

# Year 1 DT Spring Term – Chair Designer

## Design Brief/National Curriculum Objectives (KS1)

**To design and construct a chair to be used by miniatures in a doll's house.**

### 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, [...].

### Make:

- Select from and use a range of tools and equipment to perform practical tasks;
- Select from and use a wide range of materials and components, including construction materials, [...] according to their characteristics.

### Evaluate:

- Explore and evaluate a range of existing products;
- Evaluate their ideas and products against design criteria.

### Technical knowledge:

- Build structures, exploring how they can be made stronger, stiffer and more stable.

## Key Skills

- To use their own ideas to make something;
- To explain to others how to make a product;
- To choose appropriate equipment and tools;
- To measure, mark out, cut out and shape a range of materials with help, including cutting along straight and curved lines and cutting out templates;
- To express likes and dislikes about what has been made and attempt to explain why;
- To talk about designs as they develop, identifying things that are good and things that could be changed.

## Tools/Equipment/Ingredients

Some materials that could be used are:



## Diagrams/Images/Symbols



## Key Knowledge/Facts/Processes

<b>What is a doll's house?</b>	Doll's houses were also known as 'baby houses' when they were first made in Europe in the 16 <sup>th</sup> century. To begin with, rich families had a doll's house as a replica of their house to show off, but the small people and furniture inside became toys for children to play with in Victorian times. The front wall of the doll's house opens to show the inside of the house.
<b>What other miniature toys can children play with?</b>	Miniature figurines have been played with by children for centuries. Some of the most popular are toy soldiers and people made from Lego, which has been voted one of the greatest toys of all time.
<b>What is the main job of a chair?</b>	A chair is designed for someone to sit on. It has a back piece and seat piece of material joined together at a right angle, and four legs of the same length to keep the seat off the floor.

## Subject Specific Vocabulary

<b>Construct</b>	To build or make something.
<b>Cut</b>	To divide into pieces with a sharp object, such as scissors or a knife.
<b>Design</b>	A sketch, model or plan of something to be made.
<b>Equipment</b>	Items needed to build with, such as empty boxes and lollipop sticks.
<b>Evaluate</b>	To assess the strengths and development points of something.
<b>Figurine</b>	A small statue made of different materials that looks like a living thing.
<b>Join</b>	A place or line where two or more things are connected or fastened together.
<b>Material</b>	The different types of item used to make something.
<b>Measure</b>	To determine the size of something.
<b>Miniature</b>	A very small version of something.
<b>Replica</b>	An exact copy or model of something, usually in a smaller size than the original.
<b>Template</b>	A shape or pattern used as a guide to make something.
<b>Tools</b>	An object used to carry out a particular function.

# Year 2 DT Spring Term – Puppets (The Great Fire of London)

## Design Brief/National Curriculum Objectives (KS1)

**To create a stick puppet to use in a performance depicting the events of the Great Fire of London.**

### Design:

- Design purposeful, functional, appealing products for themselves and other users based on design criteria.

### Make:

- Select from and use a range of tools and equipment to perform practical tasks;
- Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.

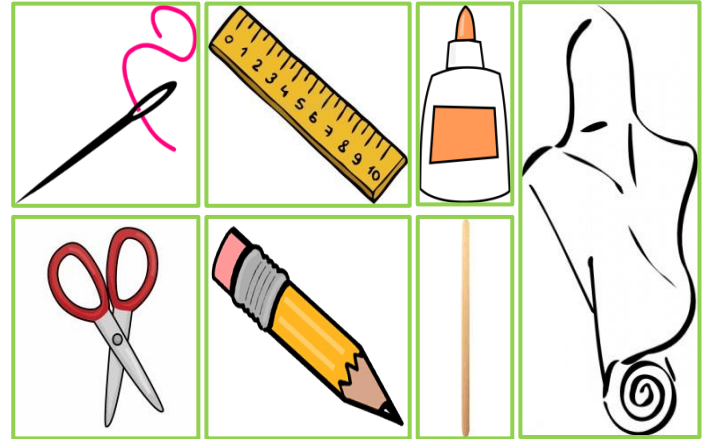
### Evaluate:

- Evaluate their ideas and products against design criteria.

