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Design	Make	Evaluate	Technical Knowledge	Cooking and Nutrition

EYFS	**Design Technology in the Early Years** In the Early Years Foundation Stage (EYFS), children learn through a practical and hands on approach. Opportunities within the provision such as building and construction (both large and small), and through creative tasks such as junk modelling, art, 'making' and through creative role play, children develop the key knowledge and skills of Design Technology. In the EYFS, children are given the opportunity to engage in practical Design Technology related tasks in the provision, both child-initiated and through activities initiated by skilled adults. Adults in the EYFS use careful questioning to develop children's metacognitive Design Technology knowledge and skills such as: ● "I wonder what would happen if…" ● "How could we make this better…" ● "How are you going to approach this?" ● "X's idea made me think…" ● "Perhaps we should try…" ● "What if we tried ___ next?" ● "Have you thought about…" ● "This reminds me of when we learnt about…" • Choose the right resources to carry out their own plan - Construction materials outside to make 3 bears cottage/rockets/fire engines… small world construction (lego/duplo/sticklebricks) to make chosen plan (boats in lost and found, different sized furniture in 3 bears cottage), junk modelling to make chosen creations (rockets, boats - do they float or sink?) • Use one-handed tools and equipment, for example, making snips in paper with scissors, holepunch, stapler, paper clips, split pins. • Make imaginative and complex 'small worlds' with blocks and construction kits, such as a city with different buildings and a park. - Using the blocks to build a representation of burgess hill- how can you make the different buildings? Can you make a bridge for the gingerbread man to cross the river- what will you use? How can you make it stronger? • Explore different materials freely, in order to develop their ideas about how to use them and what to make. • Develop their own ideas and then decide which materials to use to express them. • Safely use and explore a variety of materials (paper, card), tools and techniques (scissors, holepunch, stapler, paper clips, split pins, spoons, measuring scales), experimenting with colour, design, texture, form and function. - Make pancake mixture, help to measure out flour/ crack eggs, mix. Make gingerbread men- measure, mix, roll, cut. - Using playdough- knead, roll, cut.

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	• Share their creations, explaining the process they have used. • Use a range of small tools, including scissors, paintbrushes, pencils, holepunch, stapler, paper clips, split pins and cutlery.		
DT	Autumn	Spring	Summer
Y1	Structures A Chair for Baby Bear Children will explore how structures can be designed and constructed to make them stronger, stiffer and more stable. Through practical investigation, they will explore different ways of strengthening and joining materials before designing and making a chair for Baby Bear. Children will investigate how structures are used in the real world.. They will test and evaluate their structures using weights and use what they have learned to improve their designs. Key Vocabulary • Structure • Stable • Rigid • Strong • Design • Layers • Join Key Knowledge Children will understand: • That structures need to be strong, stiff and stable for their intended purpose. • That materials can be strengthened by folding, layering and joining them in different ways.	Mechanisms Make a Skateboard for the London Meed Olympics Children will explore how wheels and axles work together to create a moving mechanism. Through practical investigation, they will explore how wheels can be attached to an axle and how the position, size and shape of wheels can affect movement. Children will research skateboards and investigate what makes a successful skateboard design. They will experiment with different materials and mechanisms, testing wheels and axles before designing and making their own skateboard for the London Meed Olympics. They will evaluate their finished product against their design criteria and consider how it could be improved. Key Vocabulary • Mechanism • Wheel • Axle • Buggy • Skateboard • Spinning • Curved • Edge • Join • Similarities • Design Key Knowledge	Food and Nutrition Fruit Kebabs Children will explore a variety of fruits and investigate where different fruits come from. They will learn about local and tropical fruits and how different climates affect where fruit can grow. Children will explore and describe different fruits using their senses, considering characteristics such as taste, texture, colour, smell and appearance. They will learn how to use a knife safely to prepare fruit and will design and make their own fruit kebab, selecting fruits based on their personal preferences and a range of textures. Children will taste and evaluate their finished fruit kebabs, considering the taste and texture of the different fruits and identifying what they enjoyed and what they might change. Key Vocabulary • Fruit • Local • Tropical • Climate • Hot • Cold • Texture • Soft • Crunchy • Smooth • Hard • Taste • Sweet

