CARPENTRY

INTRODUCTION

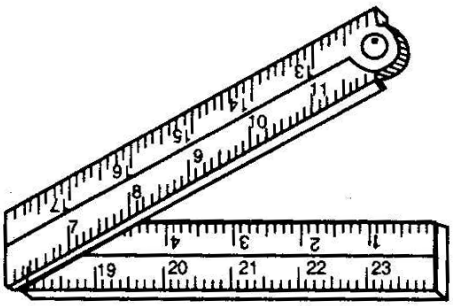
Wood is an important engineering material that is extensively used in the buildings and industries. ‘Timber’ is another name for wood, which is obtained from exogeneous trees. “Wood Working” means processing of wood by hand and machines for making articles of different shapes and sizes. It is further divided into two groups;

(1) Carpentry (2) Pattern making.

Carpentry is the common term used with any class of work with wood.

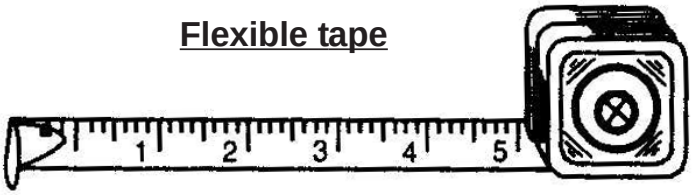
Pattern making deals with the type and construction of wooden patterns.

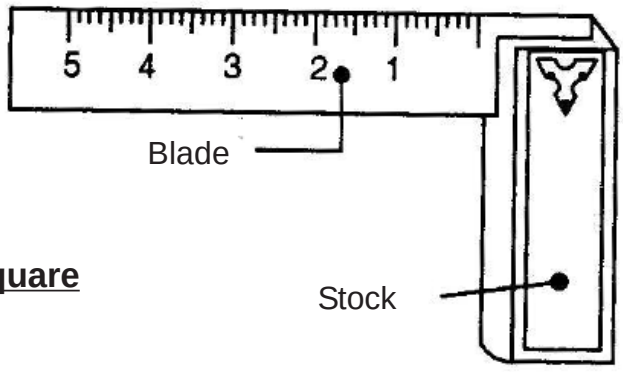
Steel Rule



Four fold rule

Flexible tape





Try square

List of Tools

I. Marking and Measuring tools

1. Pencil
2. Steel rule
3. Four fold rule
4. Flexible tape
5. Straight Edge
6. Try square
7. Mitre Square
8. Bevel Square
9. Combination square
10. Marking Knife (Scriber)
11 Marking Gauge
12 Mortise Gauge
13. Wing compass
14. Trammel (beam compass)
15 Calipers (Outside and Inside)
16. Spirit level and plumb bob

II. Cutting tools

A. Saws
B. Chisels
C. Axes

(a). Saws

1. Hand Saw (Cross cut saw)
2. Rip Saw
3. Tenon saw (Back saw)
4. Panel Saw
5. Dovetail Saw

(b). Chisels

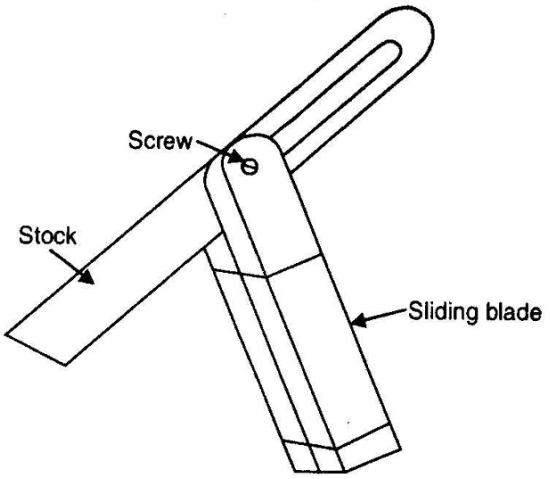
a. Firmer Chisel
b. Bevel edged
c. Pairing Chisel
d. Mortise chisel
e. Gouges (Inside & outside)

(c). Axes

a. Side Axe
b. Adze

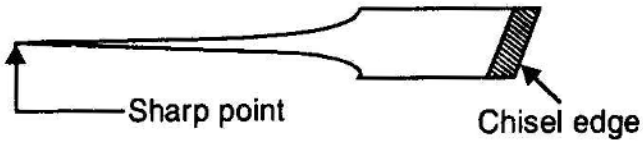
III. Planinng Tools

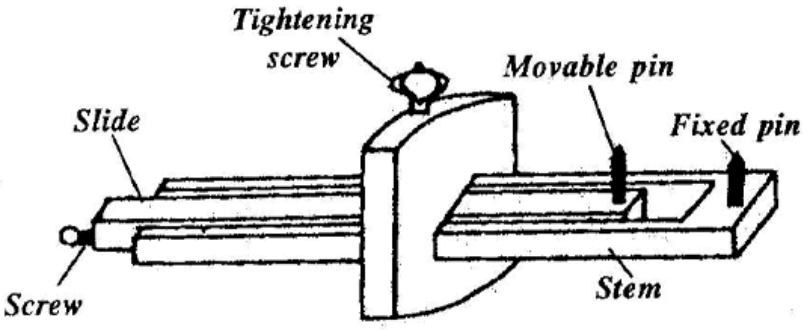
a. Jack plane (wooden & Metal)
b. Smoothing plane
c. Rebate plane
d. Spoke shave
e. Trying plane
f. Plough plane
g. Router plane



Bevel Square

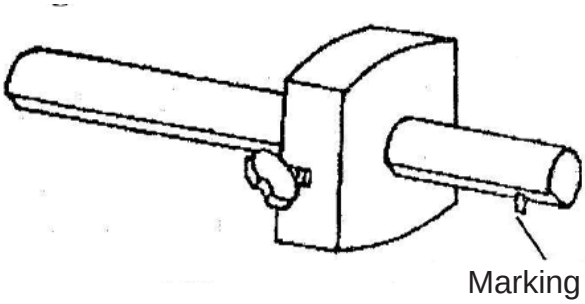
Marking knife





Mortise gauge

Marking gauge



IV. Boring Tools

a. Gimlet
b. Bradawl
c. Brace (Ratchet & Wheel brace)
d. Auger
e. Bits (Shell, Twist, Fostner, Centre, Countersunk bit)
f. Drill

V. Striking Tools

a. Claw hammer
b. Mallet
c. Cross peen hammer.

