

# Year 8 Product Design Exam Revision

Name:

Target:

Date of Exam:

Design Process	Description
<b>Recognition of problem</b>	A short description of who will use the product, why and how.
<b>Analysis</b>	Analyse the problem. Who, what, why, where, when?
<b>Research</b>	Producing a mood board to look at different examples of shapes, images , design movements etc. Look at different materials and their uses
<b>Product Analysis</b>	Look at existing products.
<b>Specification</b>	Use your research to create a specific list of criteria that the design must meet
<b>Initial Ideas</b>	Use your specification to sketch initial ideas.
<b>Development</b>	Develop your best idea.
<b>Plan of Making</b>	Step by step of how to make your product.
<b>Manufacture</b>	Making it
<b>Evaluation</b>	Does the product work? Does it meet the specification? Plus points , Minus points and Improvements

## What is CAD / CAM

### CAD stands for **Computer Aided Design**

- The computer is a tool that helps you design your product.
- There are many different types of software programs on the market, but they are all similar in that they are designed for drawing 2D or 3D images.
- **The advantage of CAD is a drawing can be modified quickly on screen without having to re-draw it all again.**
- **In school our main software programs we use is Techsoft 2D Design.**

### CAM stands for **Computer Aided Manufacture**

- Many production processes can now be done by machines.
- These machines are controlled by computers.
- **Automated manufacture is quicker and safer and far more reliable than traditional techniques.**
- **In school we currently use the Roland CAMM 1 for cutting out vinyl stickers and the Boxford Milling machine for cutting out moulds for year 8 pendant project.**



# Types of Metals

Fill in the blanks using the box at the bottom

Metal ore is **mined** from the ground and the metal is then **extracted** from the rocks. They are **non - renewable** so **recycling** is important.

There are 3 main types of metal, but some metals fit into more than one category.

**Ferrous** metals contain **Iron, Carbon** along with other elements. They are prone to a form of **corrosion** called **rusting** and are also **magnetic**.

**Non Ferrous** metals do not contain any Iron so they are **non magnetic**. When exposed to moisture they **tarnish** and **oxidise** instead of rusting.

**Alloys** are made by **combining** two or more metals together to form a better range of **properties**.

## Non Ferrous



Aluminium

Cooking foil, saucepans, chocolate wrappers, window frames, toy cars, ladders



Copper

An excellent conductor of heat  
Plumbing and electrical and electricity components

## Ferrous metals



Cast Iron

Manhole and drain covers, Metalwork vices, Machinery bases



Mild Steel

Nuts, Bolts, Car bodies, Furniture frames, Gates

## Alloys



Brass

Decorative metal work, e.g. door handles, candlesticks and boat



Pewter

Low melting point  
Drinking tankards, jewellery, picture frames, decorative gifts

# Inspiration /Mood board : Ideas

Visitors to tourist attraction often buy souvenirs from the gift shop. The design of the gifts reflects the kind of attraction visited.

A designer wishes to develop a product suitable for sale in an aquarium gift shop.

A sea life themed picture is shown below.

In the space opposite, use images from the picture to develop a design for a key ring made out of pewter that reflects the sea life theme.



# Equipment used on the pewter project:

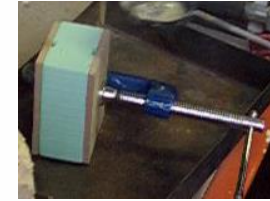
## 1. CNC Miller

High density foam block is placed into the Miller. The machine will cut out your chosen idea.



## 2. Brush

Remove dust from the mould.



## 3. G Clamp & MDF

Clamp two pieces of MDF either side of the mould.

## 4. Brazing Torch

Heat up the pewter until it is molten. (liquid)



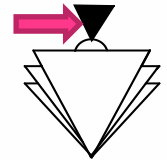
## 5. Ladle

Pour the molten pewter into the mould, and allow to cool.



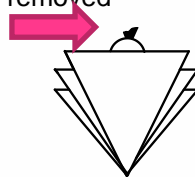
## 6. Junior Hacksaw

Cut off the pouring 'vee' with a Junior Hacksaw.



## 7. File

Use a file to flatten the area where the 'vee' was removed



## 8. Needle File

Smooth down all the edges using a needle file.



## 9. Emery Cloth

Smooth down all surfaces using emery cloth.



## 10. Wire Wool

As a final finish use wire wool to smooth down all the surfaces.



## 11. Buffer

Polish all surfaces using the Buffer



## 12. Paper & Card

Attach finished pendant to the packaging.



# Health & Safety :

Write down why you should use the following safety equipment



Complete the tables below by identifying a hazard and stating a precaution, for both machines.

### Brazing Hearth



Hazard
Precaution

### Buffer



Hazard
Precaution

Hazard
Precaution

Hazard
Precaution