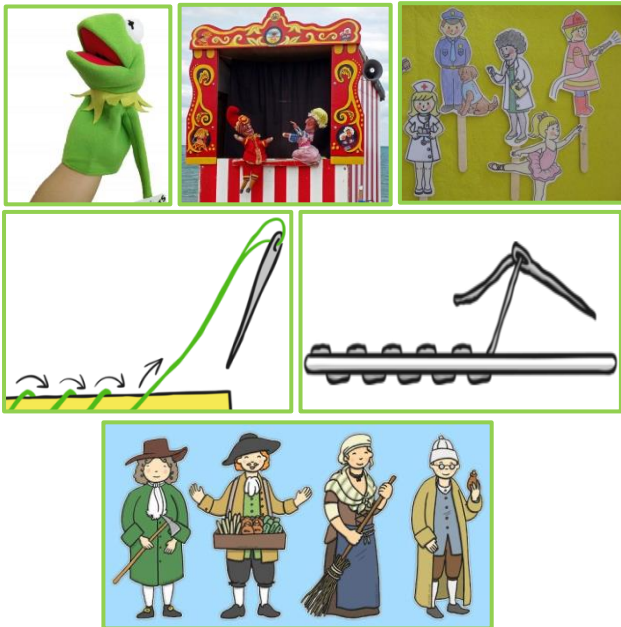
## Key Skills

- To choose suitable tools and materials and give reasons for their choice;
- To measure and mark out materials accurately;
- To join fabrics/textiles using a range of materials, such as thread, glue, staples and tape;
- To decorate fabrics/textiles with a range of materials, such as buttons, beads, sequins, braids and ribbons.

## Tools/Equipment/Ingredients



## Diagrams/Images/Symbols



## Subject Specific Vocabulary

<b>Animate</b>	To bring something to life.
<b>Cut</b>	To divide into pieces with a sharp object, such as scissors or a knife.
<b>Design</b>	A sketch, model or plan of something to be made.
<b>Evaluate</b>	To assess the strengths and development points of something.
<b>Fabric</b>	A cloth produced by weaving or knitting fibres.
<b>Join</b>	A place or line where two or more things are connected or fastened together.
<b>Material</b>	The different types of item used to make something.
<b>Measure</b>	To determine the size of something.
<b>Over Stitch</b>	A stitch that neatens edges and prevents fabrics from fraying.
<b>Running Stitch</b>	A stitch where the needle and thread are run through the fabric.
<b>Template</b>	A shape or pattern used as a guide to make something.
<b>Textile</b>	A type of cloth or woven fabric.
<b>Tools</b>	An object used to carry out a particular function.

## Key Knowledge/Facts/Processes

<b>What was the Great Fire of London?</b>	A fire started in a London bakery in September 1666 and quickly spread through the crowded streets. The buildings were made of dry wood and burnt easily. London citizens, firefighters and even soldiers helped to put out the fire, which lasted for five days and destroyed around 90% of the city.
<b>What is puppetry?</b>	Puppetry is a type of theatrical performance that uses the movement of puppets to represent the movement of animals and human beings. Puppets are animated, or made to move, by a puppeteer.
<b>How were puppets originally used?</b>	Puppets can be animated either by using strings connected to a frame above, or by using your hand. Hand puppets are easy to transport and use in performances, and have been used for many years in seaside shows like Punch and Judy, television and short films, such as The Muppet Show.

# Year 3 DT Spring Term – Joining (Anglo-Saxon Outfits)

## Design Brief/National Curriculum Objectives (KS2)

**To create a miniature outer garment to represent the clothing of a typical, early Anglo-Saxon villager (male or female).**

### Design:

- Use research and develop design criteria to inform the design of [...] functional, appealing products that are fit for purpose [...].

### Make:

- Select from and use a wider range of tools and equipment to perform practical tasks [...] accurately;
- Select from and use a wider range of materials [...], including [...] textiles [...], according to their functional properties and aesthetic qualities.

