Somaiya Vidyavihar University
K. J. Somaiya College of Engineering, Mumbai -77
(A Constituent College of Somaiya Vidyavihar University)

Batch: D2 Roll No.: 16010221025

Assignment No 1

Grade: AA / AB / BB / BC / CC / CD /DD

Signature of the Staff In-charge with date:

CO1	Build an object using Fitting trade as per given specifications.

Syllabus Module covered: 1 (Max. Marks: 10)

Q 1. Write down the answers of following questions in Two Three sentences.

a) What is Debarring?
b) For what purpose Twist Drills are used?
c) Witches are the three Filling methods used in Fitting Shop?

Q1)

(a) Deburring is a material modification process that removes sharp edges or burrs from a material, and leaves the material with smooth edges. It's commonly performed after machining operations, which leave sharp edges on the material.

(b) Twist drills are the most widely used of all drill bit types; they will cut anything from wood and plastic to steel and concrete. They're most frequently used for metal cutting, so they're generally made from M2 high speed steel.

(c) Three commonly used filling methods used in Fitting Shop :-
i) Cross filing
ii) Draw filing
iii) Lathe filing

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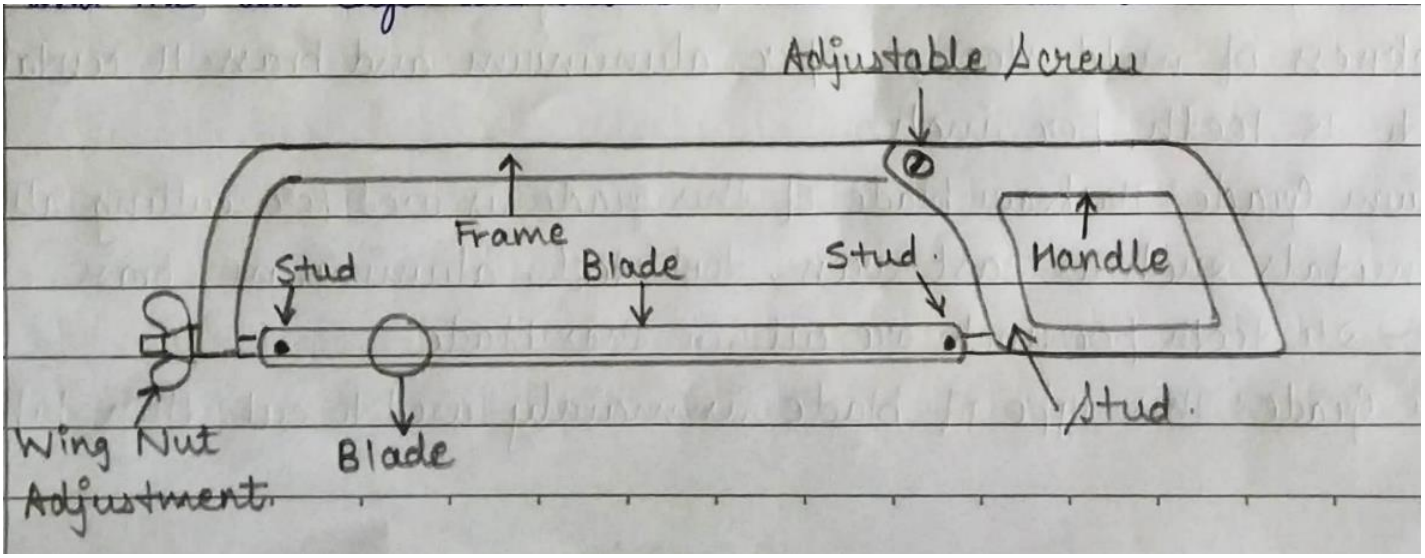
Q 2. Explain in brief with labeled diagram what is Hack Saw? Types of frames, types of Blades and use of hack saw?

Q2) In order to cut metal, rods, pipes, plates or sheets of varied thickness a hacksaw is used. It can be operated by hand or with a hacksaw and the cut edges are cleaner than those cut with a chisel.



In shape it looks like the English letter 'C'. One one end of these arms, a handle is fixed and on the other hand, a pin is fixed.