VI. Holding Tools

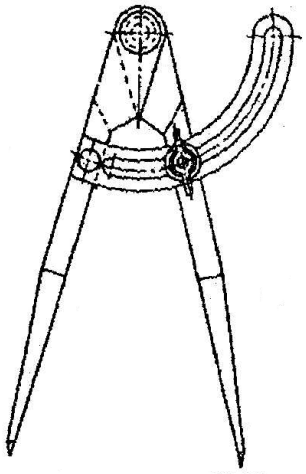
a. Carpenter's bench Vice
b. Bench hold fast
c. Sash cramp (Bar cramp or T-cramp)
d. G-cramp
e. Hand saw

VII. Miscellaneous Tools

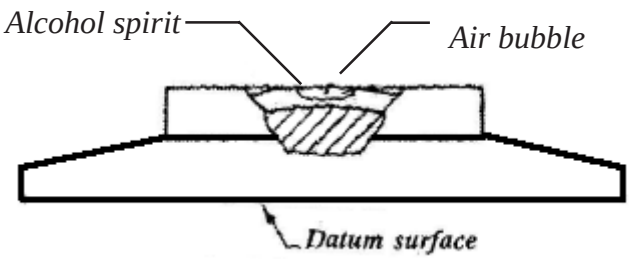
(a) Scraper
(b) File
(c) Rasp file
(d) Pincer
(e) Screw Driver
(f) Ratchet Screwdriver
(g) Star screw driver

VIII. Setting Tools and Sharpening Tools

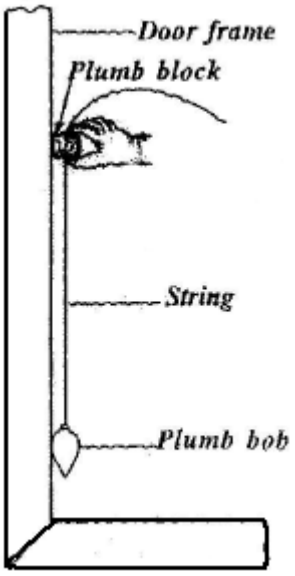
(a) Saw set
(b) Oil stone



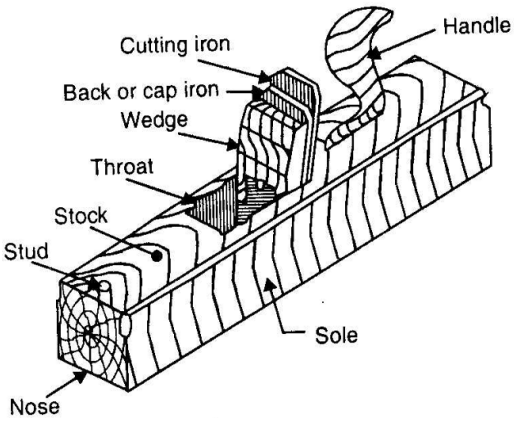
Wing compass



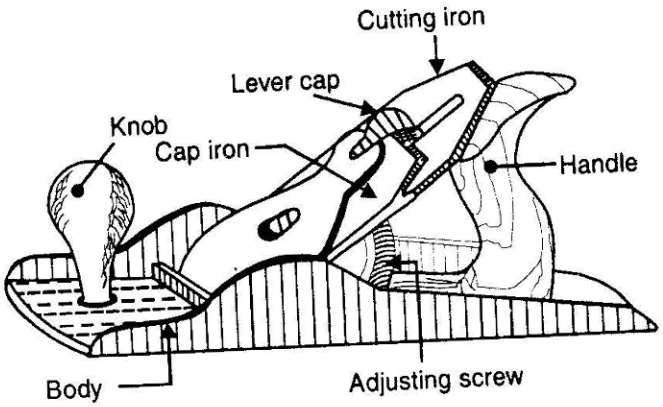
Spirit level



Plum bob



Wooden plane



Iron jack plane

I. MARKING AND MEASURING TOOLS

Pencil : Pencil is used for making dimensions and countours on wooden pieces.

Steel rule : Steel rule is made from steel. It is a measuring tool used to measure linear measurments of any objects. On one of the flar faces, graduations are marked in inches and centimeters. The least count is 1/64 of an inch or 0.5mm.

Four fold rule : It is a wooden scale and consists of four pieces each 15cm long and hinged together by means of pins. It is graduated on both sides in mm/cm and is used for measurment of stock with an accuracy of 1.0mm

Fexible Tape : It is used for measuring long dimensions, curved and angular surfaces up to an accuracy of 1.0mm.

Staright Edge : The straight edge is a machines flat piece made of wood or metal havng truely straight and parallel edge. One of the longitudinal edge is generally made levelled. This is used to test the trueness of large surfaces and edges.

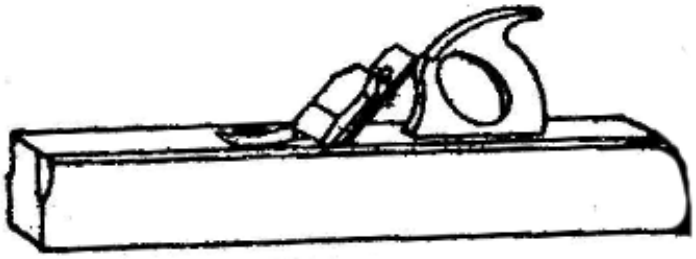
Try Square : Try square is used for marking and testing angle of 90^0. It consist of a steel blade, rivetted in to a hard wood stock at right angle or with two steel blade and cast iron stock sizes vary from 150 to 300mm according to the length of the blade.