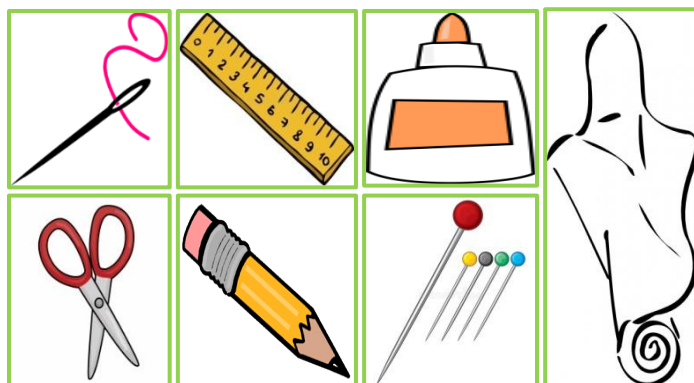
### Evaluate:

- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

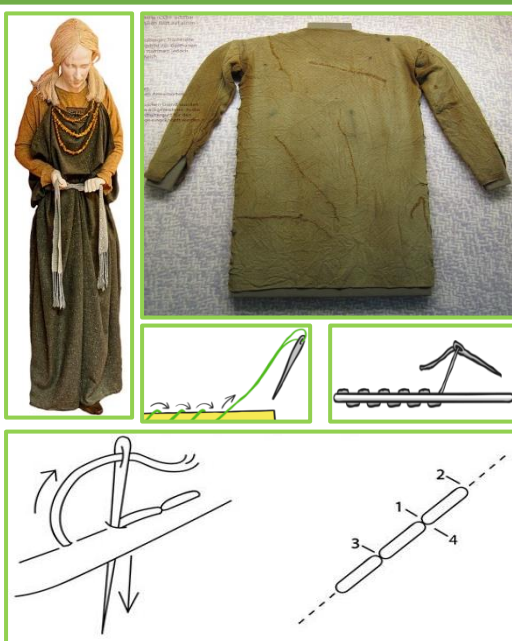
## Key Skills

- To make a textile choice based upon its suitability and appearance;
- To join textiles together using appropriate stitching;
- To understand the need for seam allowance and adjust designs accordingly;
- To select the most appropriate techniques and materials to add detail and decoration.

## Tools/Equipment/Ingredients



## Diagrams/Images/Symbols



## Subject Specific Vocabulary

<b>Applique</b>	To apply by stitching or gluing.
<b>Back Stitch</b>	A stitch that overlaps to create strength in a seam.
<b>Design</b>	A sketch, model or plan of something to be made.
<b>Evaluate</b>	To assess the strengths and development points of something.
<b>Fabric</b>	A cloth produced by weaving or knitting fibres. The Anglo-Saxons used animal wool to produce their fabrics.
<b>Garment</b>	An item of clothing.
<b>Measure</b>	To determine the size of something.
<b>Over Stitch</b>	A stitch that neatens edges and prevents fabrics from fraying.
<b>Running Stitch</b>	A stitch where the needle and thread are run through the fabric.
<b>Seam</b>	A line where two pieces of fabric are sewn together.
<b>Stitch</b>	A loop of thread or yarn generated by using a needle in sewing, knitting or crocheting.
<b>Template</b>	A shape or pattern used as a guide to make something.
<b>Textiles</b>	A type of cloth or woven fabric.
<b>Tools</b>	An object used to carry out a particular function.
<b>Tunic</b>	A loose garment that was usually knee length and without sleeves.

## Key Knowledge/Facts/Processes

<b>Who were the Anglo-Saxons?</b>	Three European tribes from mainland Europe, known as the Anglo-Saxons, invaded, and settled in, Britain at the end of Roman occupation in the 5 <sup>th</sup> century AD. They remained for centuries and were themselves invaded by the Vikings towards the end of the 8 <sup>th</sup> century.
<b>What items of clothing did typical Anglo-Saxons wear?</b>	Because the Anglo-Saxons used the natural resources around them, most of what they wore was made from wool and cloth taken from animals. Their clothing changed over time and was different for men and women: it is thought that women long gowns over a sleeved undergarment, whilst men wore tunics and trousers with a cloak on top.
<b>What is joining?</b>	The word join means to link or connect. In sewing, a range of stitches are used to join textiles or pieces of fabric together. Different types of thread can also be used to strengthen a product or garment.



# Year 4 DT Spring Term – Strengthening Structures

## Design Brief/National Curriculum Objectives (KS2)

**To design and construct a bridge to support the weight of a model railway track and goods train.**

### Design:

- Use research and develop design criteria to inform the design of [...] functional [...] 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 [...] diagrams, prototypes [...].