→ Hacksaw frames are of 2 types :-

(i) Fixed Hacksaw Frame : For making this type of hacksaw frame, one piece flat iron strip or pipe is bent at a right angle. In these types of hacksaw frame, only hacksaw blades of a specific size can be fixed, not of short or long size. 2 types of handles used are : Straight and Pistol type

(ii) Adjustable Hacksaw : In these types of hacksaw frame, its structure is a bit different from a fixed frame. The frame is made in two parts. These parts can be adjusted at different distances. Therefore in this adjustable hacksaw, big and small hacksaw blades of the different standard can be used. These type of handles used in hacksaw are : Straight, Pistol type, Tubular type, and Flexible type.

→ Hacksaw blades: On the basis of metal on the job, different types of blades are used in hacksaw. Their classification depends on: size of blade, number of dents cut on the blade per inch and nature of the blade. Following are the main types of hacksaw blades:

(i) Course Grade: Hacksaw blade of this grade is used for cutting thickness of mild steel, copper, aluminium and brass. It contains 14 to 18 teeth per inch.

(ii) Medium Grade: Hacksaw blade of this grade is used for cutting all kinds of metals such as cast iron, tool steel, aluminium, brass, etc. From 20 - 24 teeth per inch are cut in this blade.

(iii) Fine Grade: This type of blade is mainly used to cut thin pipes, sheets, tubes, etc. It has 24 - 30 dents per inch.

(iv) Superfine Grade: For cutting extraordinary solid metals and thin metal sheets, thin type of hacksaw blade is used. There are 30 - 32 dents per inch in this type of hacksaw blade.

(v) All Hard Blade: Blades of this nature are hardened and tempered only except the ends having holes. There are used for cutting articles such as cast iron or mould iron etc.

(vi) Flexible Blade: In blades of this nature only the cutting teeth and nearby part of it hardened and tempered. But this process they become elastic and there's less risk of them being broken in the event of shock. These blades are used for cutting thin sheets, pipes, curves, etc.

→ Uses: Cutting through materials such as plastic, steel and other metals.

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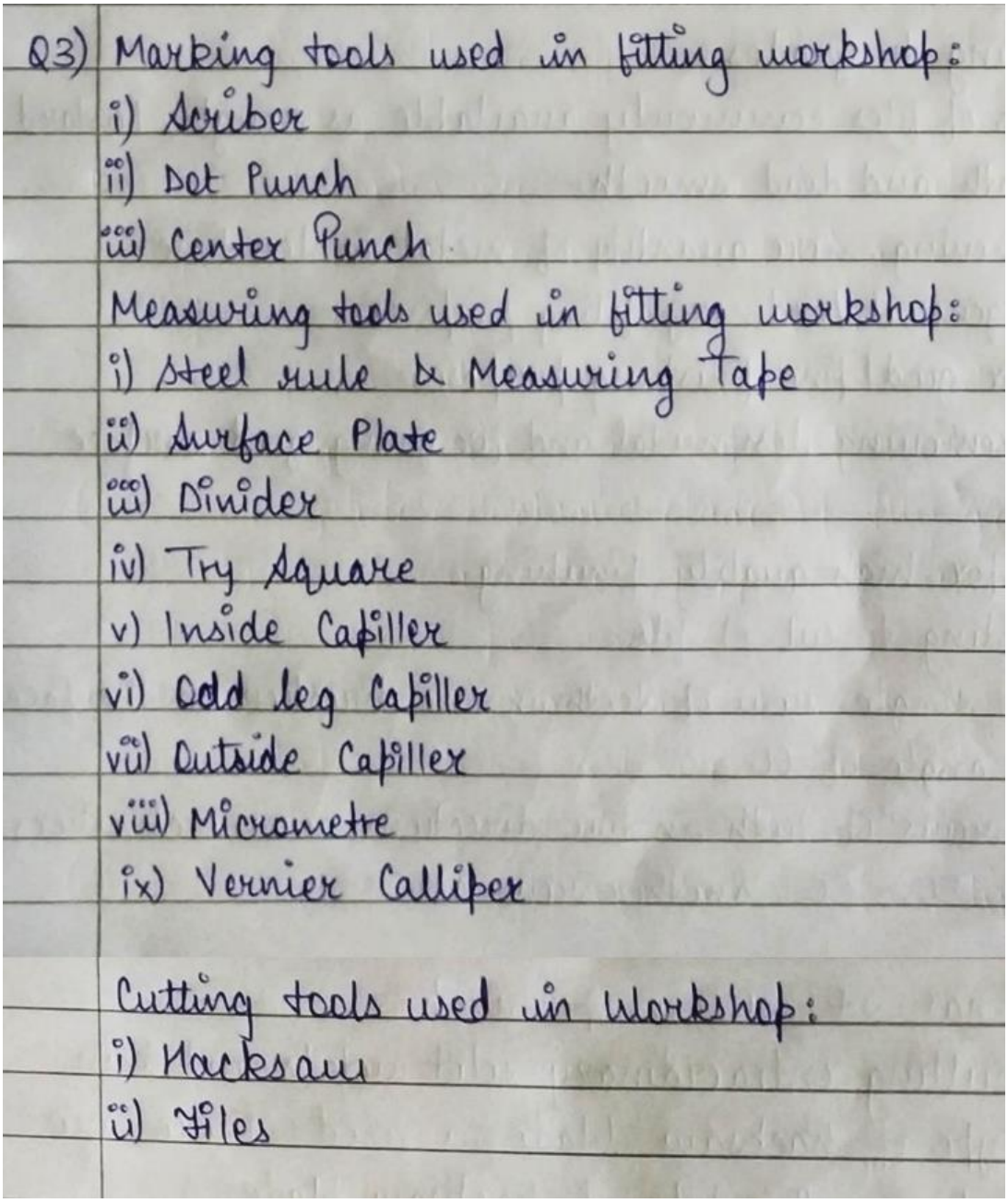
Q 3. List the Cutting tools, measuring and Marking tools used in fitting shop.