	• That the way materials are joined can affect the strength of a structure. • That structures can be tested and improved by identifying weaknesses in their design. <u>Key Skills</u> Children will develop their ability to: • Strengthen paper through folding and layering. • Join materials securely using tape and glue. • Explore and compare different structural designs. • Research different types of bridges and identify similarities and differences. • Build and test structures using weights. • Make observations and record or discuss the results of their testing. • Evaluate their designs orally and suggest ways to make them stronger, stiffer or more stable. • Apply their learning to design and make a chair for Baby Bear. <u>Key Texts</u> • *A Chair for Baby Bear* • *Goldilocks and the Three Bears* <u>Tools and Materials</u> • Paper • Masking tape • Sellotape • Glue • Scissors • Weights for testing	Children will understand: • That a wheel and axle is a simple mechanism that allows an object to move. • That wheels need to be able to turn freely for a vehicle to move effectively. • That an axle connects and supports the wheels. • That the position and size of wheels can affect how a vehicle moves.That different materials can be used to create wheels, axles and the body of a vehicle. • That a successful design needs to meet the needs of its intended user and purpose. • That products can be tested against specific criteria and improved as a result. <u>Key Skills</u> Children will develop their ability to: • Research and identify the features of a successful skateboard. • Explore and test different wheel and axle mechanisms. • Construct simple moving mechanisms using construction materials. • Experiment with different wheels, axles and joining methods. • Design a skateboard, considering its purpose, appearance and functionality. • Select and use appropriate materials and tools to make their design. • Test whether the wheels turn effectively and whether the skateboard moves as intended. • Identify problems and make modifications to improve their design. • Evaluate their finished skateboard against their design criteria.	• Juicy • Design • Evaluate <u>Key Knowledge</u> Children will understand: • That different fruits grow in different parts of the world. • That climate affects where fruit can be grown. • The difference between local and tropical fruits. • That fruits have different tastes, textures, colours and appearances. • That some fruits are soft, crunchy, smooth or hard. • That food preparation requires appropriate tools and safe working practices. • That fruit can be combined in different ways to create an appealing and tasty product. <u>Key Skills</u> Children will develop their ability to: • Identify where different fruits come from. • Research and compare local and tropical fruits. • Use their senses to describe the taste, texture, smell and appearance of different fruits. • Design a fruit kebab by selecting fruits they like and including a range of textures. • Use a knife safely and appropriately to cut fruit. • Assemble fruit safely and carefully using skewers. • Taste and evaluate their finished fruit kebab.

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		• Record and communicate their evaluations. Key Texts • *Skater Cielo* • *Sky Brown* • *Inventor: Skateboards Throughout History*	• Describe what they liked about their product and suggest changes they might make. Specific Tools and Materials • Plastic knives • Skewers • A variety of fresh fruits Key texts • *The world came to my place today* • *Olivers fruit salad*
Yr 2	Mechanisms Create a Moving Picture Children will explore how levers can be used to create movement in a picture. They will investigate how a lever works and explore the difference between fixed and moving parts. Children will research and investigate examples of lever mechanisms before designing and making a Christmas card with a moving lever mechanism. They will experiment with different positions for the lever, using split pins to create a moving mechanism. Children will test and evaluate their designs, considering whether the mechanism works effectively and how it could be improved. Key Vocabulary • Mechanism • Lever • Fixed • Moving • Movement • Pivot • Join	Food and Nutrition Create an Energy Bar Children will explore the role of food in providing the body with energy and learn about the different nutrients found in a range of ingredients. They will investigate the purpose of an energy bar and consider what makes a successful product. Children will research and develop success criteria for their own energy bar, considering factors such as size, taste, texture and nutritional content. They will select suitable ingredients, write a simple recipe and develop their food preparation skills by mashing, mixing and shaping ingredients. Children will taste and evaluate their finished energy bar against their success criteria. Key Vocabulary • Carbohydrates • Dairy • Protein • Fat • Sugar • Healthy • Energy • Ingredient	Textiles Create a Puppet Children will explore how fabrics and textiles can be joined and decorated to create a functional and appealing product. They will investigate a range of existing textile products and explore how different materials, stitches and joining techniques can be used. Children will research existing puppets and consider what makes a successful puppet. They will develop success criteria, design their own puppet and select appropriate fabrics and materials. Children will develop their sewing skills by learning and practising running stitch and blanket stitch, cutting and joining fabric. They will evaluate their finished puppet against their success criteria and identify what worked well and what could be improved. Key Vocabulary • Material • Fabric • Textile • Sewing • Stitch

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	• Design • Evaluate <u>Key Knowledge</u> Children will understand: • That a lever is a simple mechanism that can create movement. • That a lever has a fixed and moving part. • That the fulcrum is the point around which the lever moves. • That split pins can be used to create a pivot or moving joint. • That mechanisms can be incorporated into products to make them functional and engaging. • That products can be tested and modified to improve how they work. <u>Key Skills</u> Children will develop their ability to: • Research and investigate examples of lever mechanisms.Explore how levers move around a fulcrum. • Identify fixed and moving parts within a mechanism. • Design a Christmas card incorporating a lever. • Make accurate holes in card using a pencil and appropriate technique. • Use split pins to create a secure moving joint. • Assemble a simple lever mechanism using cardboard. • Test whether their mechanism moves as intended. • Identify and solve problems during the making process.	• Recipe • Mix • Mash • Texture • Taste • Evaluate • Success criteria <u>Key Knowledge</u> Children will understand: • That food provides the body with energy and helps us to grow and stay healthy. • That different foods contain different nutrients, including carbohydrates, protein and fat. • That some foods contain naturally occurring or added sugars. • That dairy products can provide important nutrients, including protein. • That ingredients can be combined in different ways to create a food product. • That the purpose of a product should influence the ingredients and design choices. • That food products can be tested and evaluated against agreed success criteria. <u>Key Skills</u> Children will develop their ability to: • Research the purpose of an energy bar and identify its key features. • Develop success criteria for a successful energy bar. • Select appropriate ingredients for their design. • Write a list of ingredients and a simple recipe. • Measure and prepare ingredients safely.	• Thread • Needle • Running stitch • Blanket stitch • Measure • Cut • Join • Design • Evaluate • Success criteria <u>Key Knowledge</u> Children will understand: • That fabric and textiles can be used to create a range of functional and decorative products. • That different fabrics have different properties and are suitable for different purposes. • That sewing can be used to join pieces of fabric together. • That different stitches can be used for different purposes. • That a running stitch is a simple stitch used to join or decorate fabric. • That a blanket stitch can be used to join and finish the edges of fabric. • That a product should be designed to meet the needs of its intended user. <u>Key Skills</u> Children will develop their ability to: • Research and investigate existing puppets and textile products. • Identify the features of a successful puppet. • Develop success criteria for their product.