### Make:

- Select from and use a wider range of tools and equipment to perform practical tasks accurately;
- Select from and use a wider range of materials and components, including construction materials [...], according to their functional properties [...].

### 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 [...] individuals in design and technology have helped shape the world.

### Technical knowledge:

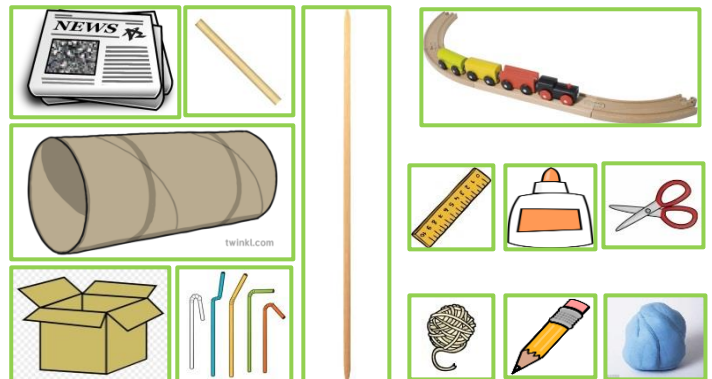
- Apply their understanding of how to strengthen, stiffen and reinforce more complex structures.

## Key Skills

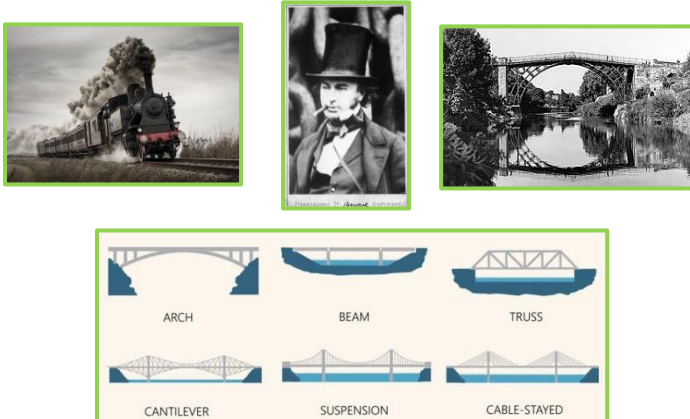
- To use and apply an understanding of how to strengthen, stiffen and reinforce more complex structures;
- To choose materials based on their strength and suitability;
- To measure and mark materials accurately, according to the most appropriate unit of measurement (mm/cm);
- To create a prototype design to help develop initial ideas further;
- To create a final product based on initial designs and prototypes;
- To work collaboratively to effectively evaluate and critique throughout the design process, identifying strengths and weaknesses as appropriate.

## Tools/Equipment/Ingredients

### Possible material choices could include:



## Diagrams/Images/Symbols



## Subject Specific Vocabulary

<b>Adhesive</b>	A substance used for sticking objects or materials together.
<b>Assemble</b>	To fit, or put, parts together.
<b>Bear</b>	To support or carry the weight of someone or something.
<b>Criteria</b>	The points or standards to which something is judged or assessed.
<b>Evaluate</b>	To judge or assess the strengths or weaknesses of something using criteria.
<b>Frame</b>	A solid structure used to surround something and reinforce it.
<b>Isambard Kingdom Brunel</b>	A Victorian engineer and inventor, who built railways, bridges and the first steam ship during the Industrial Revolution.
<b>Load (a)</b>	The weight of someone or something.
<b>Load (b)</b>	A heavy object that is being carried by someone or something.
<b>Materials</b>	A substance used to make something from.
<b>Prototype</b>	A test version of a product which is used to help develop the final design.
<b>Reinforce</b>	To make a structure stronger.
<b>Span</b>	The length that something extends across, such as a bridge or arch.
<b>Structure</b>	A building, or other object, constructed from several parts.

## Key Knowledge/Facts/Processes

<b>When did the railways become important in Victorian Dudley?</b>	Isambard Kingdom Brunel designed and opened the first railway through Dudley in 1850. It allowed coal and other goods to be transported more quickly than by horse or barges. The network eventually linked Dudley to the rest of the country, creating important trade and transport links.
<b>Why are railway bridges necessary?</b>	Physical geographical features like rivers and valleys create obstacles that are difficult, or even impossible, to cross. Railway bridges allow trains to pass over an obstacle without endangering their cargo or passengers, or causing damage to the environment.
<b>How does a railway bridge support the weight of a train?</b>	Because of the extreme weight of trains and their cargo, bridges have to be strengthened to bear the load. The longer the bridge's span, the stronger the bridge needs to be. Because of its strength and flexibility, steel has been used in railway bridges for centuries.