Mitre Square : It is used to measure an angle of 45^0. They are made of all metal a nickel-plated finish or with a steel blade, the blade varies from 200mm to 300mm long.

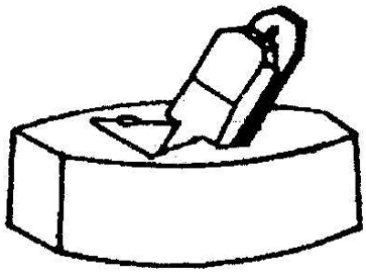
Bevel Square : The bevel square is similar to try square but has a blade may be swilled to any angle from 0 to 180^0. This tool is adjusted by releasing with a turn screw of suitable size in a machine scew running in a slot in the blade.

Combination square : It is used for accurate marking and measurment of components at different angles.

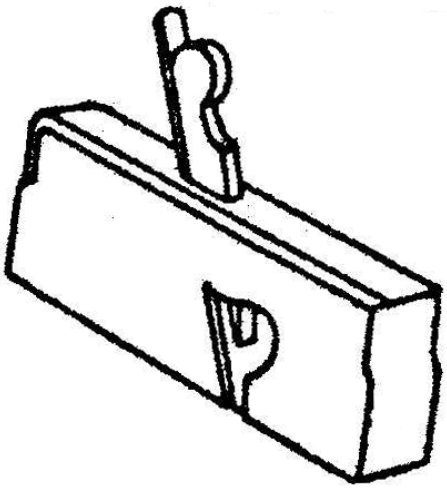
Marking Knife : Marking knife is used for converting the pencil lines in to cut lines. They are made of steel having one end pointed and the other end formed into a sharp cutting edge.



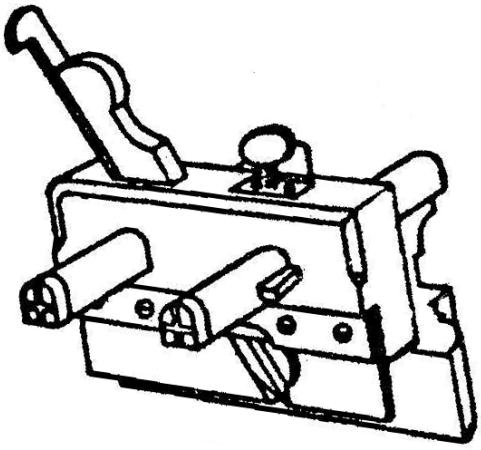
Trying plane



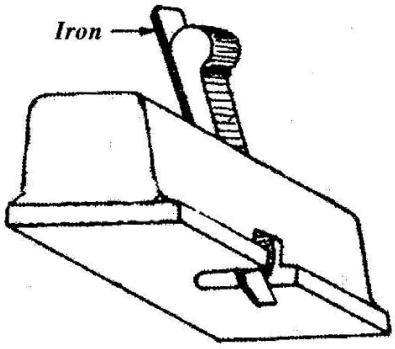
Smoothing plane



Rebate plane

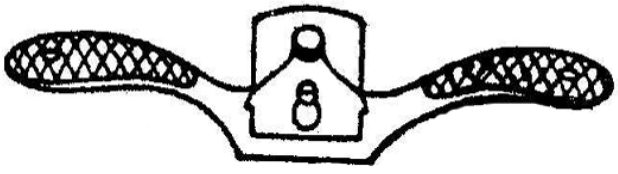


Plough plane



Router plane

Spoke shave



Marking Gauge : It has one marking point. It gives an accurate cut line parallel to a true edge, usually with the grain. The panel gauge is longer than the marking gauge and is used to gauge lines across wider surfacs.

Mortise Gauge : It has two marking points-one fixed near to the end of the stem and the other attached to a brass sliding bar. These two teeth cut two parallel lines called mortise lines.

Wing Compass : Wing compass is compossed of two finally pointed steel legs which are set to the desired position and held by a set screw and quadrant. They are used when stepping off a number equal space, marking circles or arcs and scribing parallel lines.

Trammel : The trammel is a form of beam compass, with a wooden beam to take in work that is beyond the scope of a compass.

Divider : Dividers have both points sharpened in needle point fashion for dividing out centres.

Caliper : Calipers are used for measuring outside and inside diameters.

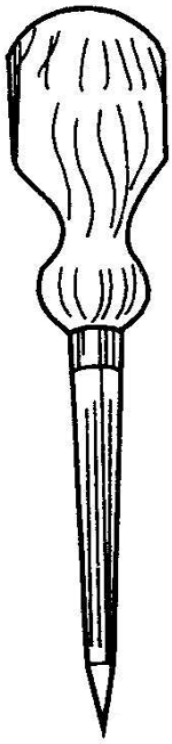
Spirit level and plumb bob : It is used for level or trueliness of hirizontal and vertical positions of work.

II. CUTTING TOOLS

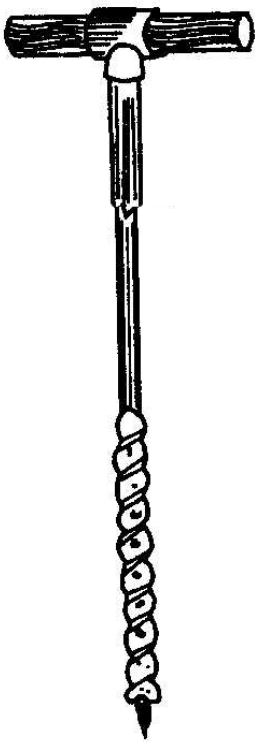
Hand saw or cross saw : Hand saw are used to cut across the grain in thick wood. They are 600 to 650 mm long with 8 to 10 teeth. per 25mm the action of the teeth is that of a series of knives which cut the fibres and force out of the waste wood in the form of saw cut.

