

I should already know:

- Understand a range of workshop tools and equipment
- Apply correct workshop Health and Safety

I will learn:

Template Design

You will learn how to draw a range of templates with accuracy and how to use these to aid the manufacture of your product. You will understand the importance of measuring and detail

Practical Skills

You will use a type of metal called aluminium and understand how to use a range of tools and equipment to cut, shape, form and finish metal with neatness and accuracy.

Working with metal

You will understand some of the key properties of metals and types of metals. You will understand the differences of working with metal as a material and understand some of its common uses.

This will help in the future:

Understand how metal is a common and useful material in the world. Understand where it is extracted from and why we use it as well as how to work with it as a material

Key Words

Ferrous Metal	a metal of mixed composition which mostly contains iron, which makes these metals magnetic such as steel
Non-ferrous metal	A metal which does not contain iron. Often more lightweight such as aluminium and not magnetic
Aluminum	Aluminium is a chemical element with the symbol Al. It is often used for drink cans
Metal forming	The bending and folding of metal to create new shapes
Templates	a shaped piece of rigid material used as a pattern for processes such as cutting out, shaping, or drilling.
Jigs	a device for holding and supporting a work piece in a machine tool and for guiding the cutting tool



Greater Depth Challenge

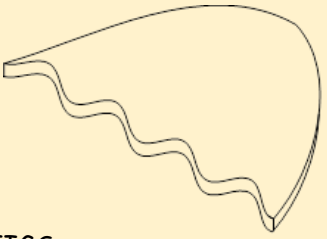
Research where metal comes from and how it is extracted.

You may want to look at the website technology student to help you

Further Reading

<https://www.bbc.co.uk/bitesize/guides/z6d48mn/revision/6>

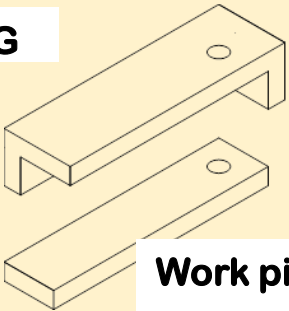
A template is a device that allows a shape to be drawn accurately and repeatedly onto a sheet of material. It can be a thin sheet of material in the shape of the design to be transferred, or it can be a thin sheet of material in which there is a hole in the shape of the design to be transferred (similar to a stencil)



JIGS

A jig is a device that allows a piece of wood, metal or plastic to be held and cut accurately to give a piece of a particular size without the need for measuring or marking out. It can also be used for drilling holes, sawing or bending; once again without the need to measure or mark out.

JIG



Work piece

Tools and Equipment

Junior Hacksaw



File



Metal Folder



Wet & Dry

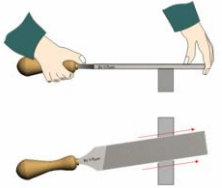


Coping saw



Filing
Hand files are used in the workshop to smooth rough edges. They can be used to smooth a range of materials including metals such as brass and steel to wood based materials such as MDF. They are made from high carbon steel and they are heat treated so that they are tougher than the steel or other materials that they are to be applied to



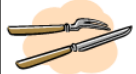
Cross filing



Excel:
There are lots of different ways to fix metal together in permanent and non permanent ways. Can you research some of the below?
Rivets, welding, brazing

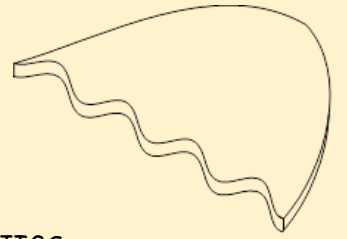
Challenge:
Can you think of FOUR products made from metal both inside and outside of the home and research what metals these may be made of and why?

Draw filing

NAME	COMPOSITION	PROPERTIES	USES
Aluminium	pure metal	Good strength/weight ratio, malleable and ductile, difficult to weld, non-toxic, resists corrosion. Conducts heat and electricity well. Polishes well.	Kitchen foil, saucepans, drinks cans, etc. 
Mild Steel	Iron + 0.15 - 0.35% carbon	Ductile, malleable & tough, high tensile strength, poor resistance to corrosion. Easily welded.	Car bodies, washing machine bodies, nuts & bolts, screws, nails, girders, etc. 
Stainless Steel	Iron + chromium nickel magnesium	Tough and hard, corrosion Resistant. Wears well, difficult to cut, bend and file.	Cutlery, sinks, teapots, dishes, saucepans, etc. 

Coat Hook (metal work)

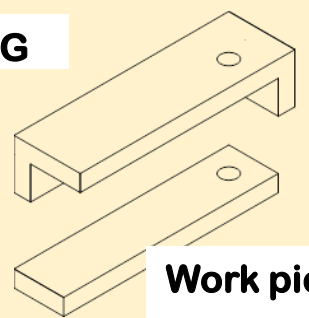
A template is



JIGS

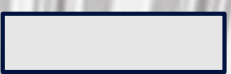
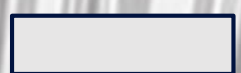
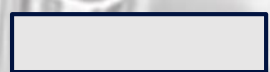
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JIG



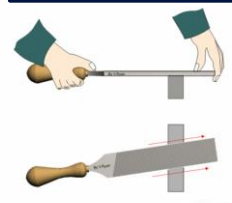
Work piece

Tools and Equipment



Filing

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