# Year 5 DT Spring Term – Pulleys and Gears (Forces)

## Design Brief/National Curriculum Objectives (KS2)

**To design and create a product that will raise and lower the sail of a Viking longboat.**

### Design:

- Use research and develop design criteria to inform the design of [...] functional [...] products that are fit for purpose [...].

### Make:

- Select from a wider range of tools and equipment to perform practical tasks accurately;
- Select from and use a wider range of materials and components, including construction materials, [...] according to their functional properties [...].

### Evaluate:

- Evaluate their ideas and products against their own design criteria and consider the views of others to improve their work.

### Technical knowledge:

- Understand and use mechanical systems in their products (for example, gears, pulleys [...]).

## Key Skills

- To design an appealing product with a clear purpose;
- To use scientific knowledge of forces to choose appropriate mechanisms for a product (e.g.: levers, winding mechanisms, pulleys, gears).
- To create and follow a step-by-step plan, choosing the most appropriate equipment, techniques and materials for each step;
- To measure accurately in order to make precise cuts and holes in materials;
- To select appropriate joining techniques.

## Tools/Equipment/Ingredients

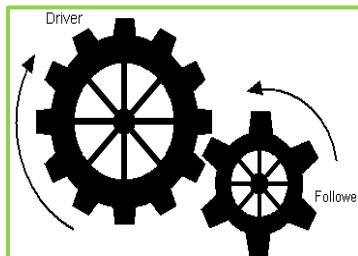
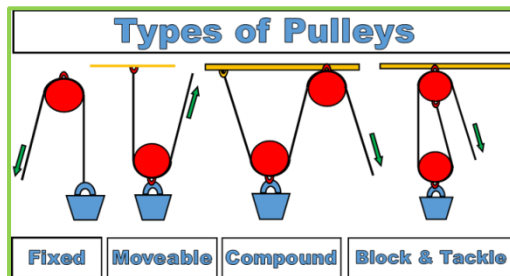
To make a gear system to lift a mast with pre-fixed sail from horizontal to vertical:  
[https://www.ogdentrust.com/assets/general/Phizzi\\_Practicals\\_investigating-gears.pdf](https://www.ogdentrust.com/assets/general/Phizzi_Practicals_investigating-gears.pdf)

**NB:** This would need to be adapted to accommodate the mast and sail – Lollipop sticks, PVA glue, string or yarn, felt or strong cloth.

To make a pulley system: [https://www.sfi.ie/site-files/primary-science/media/pdfs/col/dpsm\\_investigating\\_pulleys.pdf](https://www.sfi.ie/site-files/primary-science/media/pdfs/col/dpsm_investigating_pulleys.pdf)

**NB:** This would need to be adapted from Activity 3 [FLAG], with the sail taking the place of the flag.

## Diagrams/Images/Symbols



## Key Knowledge/Facts/Processes

<b>Who were the Vikings?</b>	The Vikings came to Britain from Scandinavia in the late 8 <sup>th</sup> century, looking for better farmland and to form trade links with other countries. They also wanted Britain's natural resources, in particular precious metals.
<b>Why were the most suitable mode of transport for Viking settlers?</b>	Longboats had an open hull and used both rowing power and wind propulsion. They were flat so that they could be carried on land if necessary and navigated in shallow water. One large, square, woollen sail helped some longboats reach speeds of up to 17 knots (approximately 20mph) in good weather.
<b>What is the difference between how pulleys and gears use forces?</b>	Pulleys increase force by running a rope over a pulley wheel and allowing the user to lift heavy weights by pulling down. Gears use cogs that rotate in different directions: the number of cogs and teeth in each cog will determine the amount of force generated and the speed of the mechanism.