Rip saw : Rip saw are used for cutting along the grain in thick wood. The blade is made of high grade tool steel and may be either straight or skew backed. It is fitted in a wooden handle made of hard wood by means of rivets or screws. Rip saw are about 700 mm long with 3 to 5 points or teeth per 25 mm.

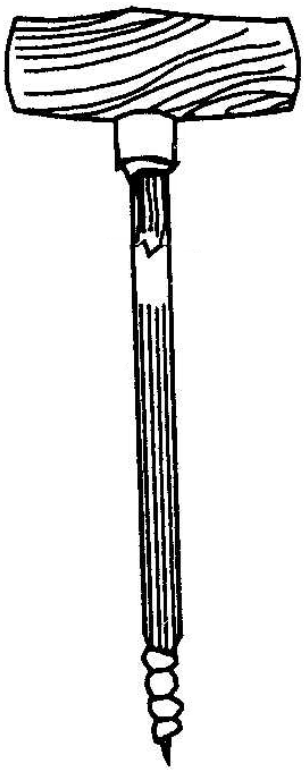
Tenon or back saw : This saw is mostly used for cross cutting when a fixer and more accurate finish is required. The blade very thin, is reinforced with a rigid steel back. It blades are from 250mm to 400mm long and the shapes are in the form of a equilateral traingle.



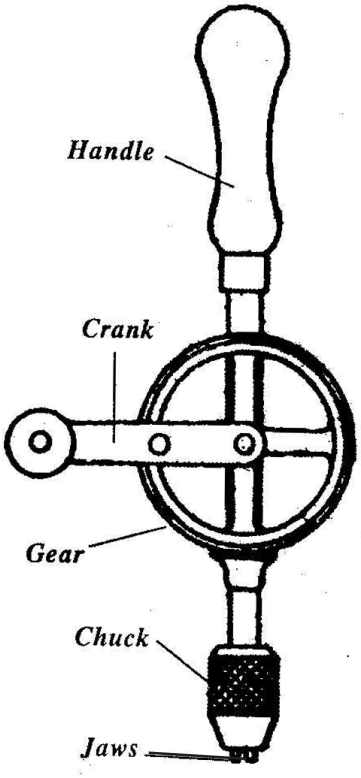
Bradawl



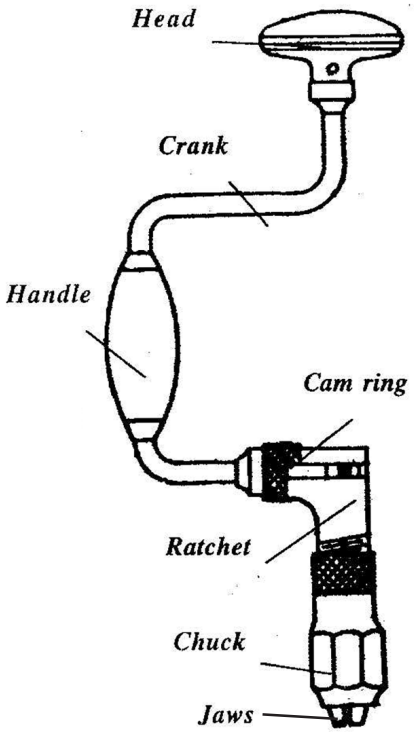
Auger



Gimlet



Wheel brace



Ratchet brace

Panel saw : Panel saw is about 500mm long with 10 to 12 teeth per 25mm and is very much like the cross cut saw. It is used for precision work.

Dovetail saw : A small version of the Tenon, this saw is used where the greatest accuracy is needed and finish allow cuts are to be made. The number of teeth may be from 12 to 28 per 25mm, while the length may vary from 200 to 350mm.

Coping saw : this saw is used for small radius curves the blade tensioned by screwing the handle.

Bow saw : For cutting finer curves and profiles having quick changes.

Compass saw : The compass saw is used for sawing small curves in confined spaces and has a narrow tapering blade about 250 to 400mm long fixed to an open type wooden handle.

Pad or key hole saw : This is smallest saw the blade being about 250mm long. It is used for cutting key holes or the starting of any interior cut.

CHISELS

Firmer Chisel : firmer chisel is the most useful for general purposed and may be used by hand pressure or mallet. It has a flat blade about 125mm long the width of the black varies from 1.5 to 50mm.

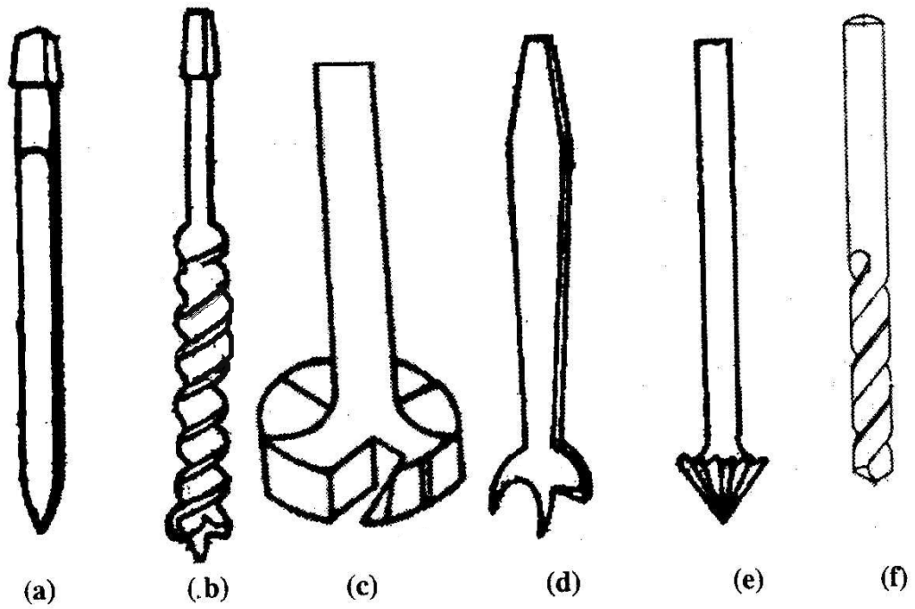
Beveled edge chisel : Beveled edge chisel is used for more dedicate or fine work they are useful for getting in to curves.

