

Name:

S1 and S2  
Craftwork

Coat Hook

Class:

### Some Facts:

#### 1. Metal

All metals in use today are either PURE METALS or ALLOYS. Copper, iron, tin, lead, gold and silver are all examples of PURE METALS which have been mined from the Earth and extracted from the ore using a process called SMELTING.

An ALLOY is a mixture of pure metals or a metal with a substance such as carbon added; examples of alloys are:- Steel (Iron & Carbon), Duralumin (Aluminium & Copper), Brass (Copper & Zinc) & Bronze (Copper & Tin).

Metals are usually classified into two main groups; FERROUS metals and NON-FERROUS metals. Some pictures of everyday objects made from ferrous and non ferrous metals are shown, can you think of others?

#### 2. Ferrous Metal

This category of metals contain iron and are usually magnetic; examples of such are Cast Iron, Mild Steel, High Carbon Steel, etc.

#### 3. Non Ferrous Metal

As the name implies (NON), this category of metal does not contain iron and is usually non-magnetic; examples are, Aluminium, Copper, Brass, Duralumin, Lead, Gold, Silver, etc.

#### 4. Aluminium

Aluminium is one of the most plentiful metals in the world and is extracted from an ore called bauxite.

Aluminium is a soft, durable, lightweight, malleable metal with appearance ranging from silvery to dull grey. It is an excellent conductor of heat and electricity, it has good resistance to corrosion and is used in the manufacture of kitchen utensils, aluminium foil and motor car components. Its lack of strength is overcome by alloying it with other metals.

#### 5. Engineers

The vice is bolted to the bench top so as to ensure that it does not move while working at it. The vice is used primarily to hold metal while cutting, sawing, filing, etc. are carried out.



Tools

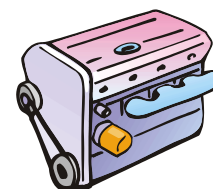
Remember Ferrous metals are usually magnetic!



Cutlery



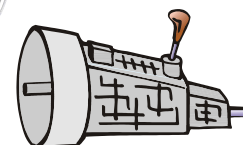
Door handles



Engine parts



Alloy wheels



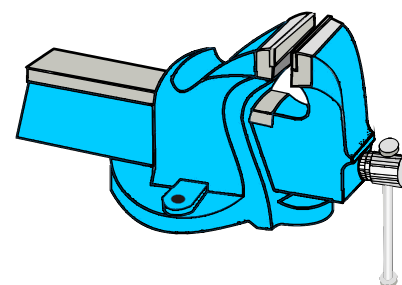
Gearbox casings



Pots



Cans



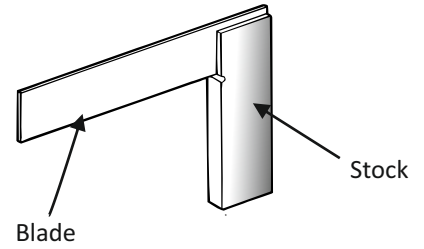
### 6. Scriber

A scriber is used to mark lines on metal or plastics. This is used instead of pencils as the marks from pencils cannot be seen as clearly as scriber marks. It is made from hardened and tempered tool steel that has been sharpened to a point at one or both ends.



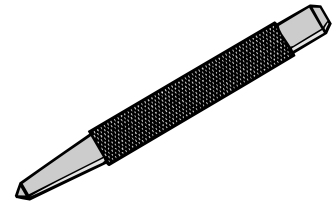
### 7. Engineers Square

An Engineers Square is similar to the Try Square but with a metal stock. It is used on both metal or plastic to check that the edges are square or to scribe lines at Right Angles to an edge. The groove in the stock prevents metal filings interfering with accurate testing.



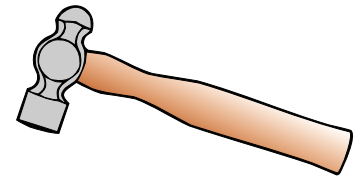
### 8. Centre Punch

A center punch is used prior to drilling holes in metal. When a twist drill is brought into contact with a flat metal surface it will have a tendency to wander on the surface until it gains sufficient purchase to start cutting the hole. A center punch forms a small dimple in which the tip of the twist drill (if it is small enough) will fit. A center punch usually has a tip, that when viewed on a profile, has sides at a 90 degree angle to one another.



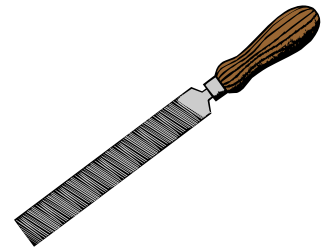
### 9. Ball Pein Hammer

The ball pein hammer is the most commonly used hammer for metalwork. The head of the hammer is made from hardened and tempered carbon steel with the shaft usually being made from ash or hickory due to its natural springiness and shock absorbing properties. The size of the hammer is classified by its weight, the most useful size for general bench work is between 0.45-0.5kg.



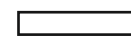
### 10. Files

Files are made from high carbon steel and are used for the removal and smoothing of metal and plastics. Due to the specialised heat treatment the blade is made very hard whilst the tang is left in a relatively soft state to prevent it from being easily broken.



Files come in a variety of shapes and sizes as shown.

**Safety Note:** File tangs can be dangerous and files should always be used with the handle fitted.



Flat



Half Round



Square



Three Square



Round

#### Skills Involved:-

- Marking out
- Filing
- Drilling
- Annealing
- Bending
- Sawing

#### Basic Materials:-

Duralumin

1 @ 3 x 12 x 140

Or

Sizes as available

Name:

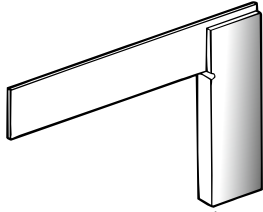
S1 and S2  
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Progress Test

Class:

Answer ALL questions

1. Name the tool shown



- engineers Square
- try square
- hacksaw
- steel rule

2. The scriber shown is for

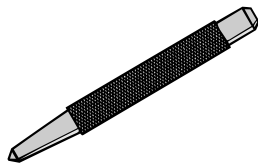


- marking wood
- marking paper
- marking metal
- marking stone

3. The most common type of measuring instrument used in the workshop is a

- steel tape
- metre stick
- wooden rule
- steel rule

4. The centre punch is used before



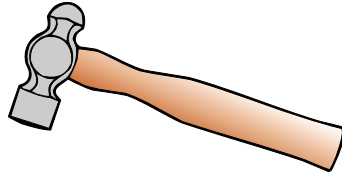
- threading
- cutting
- bending
- drilling

5. When holding material while filing it should be held in the

- hand
- engineers vice
- Z clamp
- G clamp

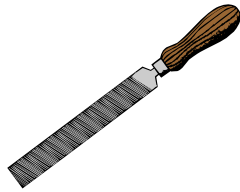
Answer ALL questions

6. What is the name of the tool below?



- mallet
- hitting stick
- ball peen hammer
- screwdriver

7. What safety rule should you always follow when using the shown tool



- never use it without a handle
- put in pocket when not using it
- sharpen your pencil with it
- keep hand in front of cutting edge

8. The name of the metal used was

- steel
- copper
- aluminium
- brass

9. This type of metal is a

- non ferrous metal
- hard metal
- soft metal
- ferrous metal

10. When we soften a piece of metal for easy working this process is known as

- tempering
- annealing
- forging
- tinning

Total /10