	• Evaluate their finished product and suggest improvements. <u>Specific Tools and Materials</u> • Cardboard • Split pins • Pencil • Blu Tack • Scissors • Drawing and colouring materials <u>Builds On</u> Year 1 – Spring Term: Wheels and Axles / Mechanisms	• Use a fork and spoon to mash and mix ingredients. • Shape and assemble ingredients to create an energy bar. • Taste and evaluate their finished product. • Evaluate whether their energy bar meets their success criteria and suggest improvements. <u>Specific Tools and Materials</u> • Spoon • Fork • Plate • A range of suitable food ingredients <u>Builds On</u> Year 1 – Summer Term: Food and Nutrition – Fruit Kebabs	• Design a puppet and communicate their ideas clearly. • Select appropriate fabrics and materials for their design. • Measure and mark fabric accurately. • Cut fabric safely and accurately. • Thread a needle and use it safely. • Practise and use running stitch and blanket stitch. • Join pieces of fabric to create their puppet. • Evaluate their finished product against their success criteria. • Explain what worked well and identify what could be improved. <u>Key Text</u> *Paddington* Specific Tools and Materials • Scissors • Needles • Thread • Fabric • Fabric pens/decorative materials
Yr 3	Food and Nutrition Seasonal Food Children will develop their understanding of seasonality and how the availability of food changes throughout the year. They will explore where and how a variety of ingredients are grown and processed, and consider why eating seasonal and locally available produce can be beneficial. Children will explore the principles of a healthy and varied diet and learn how different ingredients can be combined to create	Mechanisms Create a Dragon That Moves Using Pneumatics Children will explore pneumatic systems and investigate how air pressure can be used to create movement. They will examine existing products and simple pneumatic mechanisms to understand how air can be transferred through tubes to make parts of a model move. Children will investigate how pneumatics can be used to make the mouth of a dragon open and close. They will experiment with syringes, tubing and balloons to explore how changes in air	Structures Aqueducts Children will explore how structures can be designed and constructed to be strong, stable and secure. They will investigate how the shape, size and arrangement of materials can affect the strength and stability of a structure, developing their understanding of how structures can be reinforced and strengthened. Children will explore the purpose and design of aqueducts and investigate how structures can be constructed to carry and support water over a

	nutritious and appealing dishes. They will prepare and cook a range of seasonal foods, including a fruit crumble and a savoury tart, using a variety of preparation and cooking techniques. Children will also consider the environmental impact of eating food that is out of season, including the resources and energy that may be required to grow, transport or store non-seasonal produce. They will evaluate their finished dishes and consider how their choice of ingredients can contribute to a healthy and sustainable diet. <u>Key Vocabulary</u> • Seasonal • Seasonality • Local • Produce • Ingredient • Healthy • Varied diet • Nutrition • Grown • Reared • Caught • Processed • Harvest • Sustainable • Environment • Transport <u>Key Knowledge</u> Children will understand: • The principles of a healthy and varied diet. • That different foods are available at different times of the year.	pressure can create movement. Children will then design and make a moving dragon, following a design plan and selecting appropriate materials and joining techniques. Throughout the project, children will develop their ability to measure, cut, assemble, join, fix, strengthen and reinforce materials. They will test their pneumatic mechanism, make modifications where necessary and evaluate their finished product against their design plan. <u>Key Vocabulary</u> • Pneumatics • Pneumatic system • Air pressure • Movement • Mechanism • Model • Layout • Size • Measure • Cut • Join • Fix • Strengthen • Reinforce • Assemble • Test • Evaluate <u>Key Knowledge</u> Children will understand: • That pneumatic systems use air pressure to create movement. • That air can be transferred through tubing to move parts of a mechanism. • That syringes can be used to push and pull air within a pneumatic system.	distance. They will experiment with different structural forms, including triangular frames and wider bases, before designing and making their own aqueduct. Throughout the project, children will develop their ability to assemble, join, combine, strengthen, stiffen and secure materials. They will test their structures for strength, stability and waterproofing, making modifications where necessary and evaluating their finished product. <u>Key Vocabulary</u> • Structure • Aqueduct • Frame • Assemble • Join • Combine • Strengthen • Stiffen • Secure • Strong • Stable • Sturdy • Waterproof • Space • Fastening • Reinforce • Support <u>Key Knowledge</u> Children will understand: • That structures need to be strong, stable and sturdy for their intended purpose. • That the wider the base, the more stable a structure is likely to be. • That triangular frames can be used to create stronger structures.

