

Electrical Systems - Torches

Battery	Two or more cells put together to provide electrical energy to power a circuit.
Bulb	A circuit part, made from glass or plastic, which gives out light when electricity passes through it.
Buzzer	A circuit part which will make a buzzing noise when electricity is passed through it.
Cell	A single unit that provides electrical energy to power a circuit.
Conductor	A material that allows electricity to flow through it. e.g. metal.
Copper	A reddish metal material that is good at letting heat and electricity flow through it. It is often used to make wires and pipes.
Design criteria	A set of rules to help designers focus their ideas and test the success of them.
Electrical item	Objects that need electricity to work such as hair dryers, toasters and kettles.
Electricity	A type of energy, that is usually invisible, that can be made or stored and used to make objects work (for example to move things or to heat them up).
Electronic item	Electrical items that have an element of computer processing in them such as mobile phones and laptops.
Insulator	A material that does not allow electricity to flow through it. e.g. plastic.
Series circuit	A closed circuit where the current follows one path.
Switch	A circuit part that you can open or close to allow electricity to flow through or to stop it flowing through. (For example, in a house, an electric light switch lets you turn the lights on or turn the lights off.)
Test	To find out whether something works as it should.
Torch	A battery-powered electric lamp.
Wire	A thin piece of copper thread which conducts electricity to connect circuit components together.

Key facts

Many products use batteries!

Remote control

Torch



Mobile phone

Remote control car

Did you know?



Washing board

Washing machine

Once upon a time, there were no electrical items to use!
They had not been invented.
How would life be different for you without electrical items?

Food - Adapting a recipe

Adapt	To change or alter something to fit a given purpose, or to improve it.
Budget	To set an amount of money that can be used for something or for a project and then making sure that you record what you spend and don't spend more than the amount that you set.
Building hire	To pay to use a particular building such as a factory or a professional kitchen for it's facilities.
Equipment	Items and objects which are needed to complete a task.
Evaluation	When you look at the good and bad points about something, then think about how you could improve it.
Flavour	How food or drink tastes (for example, sour, sweet, bitter, salty).
Ingredients	Items that make up a mixture, for example foods that make a recipe.
Method	Following a process or list of instructions.
Net	A flat 2D shape, that can become a 3D shape once assembled.
Packaging	The packet or container that holds a product safe, ready to be sold and has information on about the product.
Prototype	A simple model that lets you test out your idea, showing how it will look and work.
Quantity	An amount of an item.
Recipe	A set of instructions for making or preparing a food item or dish.
Target audience	A person or particular group of people at whom a product is aimed.
Unit of measurement	The unit which you use to measure a quantity. (for example, grams, centimeters, litres).
Utilities	Services such as water, electricity, gas and internet.

Key facts

There are many different **ingredients** to think about, each one can change the **flavour** of the plain biscuit recipe.

Marshmallows

Chocolate



Lemon zest

Raisins

Did you know?



There are five different tastes our tongues can detect.

1. Sweet (fruits, honey, cupcakes)
2. Bitter (olives, dark chocolate, spinach)
3. Sour (lemon, lime, vinegar)
4. Salty (hard cheese, anchovies)
5. Umami (tomatoes, miso, seaweed)

Mechanical Systems - Slingshot car

Key facts

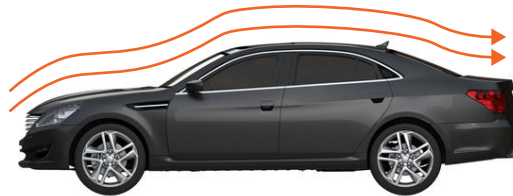
Aesthetic	How an object or product looks.
Air resistance	The level of drag on an object as it is forced through the air.
Chassis	The body of a car.
Design	To make, draw or write plans for something.
Design criteria	A set of rules to help designers focus their ideas and test the success of them.
Function	The purpose of an object (for example a chair needs to hold a person when sitting down); or how the product works (for example a torch needs to provide light in a dark space).
Graphics	Images which are designed to explain or advertise something.
Kinetic energy	The energy that causes an object to move.
Mechanism	The parts of an object that move together as part of a machine.
Net	A flat 2D shape, that can become a 3D shape once assembled.
Structure	Something that has been made and put together and can usually stand on its own (eg a building, a bridge, a chair).

Did you know?



Some of the first toy cars were made in 1901, that's over 100 years ago!

Which vehicle has the least air resistance?



Front view



Bird's-eye view



Side view



Structure - Pavilions

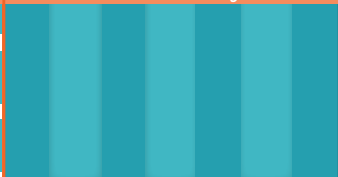
Aesthetic	How an object or product looks.
Cladding	A material put on top of another material or on a structure as protection or to improve appearance.
Design criteria	A set of rules to help designers focus their ideas and test the success of them.
Evaluation	When you look at the good and bad points about something, then think about how you could improve it.
Frame structure	A way of building something so that the inside supports are built first and the outside covering is added afterwards as cladding.
Function	The purpose of an object (for example a chair needs to hold a person when sitting down); or how the product works (for example a torch needs to provide light in a dark space).
Inspiration	To gain ideas from different sources such as the internet, magazines and books.
Pavilion	A decorative building or structure for leisure activities.
Reinforce	To make a structure or material stronger, especially by adding another material or element to it.
Stable	Object does not easily topple over.
Structure	Something that has been made and put together and can usually stand on its own (e.g. a building, a bridge, a chair).
Target audience	A person or particular group of people at whom a product is aimed.
Target customer	A person or particular group of people who you expect to buy the product.
Texture	The way that something feels when you touch it (e.g. soft, rough, smooth).
Theme	An idea or specific design that your product or structure is based on (e.g. space-themed).

