

PENANG SANGAM HIGH SCHOOL

P. O. BOX 44, RAKIRAKI

LESSON NOTES - 21

SCHOOL: PENANG SANGAM HIGH

SUBJECT: BASIC TECHNOLOGY

YEAR/ LEVEL: 9

Strand	BT9.4: HAND TOOLS AND MATERIALS
Sub - Strand	HAND TOOLS AND APPLIANCES.
Content Learning Outcome	BT9.4.1.1 Identify the common woodworking and metalworking hand tools, their parts and uses and develop skills in use of the hand tools.

Metalworking Bench

It is a very essential equipment for any metal workshop. It comes in many designs and shapes and should be strong and firm.

It is used for supporting your practical work piece or project while you work on it and during various other operations in completing your tasks and projects

**Bench Vice**

It is made from malleable cast steel. The parts are machined to slide together, or fabricated from mild steel. They are fixed to a work bench and are a common feature in any metal shop.

They are used for holding and supporting the work while cutting, grinding, drilling and welding.

**Marking Out**

It is the process of transferring measurements onto a work piece as the first step in the design process.

The use of tools to measure and mark the work play an important role with the aid of rulers, gauges, squares, dividers, pencils, etc.

Marking off

It is the process of laying out needed information in the form of center lines, circles, outlines, to show the position and area of work to be done and in setting out the work piece.

Surface Preparation

Surfaces are usually prepared to assist in marking and to ensure that the lines are clearly seen.

Engineer's square

Has a metal blade fitted to a metal stock. It is used for setting out and testing angles of 90°.

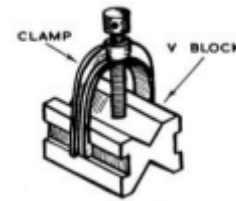
**Centre punch**

Has a thicker section and the point is 90°. It is used for marking centers for drilling holes.



Vee Blocks

Normally come in pairs and are usually fixed with fasteners to hold the job piece. It is used to hold up cylindrical work during marking.



Calipers

Are used for measuring work, checking and transferring dimensions.

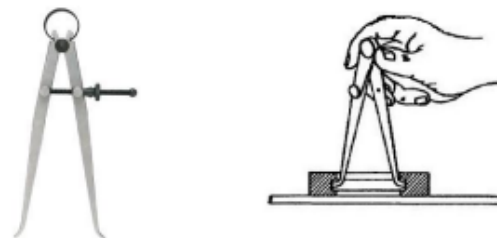
Outside calipers

Are used for checking and testing external diameters.



Inside calipers

Are used for checking and testing internal diameters.



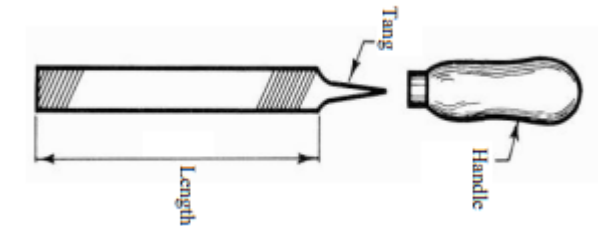
Shaping Using Hand Tools

These are important processes, such as shaping with files or hacksaws. The correct position of shaping tools is one which is comfortable to the operator and permits the tool to be used effectively.

Files

Are made from carbon tool steel forged to shape. The distinguishing features of a file are:

- Name - is determined from its cross sectional shape (triangular, square, round, half round).
- Length - is measured from the shoulder to the point.
- Cut - refers to the way the teeth are cut, whether single or double.
- Grade - commonly used are: bastard, second cut and smooth.



SHORT ANSWER QUESTIONS

1. Define the terms:

a) Marking off:

(b) Marking out:

(c) Surface preparation:

2. Name the tool which is used for checking and testing external diameters.

3. Name the tool which is used for holding and supporting the work while cutting, grinding, drilling and welding.

THE END