Paring Chisel : Both firmer and beveled edge chisel when they are made with long thin blade are known as pairing chisel. This is used for shaping and preparing the surfaces of wood and is manipulated by the hand. The length ranges from 225 to 500mm.

Mortise Chisel : Mortise chisel used for chopping out mortises. These chisels are designed to withstand heavy work. Blades varies in width from 3 to 16 mm.

Inside Gouge : Inside gouge are used for inside covered edges.

Outside gouge : OUtside gouges are used for curving hollows.



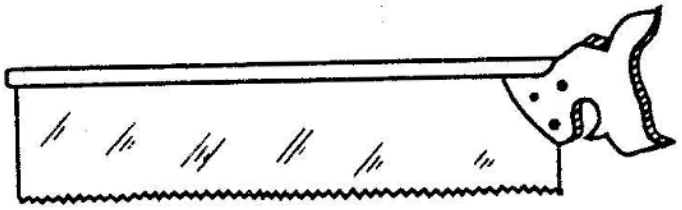
Types of Bits and Drill

(a) Shell bit (b) Auger bit (c) Fostner bit (d) Centre bit (e) Countersink bit (f) Straight shank drill bit

Rip saw

Cross cut or hand saw

Dove tail saw



AXES

Side Axe : It is a cutting tool used for removing the bark of frees and splitting the wood along the grains and also used for making the wood surface roughly plane.

Adze : It is used for rough planing.

III. PLANNING TOOLS

Metal Jack Plane : It is used to get better finish in planning. The body of a metal plane is made from grey iron casting with the side and sole machined and ground to a bright finish.

Smoothing Plane : A smoothing plane is used for smoothing or finishing after a jack plane . It is 200 to 250mm long having blade of 70mm wide.

Rebate Plane : A rebate plane is require along the edge of a piece of wood. The blade is open at both side of the plane. Its width range from 12 to 50mm.

Plough planes : It is used to cut channels and grooves of various sizes in doors panels, frames etc.

Jack plane wooden : Used for levelling the bottom of grooves which are already formed by other tools like chisels.

Router plane : Used for levelling the bottom of grooves which are already formed by other tools like chisels.

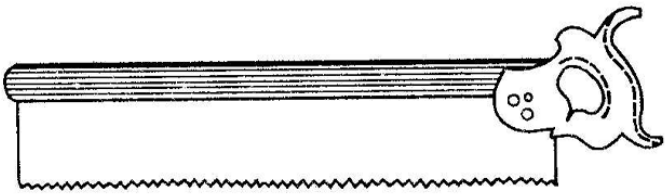
Trying planes : It is used for finishing and shaving large surfaces and making fine edges.

Spoke shave : Spoke shave is used for clearing up quick curves. It is made of iron.

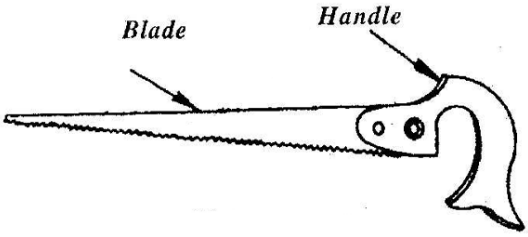
IV. BORING TOOLS

Bradawl and Gimlet : Bradawl and gimlet are hand operated tools and are used to bore small holes, such as for starting as screws or large nail.

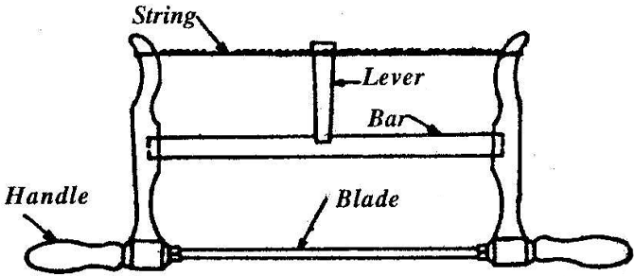
Tenon or back saw

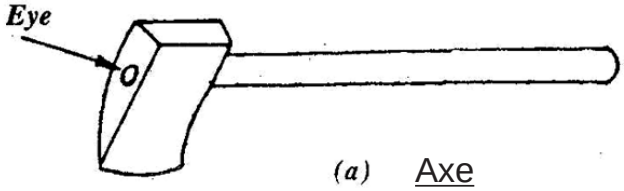


Compass saw

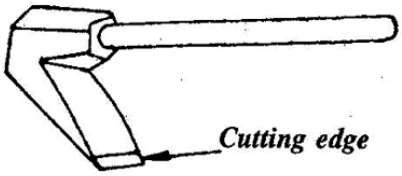


Bow saw

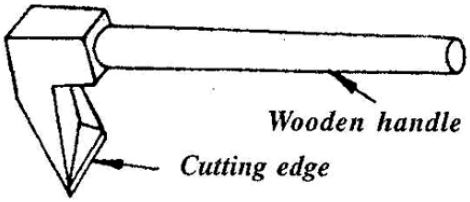




(a) Axe



(b) Side axe



(c) Adze

Ratchet Brace : The ratchet brace is most useful for turning bits and drills of all kinds, being adaptable.

Wheel Brace : The wheel brace is used to hold round and parallel shaped drill. This tool is invaluable for cutting small hole, accurately and quickly.

Auger : It is used for making holes up to 25 mm.