You can create all sorts of textures for your cladding designs using different materials and techniques.

Weave



Concertina fold



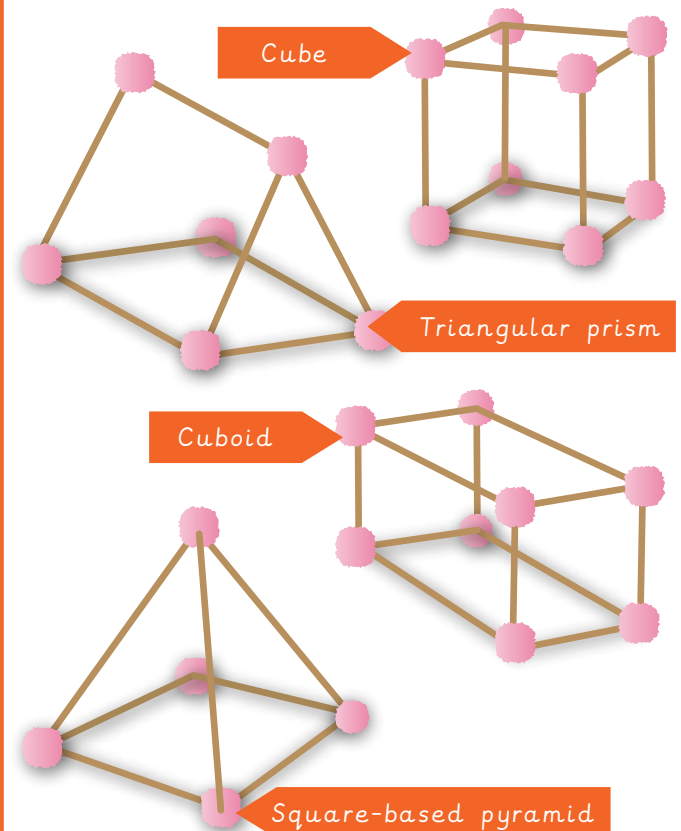
Cut-outs



Key facts



There are variety of ways to assemble a frame structure.



What materials and equipment could you use to make your structure?

Textiles - Fastenings

Aesthetic	How an object or product looks.
Assemble	To put parts together.
Book sleeve	A protective cover for a book to keep it from getting damaged.
Design criteria	To help designers focus their ideas and test the success of them.
Evaluation	When you look at the good and bad points about something, then think about how you could improve it.
Fabric	A natural or man-made woven or knitted material that is made from plant fibres, animal fur or synthetic material.
Fastening	Something that holds two pieces of material together securely or shuts something, such as buttons, zips and press-studs.
Prototype	A simple model that lets you test out your idea, how it will look and work.
Net	A flat 2D shape, that can become a 3D shape once assembled.
Running-stitch	A simple style of sewing in a straight line with no overlapping.
Stencil	A shape that you can draw around.
Target audience	A person or particular group of people at whom a product is aimed.
Target customer	A person or particular group of people who you expect to buy the product.
Template	A stencil you use to help you draw the same shape more easily on to different materials.

Did you know?

Up to fifty books can be made from the pulp harvested from one tree!



! Be very careful when threading the needle through the fabric, watch your fingers and ask an adult if you're unsure.

Key facts

There are a number of **fastenings** that you can use to bring two pieces of **fabric** together.

Zipper



Velcro



Press stud



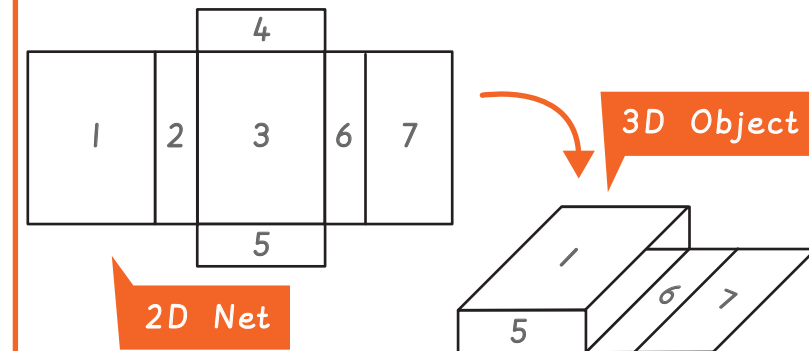
Buckle



Button



Toggle



A **2D net** made from card can be created to check the size for the book sleeve, before using **fabric**.
When folded into a **3D shape**, we can test if it needs to be made bigger or smaller.
This **2D net** has seven faces.