Q3) Marking tools used in fitting workshop:
i) Scriber
ii) Dot Punch
iii) Center Punch
Measuring tools used in fitting workshop:
i) Steel rule & Measuring Tape
ii) Surface Plate
iii) Divider
iv) Try Square
v) Inside Capiller
vi) Odd leg Capiller
vii) Outside Capiller
viii) Micrometre
ix) Vernier Calliper

Cutting tools used in Workshop:
i) Hacksaw
ii) Files

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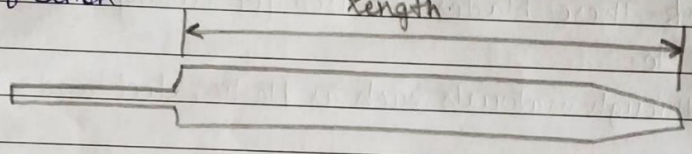
Q 4. What is the use of Files in workshops? Explain in brief Types of Files according to size, shape, grade and Cut of Files.

Q4) File is a filing tool, which is used to file the rough surface and smooth surface on metals by friction. Type of files are specified according to their length, grade, cut and shape.

→ Type of file according to Length:
Length is the distance measure from the tip of the heel. It may be 300 mm, 250 mm, 200 mm, 150 mm or 100 mm as per specification.



→ Type of file according to Grades:
The different grades of files commonly available as rough, bastard, second cut, smooth and dead smooth.
Rough - Used for removing more quantity of metal in less time.
Bastard - Used for general/ordinary filing purposes.
Second Cut - Used for good/fine finishing purposes.
Smooth - Used for removing less metal and for giving good surface finishing.
Dead Smooth - Used for high quality finishing

→ Type of file according to cut of file:
(i) Single cut - It has single rows of teeth in one direction on the face of the file at an angle of 60°
(ii) Double cut - It has rows of teeth in two directions across each other, one at an angle of 50° - 60°, another row at 70°.

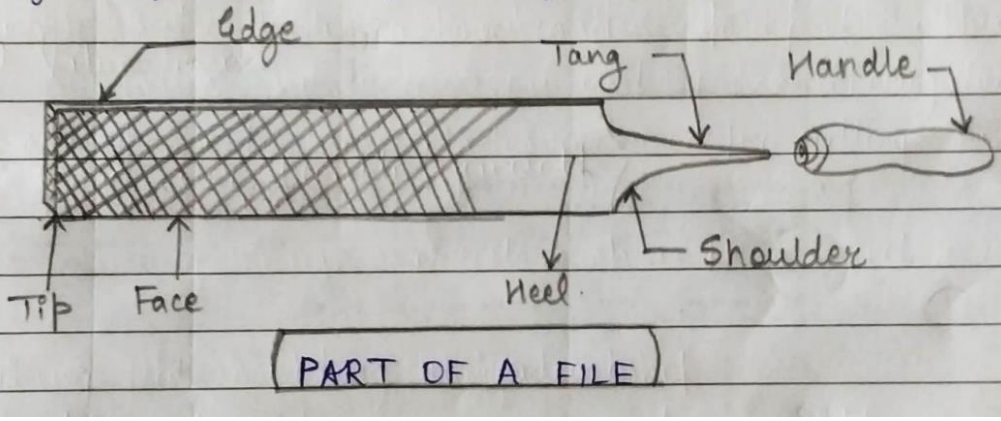
(iii) Rasp cut : This has individual, sharp, pointed teeth in a line and is useful for filing on soft materials like wood, leather and other.

