelter had to be: able to fit a lego man inside, waterproof, able to withstand a 1kg weight placed upon it. ● revisit techniques from year 1, 3 and 4 structure units for making a strong structure. ● experiment with techniques to make a strong structure	Ribbed, laminated, beam, pillars, stability, base, centre of gravity, buttress
4	To use computer-aided design to design a structures	● use CAD to design an air raid shelter ● refer to their design criteria as they design	Tinkercad, design criteria, ribbed, laminated, beam, pillars, stability, base, centre of gravity, buttress
5	To measure, mark out, cut and shape materials	● assemble, join and combine materials and components with some accuracy ● measure, mark out, cut and shape materials and components with some accuracy assemble ● apply a range of finishing techniques, including those from art and design, with some accuracy	cutting jig, cladding, finishing technique, assembling, components,
6	To evaluate the final product	● test their completed shelter ● use their design criteria to evaluate their completed products ● identify the strengths and areas for development in their ideas and products	evaluate, successful, improvements, achieved.