Shellbit : Used for boring rough holes upto 12 mm diameter.

Auger bit : (Twist bit) It is used for making long, clean and accurate holes upto 35mm diameter.

Fostner bit : It is used for sinking a clean hole partly through the wood and for cleaning out recesses.

Centre bit : It is used for making accurate, clean and shallow holes across the grain from 3 to 35mm dia.

Counter sink bit : It is used for countersinking previously drilled holes to fit the heads of screws in wooden pieces.

Drill bit : For drilling holes by using wheeled brace or drilling machines.

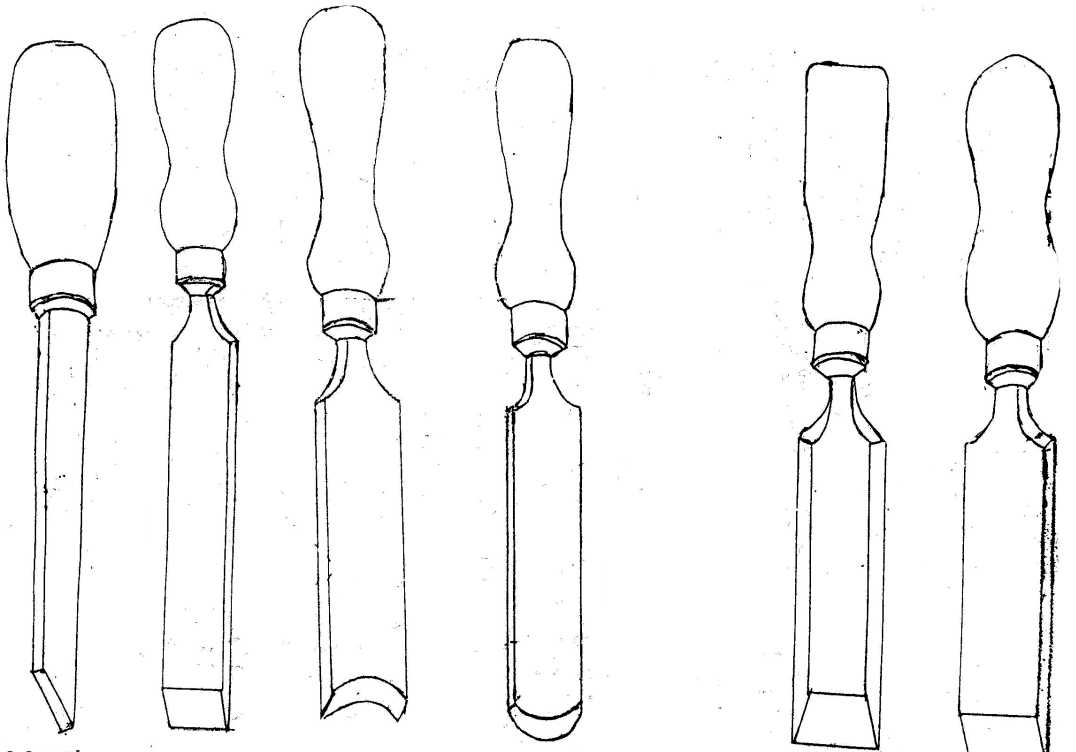
V. STRIKING TOOLS

Claw Hammer : The claw hammer is used for pulling out any nails accidently bent in driving. These hammers are made in numbers sizes from 1 to 4 weighing 375, 450, 550 and 675gms.

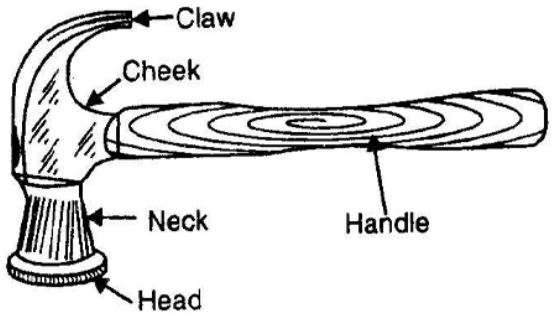
Mallet : the mallet is used to give light blows to the cutting tools having wooden handle such as chisels and gauges.

Ball peen hammer : Used for general striking purpose.

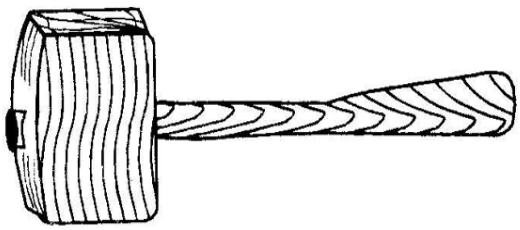
Cross peen hammer : Used for carpentry work usually.



Mortise Chisel | Paring Chisel | Inside Gouge | Ouside Gouge | Bevelled Edge Chisel | Firmer Chisel

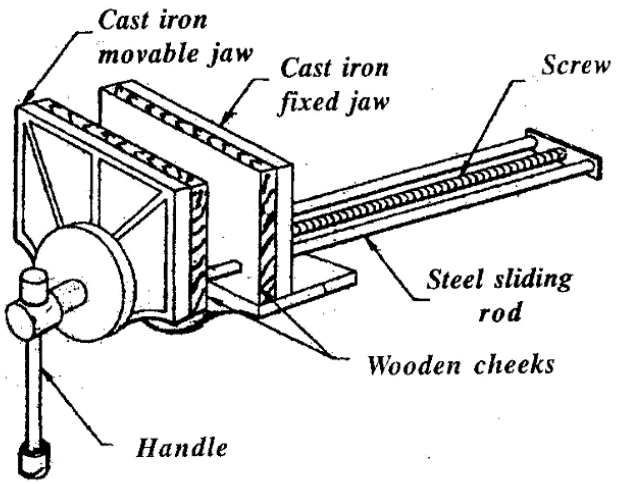


Claw hammer



Mallet

Carpenter's Vice



VI. HOLDING TOOLS

Bench vice : Bench vice is used for holding work piece. It is made of iron and steel.