	• What seasonal food means and why some foods are naturally available in particular seasons. • Where and how a variety of ingredients are grown, reared, caught and processed. • That food can be transported long distances when it is not available locally or in season. • That producing, transporting and storing non-seasonal food can have an environmental impact. • That choosing seasonal and locally available ingredients can help reduce some of the environmental impacts associated with food production and transportation. • That different cooking techniques can be used to transform ingredients into a finished dish. <u>Key Skills</u> Children will develop their ability to: • Identify and research seasonal ingredients. • Investigate where and how different ingredients are produced. • Select suitable seasonal ingredients for a healthy and varied diet. • Prepare ingredients safely and hygienically. • Use knives safely to cut, chop and prepare ingredients. • Use chopping boards correctly and safely. • Prepare and cook a variety of dishes using different techniques.	• That changing the amount of air or pressure within a system can affect movement. • That the position and layout of components can affect how effectively a mechanism works. • That structures may need to be strengthened or reinforced to support a moving mechanism. • That mechanisms can be incorporated into models to make them functional and interactive. <u>Key Skills</u> Children will develop their ability to: • Investigate existing products and simple examples of pneumatic mechanisms. • Explore how pneumatics can be used to create movement. • Experiment with syringes, tubing and balloons to investigate air pressure. • Investigate different ways of making a dragon's mouth open and close. • Develop and communicate a design plan for their dragon. • Measure and cut materials accurately. • Assemble and join materials using appropriate techniques. • Select and use tools safely. • Use different joining methods to fix components securely. • Strengthen and reinforce the structure where necessary. • Follow a design plan when making their product. • Test and modify the pneumatic mechanism to improve its movement.	• That the frame forms the base structure, giving the product its shape and supporting other parts. • That frames are often constructed before additional parts are added. • That structures can be reinforced and strengthened by changing their shape, adding supports or using different joining techniques. • That an aqueduct is a structure designed to carry water from one location to another. • That materials and joining methods need to be selected according to the purpose of the structure. • That structures can be tested and modified to improve their strength, stability and functionality. <u>Key Skills</u> Children will develop their ability to: • Research and investigate the purpose and structure of aqueducts. • Explore different ways of constructing strong and stable frames. • Assemble and join materials securely. • Combine materials and components to create a complete structure. • Strengthen and stiffen structures using appropriate techniques. • Create and use triangular frames to improve strength. • Construct a wide and stable base. • Select appropriate fastenings and joining techniques. • Test their aqueduct for strength, stability and waterproofing.

	• Make a fruit crumble using appropriate preparation and cooking techniques. • Make a savoury tart, selecting and preparing suitable seasonal ingredients. • Evaluate the taste, texture, appearance and nutritional qualities of their finished dishes. • Consider the environmental impact of their ingredient choices. <u>Specific Tools and Materials</u> • Knives • Chopping boards • A range of seasonal ingredients • Appropriate cooking equipment <u>Builds On</u> Year 2 – Spring Term: Food and Nutrition – Energy Bars	• Evaluate their finished product against their design plan and identify what worked well and what could be improved. <u>Key Text</u> • *The Egg* • *Chinese New Year* Specific Tools and Materials • Syringes • Piping/tubing • Balloons • Split pins • Glue • Tape • Blu Tack • Paper clips • Rubber bands • Treasury tags • Stapler • Card and construction materials <u>Builds On</u> Year 2 – Autumn Term: Mechanisms – Levers	• Identify weaknesses in their structure and make improvements. • Evaluate their finished product against their design criteria. <u>Builds On</u> Year 1 – Autumn Term: Structures – A Chair for Baby Bear