(iv) Curved cut : These files have deeper cutting action and are useful for filing soft materials like plastic, tin, etc.

(v)

→ Type of file according to shape :

The various shapes of files with their application are available as triangular file, round file, half round file, flat file, square file, etc.



PART OF A FILE

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Q 5. Prepare process plan for performing the Fitting Job with help of points given below. (Job drawing is attached herewith)

Job Title:

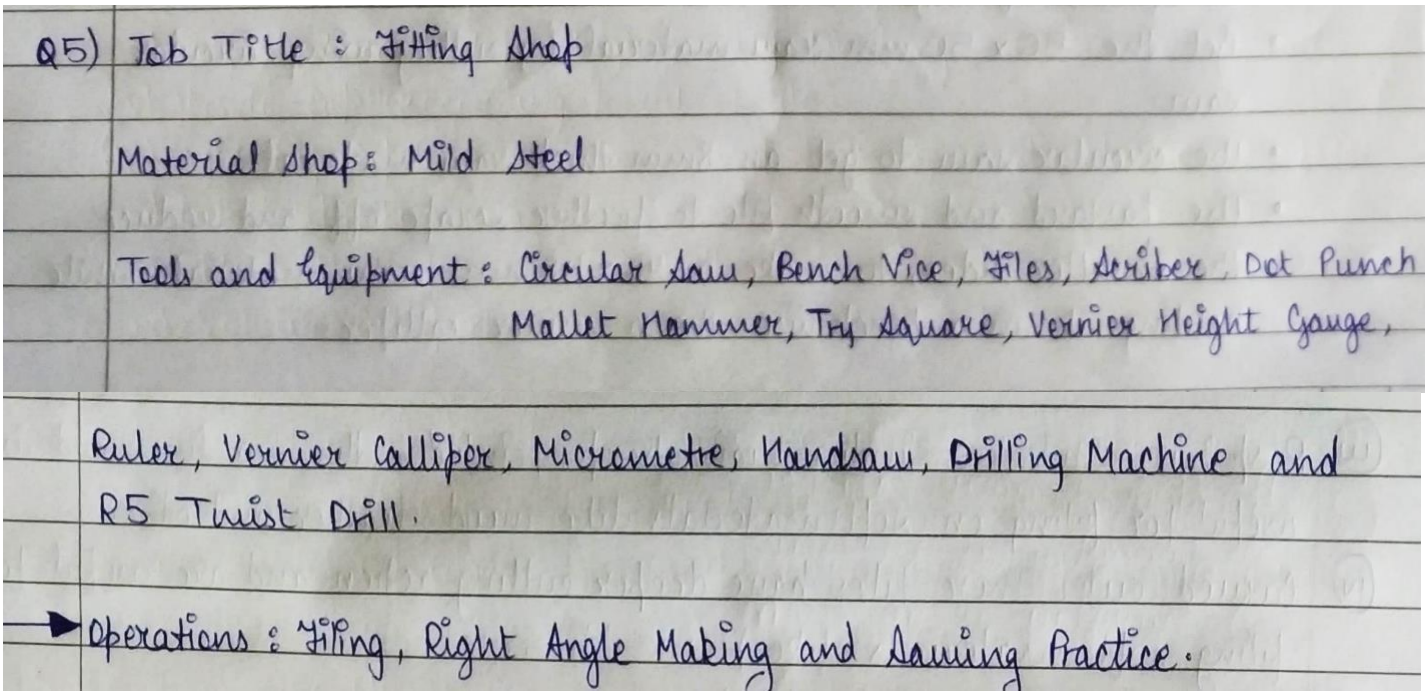
Material used:

Tools and Equipment:

Operations:

Job Drawing:

Point to point Process:



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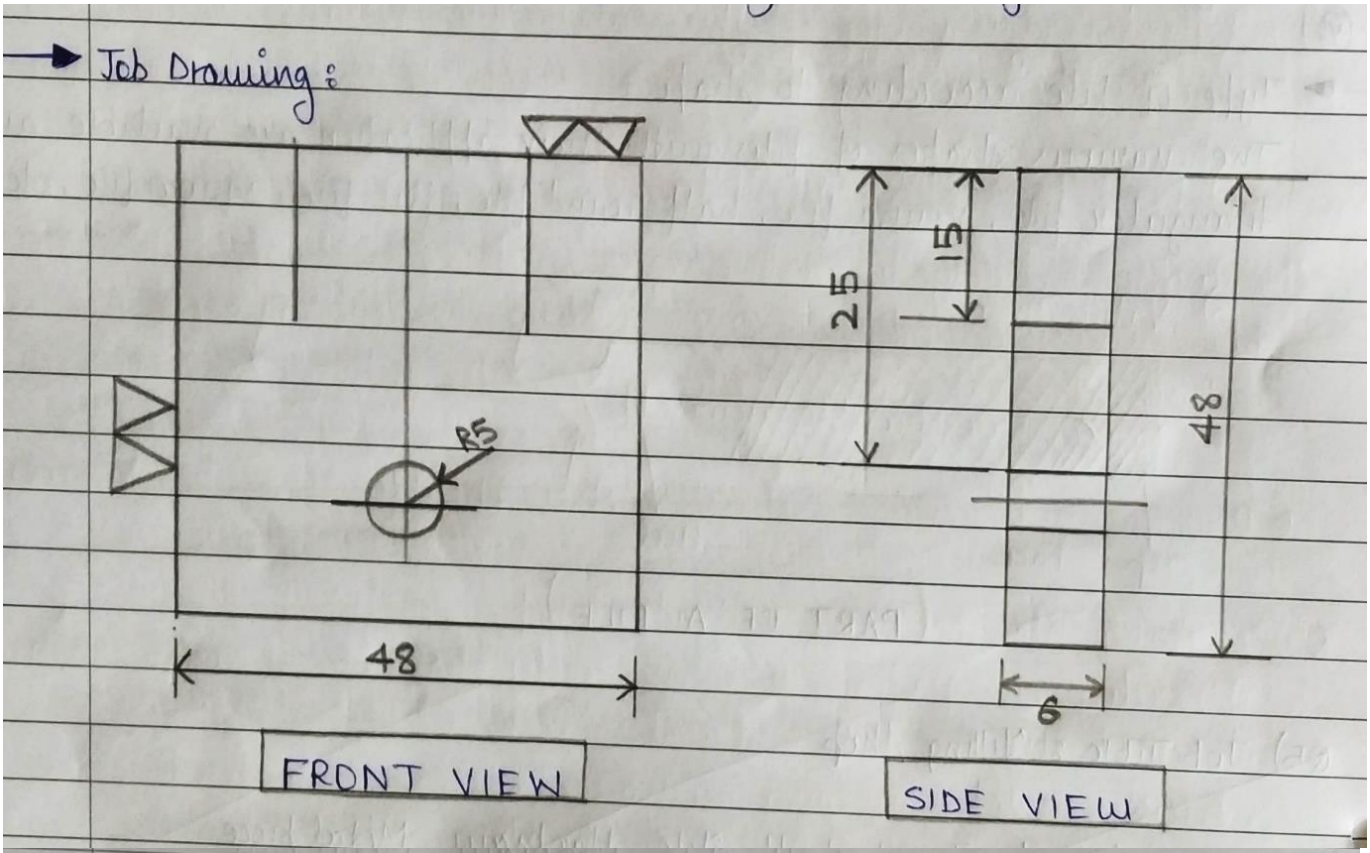
→ Job Drawing :



→ Point to Point Process :

- Use steel ruler and scriber to mark on the raw materials, a square of size 50 x 50 mm.
- Get the 50 x 50 mm raw material by cutting using circular saw.
- Use circular saw to get an 8mm thick raw material.
- Use bastard and smooth file to further scrape off and reduce the smaller sides, to make a 48 x 48 mm raw material, while holding it in a bench vise. Use a vernier calliper.