Bench hold fast : Bench hold fast is made to cast iron rod, square. Cut screws threads of steel bars, with a light vice handle and a drop-forged steel arm.

Sash Cramp : The sash cramp or bar cramp is made up of a steel bar of rectangular section, width malleable iron fittings and a steel screw. This is used for holding wide work such as frames or tops.

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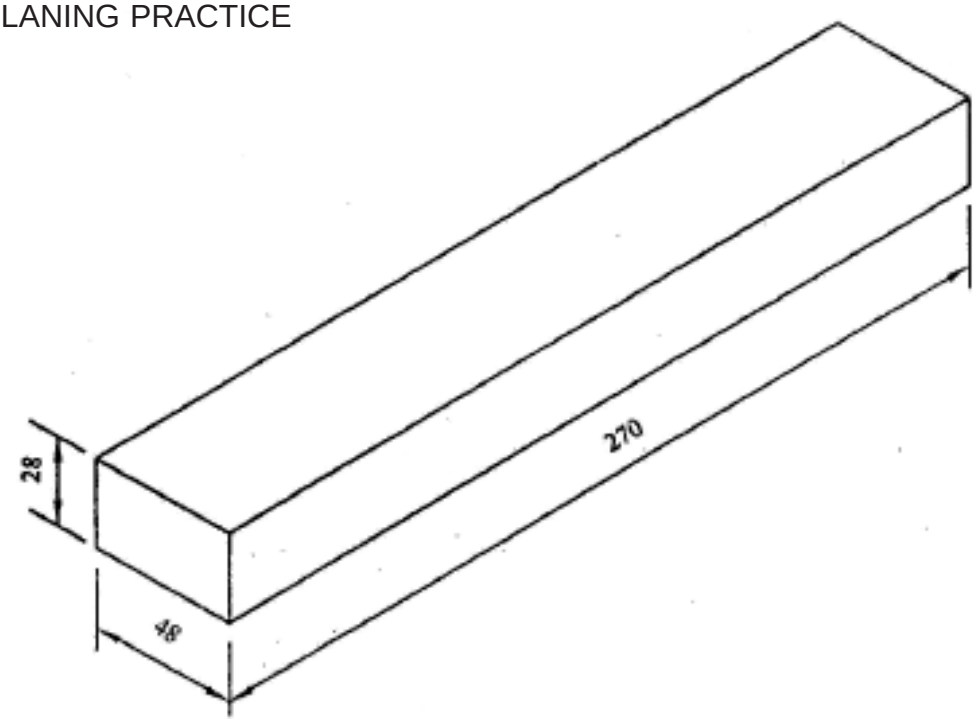
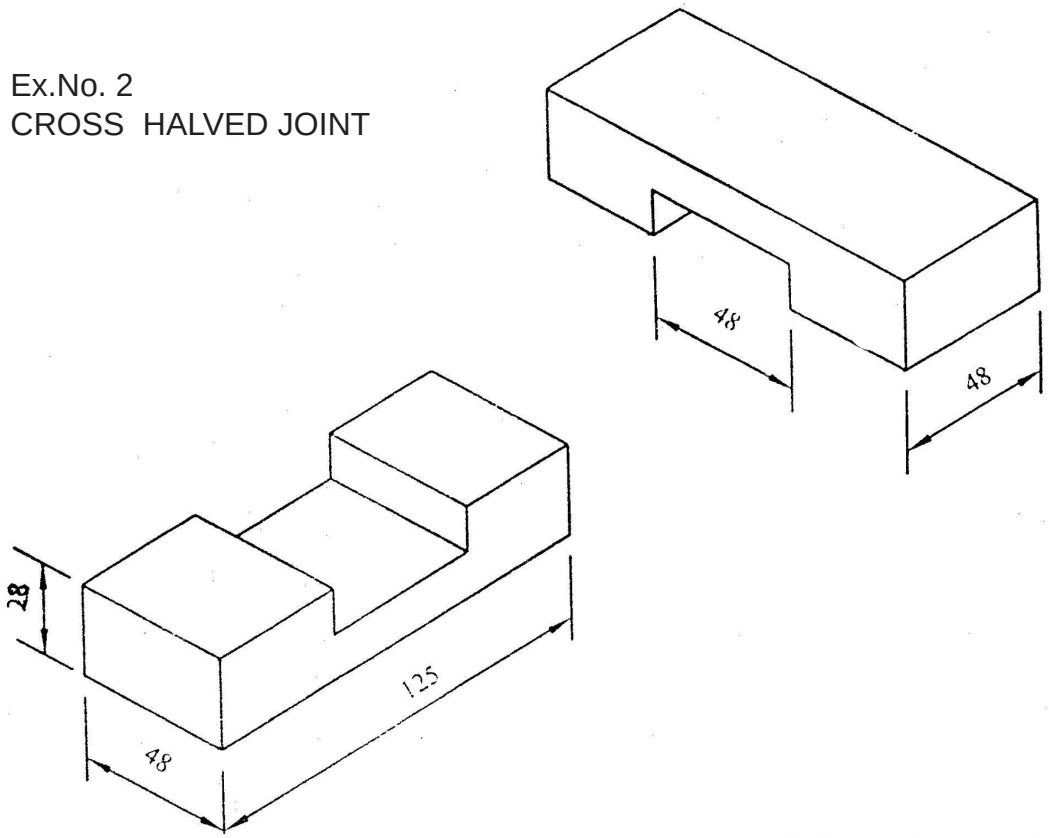
Ex.No. 1
PLANING PRACTICE



All dimensions are in ‘mm’

Ex.No. 2
CROSS HALVED JOINT



All dimensions are in ‘mm’

MODELS FOR PRACTICE

Ex.No. 1
Date :