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Yr 4	Mechanisms Winding Up – Create a Moving Toy Children will explore how mechanisms can be used to create different types of movement. They will investigate a range of existing moving toys and products, handling and exploring them to understand how their mechanisms work. Children will identify and label the different components and investigate how movements such as rotating, sliding and turning can be created. They will investigate the relationship between a rotating shaft and moving parts, including followers and sliders, before designing and constructing their own moving toy. Throughout the project, children will develop their ability to create and test prototypes, selecting and combining appropriate components and making modifications to improve the movement and functionality of their finished product. Key Vocabulary • Mechanism • Handle • Lever • Fulcrum • Prototype • Rotate • Rotating shaft • Component • Dowel • Follower • Slider • Movement • Turning • Sliding Key Knowledge Children will understand: • That a mechanism is a system of parts that work together to create or control movement. • That different mechanisms can create	Textiles Sewing – Butterflies Children will develop their knowledge and skills in textiles and sewing by designing and creating a fabric butterfly. They will research butterflies and explore a range of fabrics, patterns and decorative techniques before planning their own design. Children will develop their sewing skills by learning and practising cross stitch, running stitch and blanket stitch. They will learn how to thread a needle, secure thread with a knot and join and decorate fabric. Children will also explore how to sew on a button and use cutting and shaping techniques to create their butterfly. Throughout the project, children will consider how to make their design simple, achievable and effective, selecting appropriate materials and stitches for their intended outcome. They will evaluate their finished butterfly and consider how their sewing skills and design could be improved. Key Vocabulary • Textile • Fabric • Sewing • Stitch • Thread • Needle • Cross stitch • Running stitch • Blanket stitch • Button • Cut • Shape • Join • Design • Pattern • Evaluate Key Knowledge Children will understand: • That textiles are materials made from fibres that can be used to create a range	Food and Nutrition Make a Flavoured Bread Children will explore how bread is made from wheat and investigate the process involved in turning ingredients into dough and, ultimately, a finished loaf. They will learn about the role of yeast and how fermentation helps dough to rise. Children will work collaboratively to research and design their own flavoured bread, exploring the difference between sweet and savoury flavours. They will develop success criteria for their product before selecting ingredients and preparing their dough. Children will develop practical skills including measuring, mixing, kneading and proving, before baking and evaluating their finished bread. Through this project, children will develop their understanding of how ingredients change during the cooking process and how careful preparation and accurate measurements contribute to a successful finished product. Key Vocabulary • Wheat • Harvest • Bread • Yeast • Ferment • Fermentation • Process • Dough • Sweet • Savoury • Knead • Prove • Bake • Ingredient • Recipe • Measure • Evaluate Key Knowledge Children will understand:

Bravery.....Community.....Curiosity.....Resilience.....Respect

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Yr 5	Food and Nutrition Seasonal Eating – Pasta with Tomato Sauce Children will develop their understanding of seasonal eating and explore how seasonal ingredients can be used to create a healthy, nutritious and appealing meal. They will investigate the availability and properties of different ingredients and use the results of their research to inform their design decisions. Children will draw up a design specification for their pasta dish, considering the intended user, ingredients, appearance, taste and nutritional value. They will develop their practical food preparation skills by accurately measuring and weighing ingredients, safely preparing vegetables and using a range of tools and equipment. Children will apply the principles of basic food hygiene and safe cooking practices, including understanding hazards associated with using an oven. They will prepare and cook their pasta with tomato sauce before evaluating the finished product against their original design specification. Children will seek feedback from others and consider alternative methods and improvements for future versions. Key Vocabulary • Seasonal • Seasonality • Design specification • Ingredients • Evaluate • Research • Investigate • Method	Structures Scaled Shelter Building Children will explore how structures can be designed and constructed to be strong, stable, weatherproof and fit for purpose. They will investigate a range of shelters and consider how their shape, materials, scale and construction methods contribute to their strength, stability and functionality. Children will compare different types of shelters and identify features that make them suitable for their intended purpose. They will design and construct a scaled shelter for a LEGO figure, using appropriate materials and joining techniques. Children will explore how structures can be strengthened, stiffened and reinforced through the use of triangular frames, braces and secure joints. Throughout the project, children will develop their practical skills by working with a range of tools and materials. They will test their shelters for strength, stability and weather resistance, using the results to modify and improve their designs. They will also apply finishing techniques to strengthen their models and improve their appearance. Key Vocabulary • Structure • Shelter • Scale • Assemble • Join • Combine • Strengthen • Stiffen • Reinforce	Digital Systems, Programming and Structures Create a Temperature Monitor for Pets Children will explore how electronic monitoring devices, sensors and computer programming can be used to solve real-world problems. They will research the environmental needs of different animals and consider how a temperature-monitoring device could help an animal carer maintain a suitable habitat. Children will use micro to program a temperature monitor that measures the ambient temperature and provides an audible or visual alert when the temperature moves outside a specified range. They will develop their understanding of programming through the use of loops, variables and conditional statements, explaining how each part of their program contributes to the function of the device. Alongside the electronic system, children will design and develop a suitable protective case or housing for their temperature monitor. They will generate and test ideas using LEGO before creating and refining a 3D CAD model in Tinkercad. Children will explore the functional and aesthetic properties when selecting materials. Key Vocabulary • Monitoring device • Electronic • Sensor • Thermometer • Thermoscope • Ambient • Temperature • Alert • Micro • Programming