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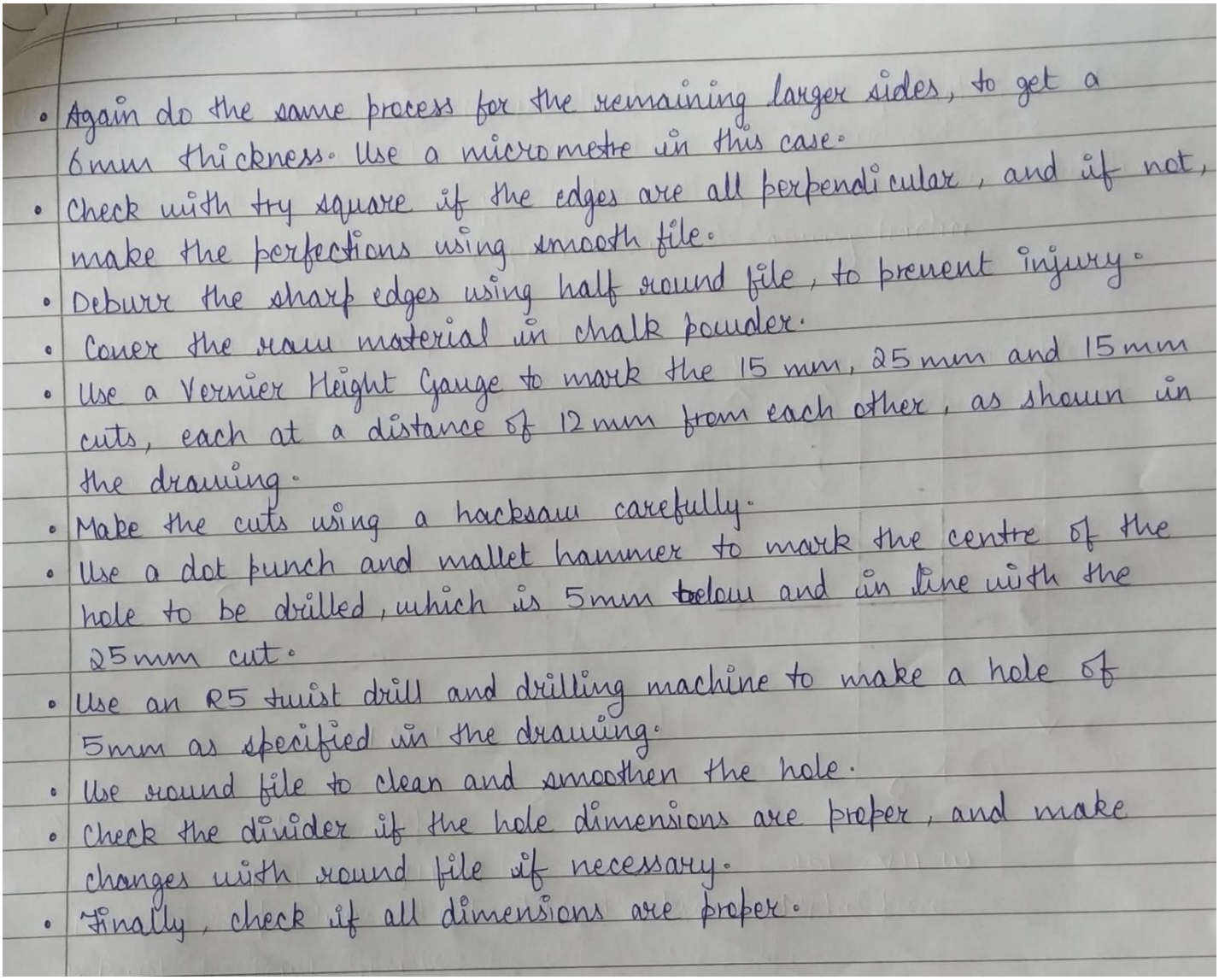

- Again do the same process for the remaining larger sides, to get a 6mm thickness. Use a micrometre in this case.
- Check with try square if the edges are all perpendicular, and if not, make the perfections using smooth file.
- Deburr the sharp edges using half round file, to prevent injury.
- Cover the raw material in chalk powder.
- Use a Vernier Height Gauge to mark the 15 mm, 25 mm and 15 mm cuts, each at a distance of 12 mm from each other, as shown in the drawing.
- Make the cuts using a hacksaw carefully.
- Use a dot punch and mallet hammer to mark the centre of the hole to be drilled, which is 5mm below and in line with the 25mm cut.
- Use an R5 twist drill and drilling machine to make a hole of 5mm as specified in the drawing.
- Use round file to clean and smoothen the hole.
- Check the divider if the hole dimensions are proper, and make changes with round file if necessary.
- Finally, check if all dimensions are proper.