## Subject Specific Vocabulary

<b>Block and Tackle</b>	A lifting mechanism made up of pulleys, commonly used on ships.
<b>Cog</b>	A wheel with teeth cut into its circumference.
<b>Force</b>	A push or a pull which causes a change in speed, direction or shape.
<b>Gear</b>	A mechanism that uses cogs, which lock together and move each other to generate force.
<b>Join</b>	To link or connect two or more objects together.
<b>Mast</b>	A long pole that rises from the bottom of a ship and supports the sails and rigging.
<b>Mechanism</b>	A system of parts working together in a machine.
<b>Pivot</b>	The central point, or pin, on which a mechanism turns.
<b>Pulley</b>	A mechanism of ropes and wheels used to pull heavy weights.
<b>Rigging</b>	The collection of ropes or chains that support the masts and sails of a ship.
<b>Sail</b>	A sheet of strong fabric used to harness enough wind to propel boats through water.

# Year 6 DT Spring Term – Chocolate

## Design Brief/National Curriculum Objectives (KS2)

**To design and create a new chocolate-based product adapted from an existing product or recipe.**

### 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 [...].

### Make:

- Select from and use a wider range of tools and equipment to perform practical tasks accurately;
- Select from and use a wider range of materials and components, including [...] ingredients, according to their functional properties and aesthetic qualities.

### 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.

### Cooking and Nutrition:

- [...] know where and how a variety of ingredients are grown [...] and processed.

## Key Skills

- To conduct market research to discover the range of available products and people's preferences towards them;
- To follow the sequential instructions of a recipe, adapting and modifying it based on market research and original ideas;
- To use a range of ingredients appropriately and explain how they are combined to produce an edible product;
- To measure ingredients to the nearest and most appropriate unit of measurement (ml/g);
- To market a product in a functional and aesthetically appealing way;
- To evaluate and refine ideas during the design and creative processes by offering and receiving constructive feedback.

## Tools/Equipment/Ingredients

The link below references 50 no-bake chocolate recipes that can be chosen from and include chocolate, cake, biscuits, etc.:

<https://chocolatecoveredkatie.com/no-bake-chocolate-recipes-healthy-easy/>

**NB:** The appropriate kitchen utensils will be dependent upon the recipe used.

## Diagrams/Images/Symbols



## Key Knowledge/Facts/Processes

<b>What is chocolate made from?</b>	Chocolate's main ingredient is the cacao bean, which is where the English word cocoa originally comes from. Cacao beans are separated into cocoa solids and fats, which are known as cocoa butter. Both parts of the cacao bean are used to make chocolate.
<b>What have the Mayans and Spanish got to do with chocolate?</b>	The Mayans were the first to use cacao beans for food. When the conquistadors conquered the Mayan and Aztec civilisations in the 16 <sup>th</sup> century, they saw that chocolate was a drink for the rich and powerful and began exporting cacao beans to Spain, and later to Europe. The Spanish word cacao comes from the word <i>cacahuatl</i> , used by the Mayans and Aztecs.
<b>How important is chocolate to the people of the UK?</b>	On average, every person in Britain eats three bars of chocolate a week. Some of the biggest chocolate companies also have factories in Britain, such as Cadbury's in Bournville, Birmingham. In 2020, Cadbury's Dairy Milk was voted the UK's favourite chocolate.

## Subject Specific Vocabulary

<b>Combine</b>	To mix two or more ingredients together.
<b>Decoration</b>	Something used to make a product or item look appealing.
<b>Degrees Celsius</b>	The unit of measurement for temperature when using an electric oven.
<b>Dissolve</b>	When a solid, like sugar, mixes into a liquid.
<b>Grease</b>	To smear with a fat-like substance to stop the mixture sticking to cooking equipment.
<b>Ingredients</b>	A range of foods used to make a particular dish.
<b>Kitchen utensil</b>	A small, hand held tool used to prepare food.
<b>Mash</b>	To squash or crush a solid into a pulp to make it softer.
<b>Measuring jug</b>	Used to measure liquids accurately, usually in millimetres.
<b>Mixture</b>	A combination of ingredients.
<b>Recipe</b>	A set of instructions to follow to create a meal or something to eat.
<b>Scales</b>	Used to measure solids accurately, usually in grams and/or kilograms.
<b>Whisk (a)</b>	To beat or stir a substance with a light, rapid movement.
<b>Whisk (b)</b>	A utensil usually used for whipping eggs or cream.