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	• Nutrition • Hygiene • Weigh • Measure • Mark out • Prepare • Cook • Simmer • Boil • Sauce • Evaluate <u>Key Knowledge</u> Children will understand: • What seasonal eating means and why ingredients are available at different times of the year. • That research and information from reliable sources can be used to inform food design decisions. • That a design specification identifies the requirements a finished product should meet. • That ingredients can be selected according to their seasonality, nutritional value, taste and suitability for the intended user. • That accurate measuring and weighing are important when following and adapting a recipe. • That different cooking methods can affect the taste, texture and appearance of food. • The importance of basic food hygiene when preparing and cooking food.	• Secure • Strong • Stable • Sturdy • Weatherproof • Waterproof • Frame • Brace • Fastening • Support • Structure • Space • Finish <u>Key Knowledge</u> Children will understand: • That structures should be functional, appealing and fit for purpose. • That the wider the base, the more stable a structure is likely to be. • That triangular frames can be used to create stronger structures. • That a frame is the base structure that gives shape and supports other parts and is usually constructed first. • That braces can form triangular frames to support rectangular corners and make structures more sturdy. • That structures can be strengthened, stiffened and reinforced by adding supports and using appropriate joining techniques. • That the materials and fastenings used should be selected according to the purpose of the structure.	• Programming loop • Programming comment • Conditional statement • Variable • Value • Duplicate • Copy • Event • Design brief • Design criteria • Research • Development • Model • CAD • 3D model • Tinkercad • Workplane • Group • Ungroup • Plastic • Microplastics • Synthetic • Decompose • Sustainability • Durable • Water-resistant • Transparent • Opaque <u>Key Knowledge</u> Children will understand: • That a device is a piece of equipment created for a particular purpose or task. • That monitoring devices observe, measure and record information.

	• The potential hazards associated with cooking equipment, including ovens, and how to reduce risks. • That finished products can be evaluated against their original design specification and improved using feedback. <u>Key Skills</u> Children will develop their ability to: • Research seasonal ingredients and use information sources to inform their design ideas. • Draw up a design specification for their pasta dish. • Use research and investigation to select appropriate ingredients and cooking methods. • Suggest and compare alternative methods of making. • Use knives and other kitchen equipment safely and accurately. • Apply basic food hygiene and safe food preparation practices. • Recognise and manage hazards associated with cooking, including the use of ovens. • Prepare and cook a pasta dish with tomato sauce. • Evaluate the finished product against the original design specification. • Evaluate the product personally and gather feedback from others. • Use feedback and evaluation to suggest improvements to the recipe, method or finished product. <u>Specific Tools and Materials</u>	• That a shelter needs to provide appropriate space, protection and stability for its intended user. • That finishing techniques can improve both the strength and appearance of a finished product. • That testing a structure can identify weaknesses and inform improvements to its design. <u>Key Skills</u> Children will develop their ability to: • Research and compare different types of shelters. • Identify features that make shelters strong, stable and fit for purpose. • Use scale when designing and constructing a shelter for a LEGO figure. • Develop a detailed design based on the needs of the intended user. • Select appropriate materials and joining methods. • Assemble, join and combine materials accurately. • Strengthen, stiffen and reinforce structures using braces, triangular supports and secure joints. • Use a range of tools safely and accurately. • Construct a scaled shelter using natural and manufactured materials. • Test their shelter for strength, stability and weather resistance. • Identify weaknesses and make modifications to improve their design. • Apply appropriate finishing techniques to strengthen and improve the appearance of their model.	• That a sensor is a device that detects and responds to changes in the environment for a particular purpose. • That a temperature sensor can be used to monitor ambient temperature. • That conditional statements are rules that are followed when particular conditions are met. • That a programmed system can use a sensor input to trigger an audible or visual alert. • That a programming loop allows instructions to be repeated. • That variables and values can be used to store and work with changing information. • That a monitoring device can help an animal carer identify when environmental conditions are outside a suitable range. • That a virtual model is a digital representation of a product or structure. • That CAD allows designers to create, modify and refine 3D models before manufacture. <u>Key Skills</u> Children will develop their ability to: • Research the environmental needs of a particular animal using books and reliable online sources. • Develop design criteria based on their research and the needs of the animal. • Create a design brief for their temperature-monitoring system and protective case. • Generate and compare multiple housing ideas using LEGO.

	• Knives • Chopping boards • Measuring equipment • Weighing scales • Appropriate cooking equipment • Oven • Seasonal ingredients <u>Builds On</u> Year 3 - eating seasonally Year 4 – Summer Term: Food and Nutrition – Make a Flavoured Bread	• Evaluate their finished shelter against their design criteria and intended purpose. <u>Specific Tools and Materials</u> • Saws • Drills • Hammers • Nails • Wood glue • Glue gun • Joining corners • Card triangles • Wood • Cardboard • Natural materials • LEGO figures for testing <u>Builds On</u> Year 3 – Summer Term: Structures – Aqueducts	• Investigate the advantages and disadvantages of traditional modelling and CAD modelling. • Use Tinkercad to create a virtual 3D model. • Place, move, resize and manipulate 3D objects using CAD. • Change the properties of 3D objects and combine objects using group and ungroup functions. • Explore the functional and aesthetic properties of different materials. • Program a micro to monitor ambient temperature. • Use variables, loops and conditional statements within a program. • Program an audible or visual alert when the temperature moves outside a specified range. • Test, debug and develop their program to ensure it works as intended. • Explain the key functions of their program and how the programmed features would benefit an animal carer. • Suggest ways in which materials and products could be made or used more sustainably. • Evaluate their electronic system and 3D housing against their design criteria. <u>Specific Tools and Materials</u> • Micro • LEGO • Tinkercad • Computer or tablet • Suitable modelling materials and consumables