PLANING PRACTICE

Aim :-

Material Required :-

Tools Required :-

Operations to be carried out :-

PROCEDURE

Ex.No. 2
Date :

CROSS HALVED JOINT

Aim :-

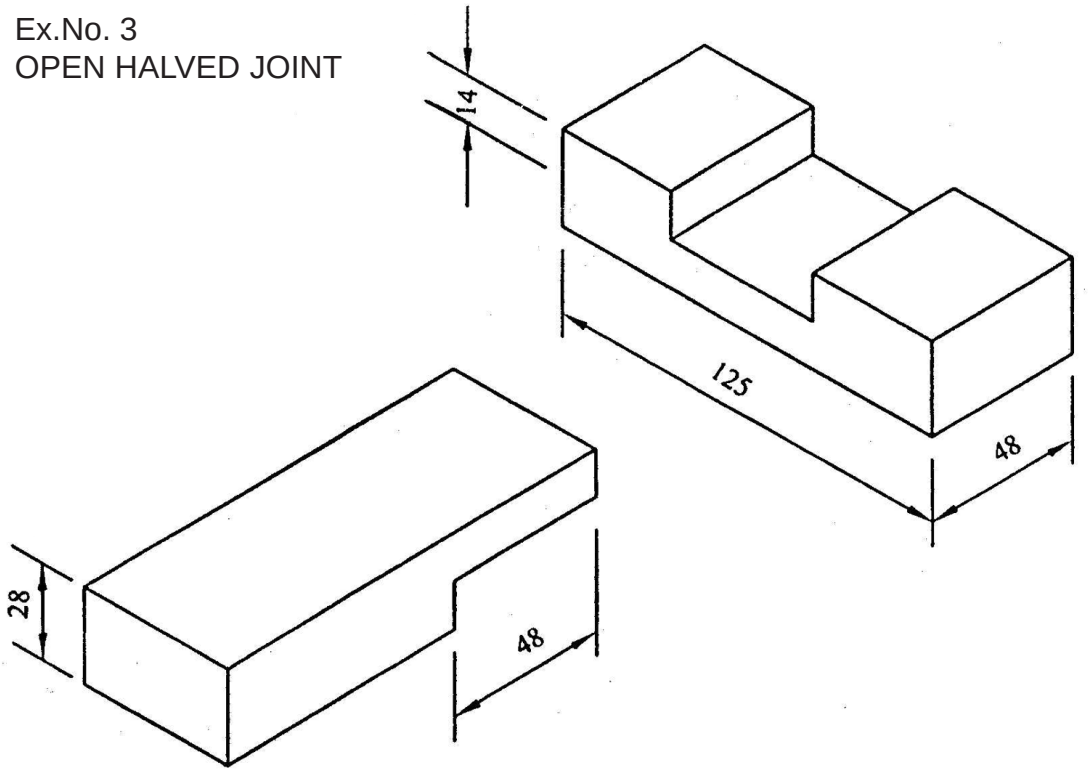
Material Required :-

Tools Required :-

Operations to be carried out :-

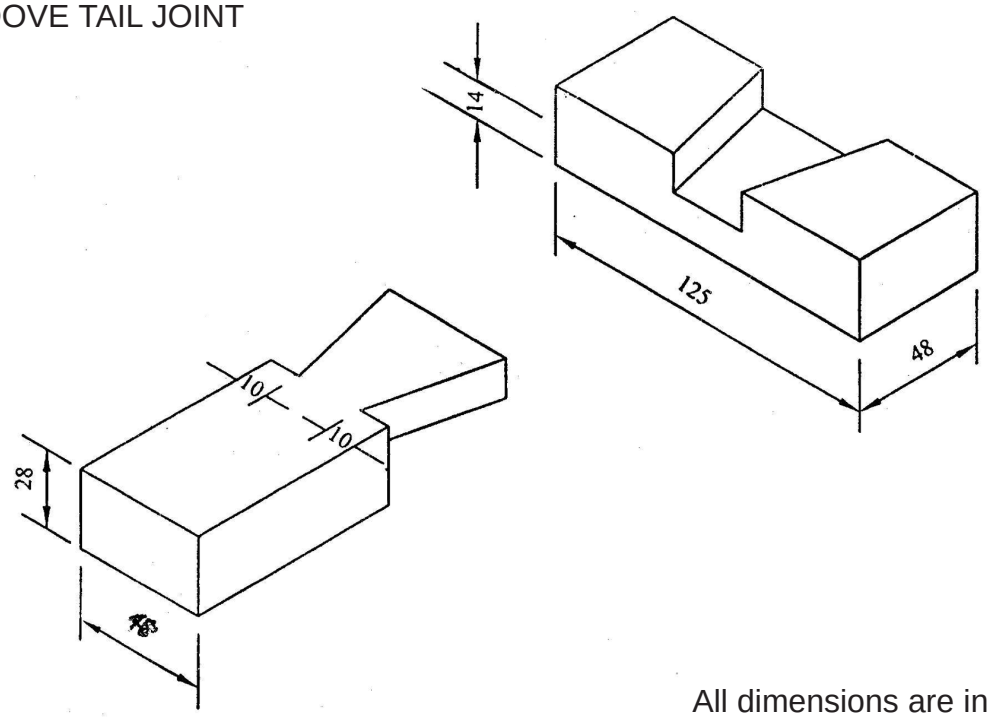
PROCEDURE

Ex.No. 3
OPEN HALVED JOINT



All dimensions are in ‘mm’

Ex.No. 4
DOVE TAIL JOINT



All dimensions are in ‘mm’

Ex.No. 3
Date :

OPEN HALVED JOINT

Aim :-

Material Required :-

Tools Required :-

Operations to be carried out :-

PROCEDURE

Ex.No. 4
Date :

DOVE TAIL JOINT

Aim :-

Material Required :-

Tools Required :-

Operations to be carried out :-

PROCEDURE