PENANG SANGAM HIGH SCHOOL
P.O.BOX 44, RAKIRAKI
WEEK 24 WORKSHEET

Subject: Basic Technology **Year/Level:** 10

Strand	**BT10.6 JOINTS AND PROCESSES**
Sub Strand	**BT10.6.2** METALWORK JOINTS
Content Learning Outcome	**BT10.6.2.1** Identify and state the use of complex metalwork joints and develop confidence in skillful construction of the joints incorporated in tasks, projects and other artifacts.

LESSON NOTES

JOINTS AND PROCESSES
Screws

There are two types of screws, machine and wood screws. Both are made of metal; however the machine screw has a constant diameter and joins with nuts while the wood screw is tapered and grips to the actual wood surface.

Screws are generally made from low to medium carbon steel wire, but other tough and inexpensive metals may be substituted, such as stainless steel, brass, nickel alloys, or aluminium alloy.

Screws come with many different styles of heads, the three most common are flat, round and pan.

Types of Screws:

(i) The ***countersunk*** head are probably the most common. They do not protrude above the surface so can be filled and painted over and become invisible. This type of head is used in butt hinges and in metal where the head is to be flat with the surface. The heads have an included angle of 82°.

Flat

(ii) These are used when a countersunk head is not required.

Round

(iii) These are similar to round head except the top of the head is flat, self-threading metal screws are a good example.

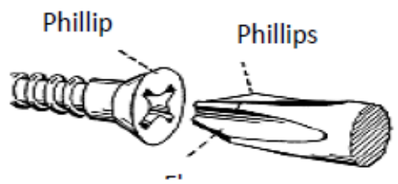
Pan

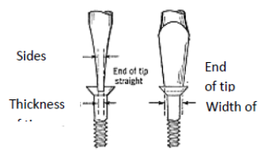
Screws sizes are listed with the shank size first then the length. Shank sizes are denoted by numbers, the larger the number the larger the shank, the most common sizes are #6, #8 and #10 so a medium size screw 1½" long would be listed as: #8 x 1½".

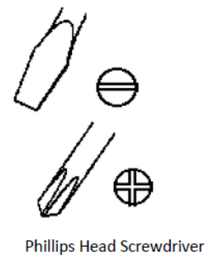
Screwdrivers
The screwdriver is used to drive screws and to remove them. These are made in a variety of styles, such as the plain, ratchet, offset, and spiral.

The screwdriver consists of a blade, the tip of which is shaped to fit the slot in the head of a screw, and a handle, which may be part of the blade.

The sizes of screwdrivers are determined by the length of the blade, which is measured from the tip to the beginning of the ferrule, as well as by the width of the tip.







Phillips Head Screwdriver

In order to allow for the screw to be driven easily through the metal, a pilot hole is drilled. There are two basic reasons for drilling pilot holes:

(i) for tight fitting, and
(ii) prevent the material from splitting

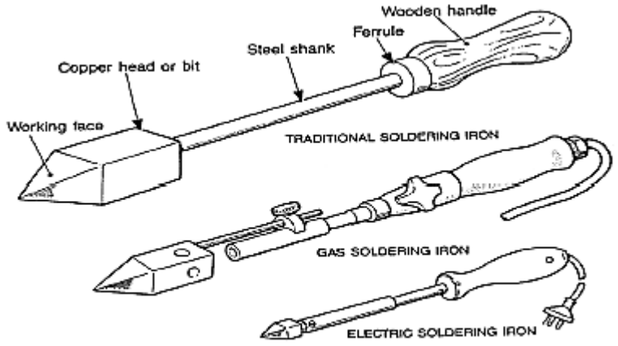
Soldering

SHEET 2

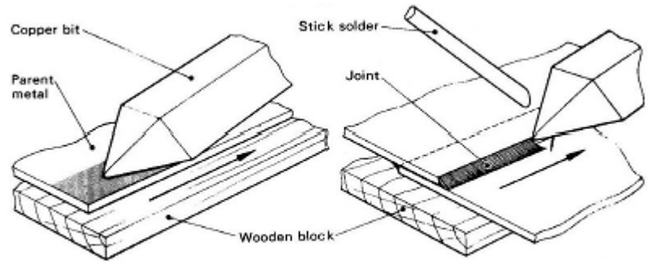
Soldering is a method of joining metal by using an alloy having a lower melting point than the metal being joined. Good for joining dissimilar materials.

Soldering irons have copper bits because copper has an attraction for solder, has a high thermal capacity, it is malleable, soft metal and is a good conductor of heat. It is a tool used to transfer heat and melted solder into suitably designed metallic connections and sheet metal joints.

The process of soldering involves:
(i) Tinning the metal surface.
(ii) Filling the space between the tinned surfaces with solder.



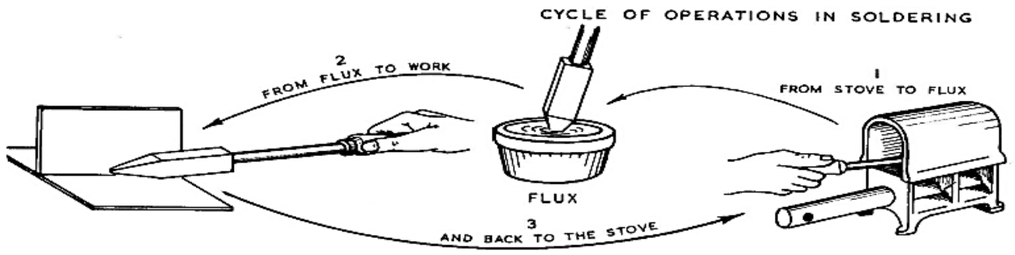
Source: Metalcraft Theory and Practice –



Tinning the metal — Adding solder to fill the joint

A fluxing agent is used to assist the flow of solder and increase bonding strength. Fluxes are of two general types, zinc chloride and resin. The functions of a flux are:

(i) They keep the metal clean during heating.
(ii) They break down the surface tension of the solder enabling it to flow.



Source: Metalcraft Theory and Practice – John R Bedford

STUDENT ACTIVITY

1. The process of soldering involves two processes. Name the two processes.

   _____

   _____

2. Sketch a soldering iron and name its parts and write down the uses.

   _____

   _____

THE END