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Yr 6	Electrical Systems Torches – Design and Make a Head Torch Children will explore how electrical systems and circuits can be used to create a functional product. They will investigate a range of existing helmets and head torches, identifying the purpose and function of different components and considering how the products have been designed for their intended users. Children will develop a design brief and specification for a head torch aimed at a specific target audience. They will design and represent an electrical circuit using both schematic and pictorial diagrams, as well as creating a computer model of their design. Children will explore how components such as batteries, wires, LEDs and resistors work together to form a circuit. Children will then construct their circuit, integrate it into their head torch design and test the finished product. They will evaluate their head torch against their design requirements, considering both its functionality and appearance and identifying potential improvements. <u>Key Vocabulary</u> • Electrical system • Purpose • Simulation • Design brief • Specification • Design requirements • Component • Circuit • Circuit diagram	Food and Nutrition WWII Soup Children will explore how food was grown, reared, caught and processed, and investigate how food choices were influenced by rationing and availability during the Second World War. They will consider how people made nutritious meals using limited and seasonal ingredients and explore the importance of a balanced diet. Children will develop their food preparation skills by safely chopping, peeling, grating and blending a range of ingredients. They will learn and apply safe knife techniques, including the claw grip and bridge grip, while following good food hygiene practices. Children will write and follow a recipe to make their soup before tasting and evaluating the finished dish. Through this project, children will develop their understanding of vitamins, minerals and fibre and consider how different ingredients contribute to a healthy and balanced diet. <u>Key Vocabulary</u> • Reared • Caught • Processed • Ingredient • Nutrition • Vitamins • Minerals • Fibre • Balanced diet • Food pyramid • Rationing • Hygiene • Food safety • Hazard	Structures and Mechanisms Design and Make Play Props Children will draw upon and apply the knowledge, skills and techniques developed throughout their Design and Technology learning across the school. This project will provide an opportunity for children to work with greater independence, selecting appropriate materials, tools, joining techniques and mechanisms to create purposeful and functional play props. Children will begin by exploring a wide range of materials, tools and joining techniques, allowing them to investigate their properties and decide which are most appropriate for their intended product. They will research existing props and consider their purpose, intended user, appearance, functionality and durability before developing a design brief and specification. Children will design and make their own play props, ensuring that their products are purposeful, appealing and fit for purpose. Where appropriate, props will incorporate moving parts and mechanisms, such as levers, wheels and axles, gears, pulleys and cams. Children will work through the full design process, from research and initial ideas through to making, testing, modifying and evaluating their finished products. This project will encourage children to demonstrate their ability to select, combine and apply techniques independently, making informed decisions about how their product should be constructed and improved. <u>Key Vocabulary</u> • Design • Design brief • Design specification

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	• Schematic • Pictorial • Cross-section • LED • Resistor • Battery • Wire • Current • Switch • Soldering • Prototype • Target audience • Function • Evaluate <u>Key Knowledge</u> Children will understand: • That an electrical system is made up of components that work together to perform a particular function. • That a complete circuit is needed for electrical current to flow. • That batteries provide electrical energy to a circuit. • That wires provide a pathway for electrical current between components. • That an LED (light-emitting diode) can be used to produce light in a circuit. • That a resistor can be used to limit the flow of current within a circuit. • That switches can be used to control whether a circuit is complete or broken. • That electrical circuits can be represented using schematic diagrams and pictorial representations.	• Allergic reaction • Cross-contamination • Chop • Peel • Grate • Blend • Claw grip • Bridge grip • Recipe • Evaluate <u>Key Knowledge</u> Children will understand: • The difference between food that is grown, reared, caught and processed. • That food availability and choice were affected by rationing during WWII. • That people could use available ingredients creatively to make nutritious meals. • That a balanced diet contains a variety of foods that provide the nutrients the body needs. • That vitamins, minerals and fibre play important roles in maintaining good health. • That different ingredients provide different nutrients. • The importance of following food hygiene and safety rules when preparing food. • That hazards can occur when using knives, graters, peelers, blenders and other kitchen equipment. • How cross-contamination can occur and ways to reduce the risk.	• Purpose • Function • Target audience • Structure • Mechanism • Component • Prototype • Material • Properties • Assemble • Join • Strengthen • Reinforce • Secure • Evaluate • Modify • Refine • Lever • Wheel • Axle • Gear • Pulley • Cam • Solder • Stitch • Cross stitch • Running stitch <u>Key Knowledge</u> Children will understand: • That successful products are designed to be purposeful, functional, appealing and fit for purpose. • That different materials have different properties and should be selected according to their intended use.

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	• That a design brief and specification identify the purpose, user and requirements of a product. • That products should be designed to meet the needs of a specific target audience. • That simulation and computer modelling can be used to develop and test designs before making. • That different components have specific functions and need to be connected appropriately for a circuit to work. <u>Key Skills</u> Children will develop their ability to: • Investigate a range of existing head torches and helmets, handling and examining products where possible. • Annotate existing products and identify the function of different components. • Identify the needs of a specific target audience. • Develop a design brief and design specification for a head torch. • Establish clear design requirements based on the intended user. • Design an electrical circuit for their head torch. • Represent their circuit using schematic and pictorial diagrams. • Create and explore a computer model or simulation of their circuit. • Select and connect appropriate electrical components. • Build and test a working circuit.	• That food allergies can cause allergic reactions and that ingredients need to be checked carefully. • That recipes provide instructions and quantities to help produce a consistent finished product. <u>Key Skills</u> Children will develop their ability to: • Research food and cooking during WWII and investigate how rationing influenced recipes. • Identify how ingredients have been grown, reared, caught or processed. • Consider the nutritional value of ingredients when planning a soup. • Write a clear and appropriately sequenced recipe. • Prepare ingredients safely and hygienically. • Use a knife safely using the claw grip and bridge grip. • Peel and chop vegetables accurately. • Grate ingredients safely. • Blend ingredients using appropriate equipment. • Follow a recipe and use accurate measurements. • Apply appropriate food hygiene practices throughout the preparation and cooking process. • Identify potential hazards and take appropriate steps to reduce risk. • Taste and evaluate the finished soup. • Evaluate the soup for taste, texture, appearance and nutritional value and suggest possible improvements.	• That different tools and joining techniques are suited to different materials and purposes. • That structures can be strengthened, stiffened and reinforced to improve their stability and durability. • That mechanisms can be used to create and control movement. • That levers, wheels and axles, gears, pulleys and cams can be incorporated into products to create different types of movement. • That a product can be constructed using a combination of different materials and techniques. • That prototypes can be used to test ideas and identify problems before completing a final product. • That a design can be developed and refined in response to testing and feedback. • That careful planning and accurate making contribute to the quality and functionality of a finished product. • That designers need to consider the needs of the intended user and purpose throughout the design process. <u>Key Skills</u> Children will develop their ability to: • Research and analyse existing play props and identify their purpose and function. • Develop a design brief and detailed design specification. • Explore and test a range of materials and tools before deciding how their product will be made.

	• Integrate the electrical system into their head torch design. • Use tools and equipment safely and accurately. • Test their finished product against their design requirements. • Evaluate the functionality, appearance and suitability of their head torch. • Use feedback and testing to identify improvements to their design. <u>Specific Tools and Materials</u> • Glue gun • Battery/battery pack • Wires • LEDs • Resistors • Switches • Suitable construction materials • Computer or tablet for simulation and modelling <u>Builds On</u> Year 5 – Summer Term: Micro – Creating a Temperature Monitor and Designing a Suitable Case	<u>Specific Tools and Materials</u> • Chopping boards • Knives • Peelers • Graters • Blender • Measuring equipment • Suitable cooking equipment • A range of vegetables and other ingredients <u>Builds On</u> Year 5 – Autumn Term: Food and Nutrition – Seasonal Eating: Pasta with Tomato Sauce	• Select appropriate materials based on their properties and intended purpose. • Measure, mark out and cut materials accurately. • Use a range of cutting tools safely and appropriately, including scissors, saws, wire cutters and fabric scissors. • Select and use a variety of joining techniques, including glue, glue guns, wood glue, textile techniques such as cross stitch and running stitch where appropriate. • Apply appropriate techniques when working with wood, fabric, cardboard, paper and metal. • Use electrical techniques, including soldering, where appropriate and with suitable supervision. • Design and construct products containing moving mechanisms. • Select and incorporate appropriate levers, wheels and axles, gears, pulleys and cams. • Create and test prototypes before producing their final prop. • Assemble, join, strengthen and reinforce their product to improve its stability and durability. • Work safely, independently and accurately with a range of tools and materials. • Test their finished product against their design specification. • Gather feedback from others and use it to refine and improve their product. • Evaluate the functionality, appearance, quality and suitability of their finished prop. <u>Materials</u>

			Children will have opportunities to explore and select from a range of materials, including: • Fabric • Wood • Metal • Cardboard • Paper • Wire • Recycled and reclaimed materials <u>Tools and Equipment</u> Depending on the requirements of their individual designs, children may use: • Scissors • Saws • Wire cutters • Fabric scissors • Glue • Glue guns • Wood glue • Nails • Staples and staplers • Needles and thread • Measuring and marking equipment • Construction and joining equipment <u>Mechanisms</u> Children may incorporate one or more of the following into their play props: • Levers • Wheels and axles • Gears • Pulleys • Cams • Other appropriate moving mechanisms <u>Builds On</u> All previous Design and Technology learning across Key Stages 1 and 2, providing children with an

			opportunity to independently apply and demonstrate the full range of knowledge, skills and techniques developed throughout their time at school.