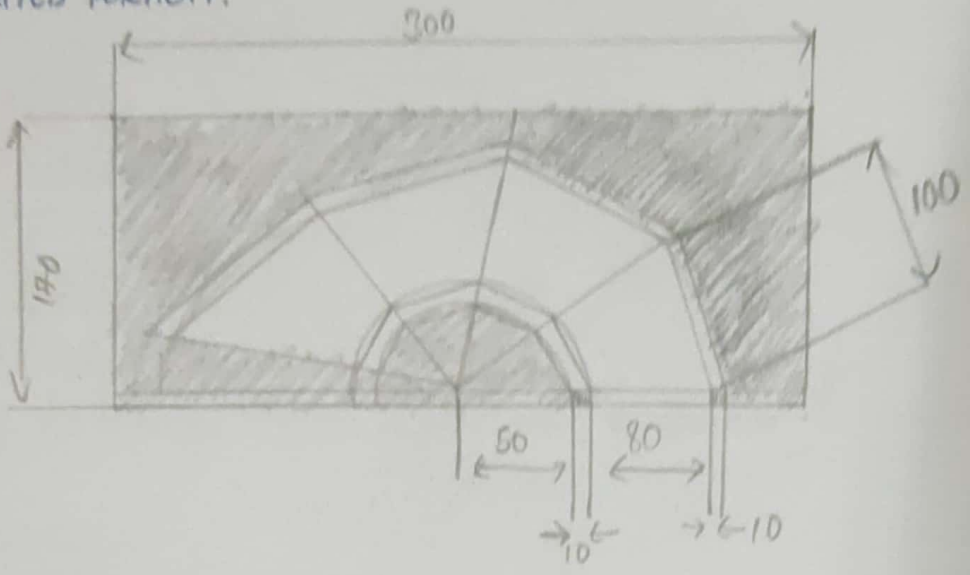
EXP: 5
DATE: 25.10.21

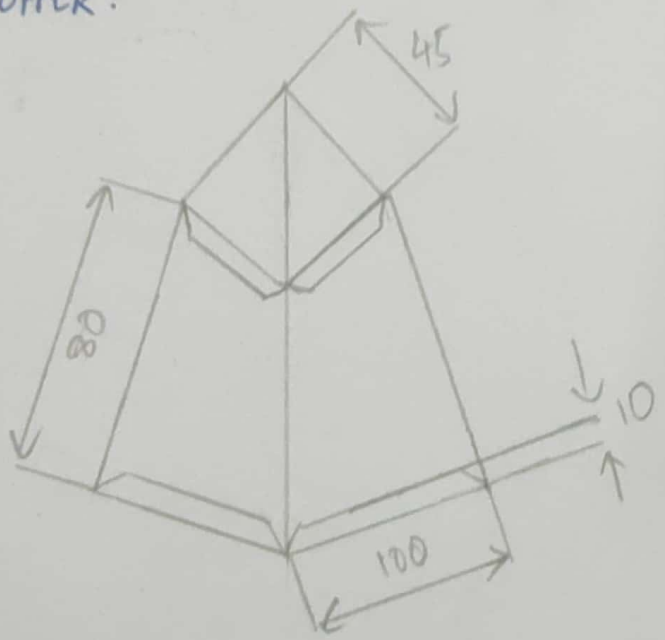
HOOPER MAKING

(1) LAYOUT OF HOOPER :

→ UNWANTED PORTION.



(2) FINISHED HOPPER :



ALL DIMENSIONS IN MM.

★ AIM:

To make a hopper of given specification from a sheet metal piece.

★ APPLICATIONS:

Flour mill, chimney and A/C dust etc.

★ MATERIAL SPECIFICATIONS:

(1) Material: Galvanised iron.
(2) Sheet of dimension: 300mm x 170mm, thickness 33 gauge.

★ TOOLS REQUIRED:

(1) Steel rule (2) Scriber (3) Divider (4) Dot punch (5) Straight snip (6) Mallet (7) Stake (8) Anvil.

★ SEQUENCE OF OPERATION:

(1) checking (2) Layout Making (3) Shearing (4) Folding (5) Locking and finishing.

★ WORKING STEPS:

(1) Checking:

→ Check whether the given sheet is having its dimensions as 300mm x 170mm. If the dimension is excess trim off using hand shear. It's less change the given sheet.

(2) Layout Marking:

→ Place the given sheet over working table, so that the side of dimension 300 mm is horizontal.

→ From left bottom corner, draw the 10 mm horizontal line.

→ Then mark the mid-point on horizontal line. From that point, to mark 50 mm, 10 mm, 80 mm, and 10 mm on, and make dot with punch.

→ From the middle point draw an arc of radius 50 mm, 60 mm, 140 mm, and 150 mm.

→ Using divider keep 100 mm between legs and with 140 mm as center draw an arc.
→ Similarly cut arc as shown in figure.
→ From the mid-point draw an intersection line through and till the end.
→ In each division lines have four intersection points and make dot with punch.
→ Joint the punch mark in horizontal in each division these lines are reference lines for cutting and folding.
→ Hatch unwanted portion as shown in figure using marker.

(3) Shearing:
→ To remove unwanted portion cut along the dark line.
→ Make a small diagonal cut at all corners of the seam portion in figure.

(4) Folding:
→ Keep the pattern over taper stake such that the line locking with edge of the stake. Using mallet fold the seam portion 180° outwards.
→ Similarly fold all the seams except last seam in portion.
→ Place the sheet over stake such that edge of align with stake edge and fold the hem portion 90° downwards.
→ Now it's got hopper shape without locking.

(5) Locking and finishing:
→ Overlap the locking portion 10 mm on last division, hemming the 10mm portion both bottom and top fold outwards.
→ Use proper stake and mallet make perfect shape.
→ Check for the dimension.

★ PRE AND POST LAB QUESTIONS:

Q1. How many sides in hopper?
Ans= Four sides are there in hopper.

Q2. Define sheet metal work?
Ans= The craft of doing sheet metal work.

Q3. What is the use of hopper?
Ans= Hopper can be used in flour mill, chimney, and A/C duct, etc.

Q4. Which device used to measure angles?
Ans= Divider and protractor are used to measure angles.

Q5. How many inches in one feet?
Ans= There are 12 inches in one feet.

Q6. What are the applications of sheet metal work?
Ans= Some applications are automobile and truck (lorry) bodies, aeroplane fuselages and wings, medical tables, roofs for buildings (architecture).

Q7. Write the difference between divider and jenny caliper?
Ans= Jenny Caliper are used in layout work for locating and testing centre on cylindrical & other sections laying of distance from an edge and to scribe parallel lines.
Divider is used to scribe circles, arcs, parallel lines and laying of distance, to divide straight or curved lines into a number of equal spaces, to find the centre of a round bars, to transfer the dimension from a rule to job.

Q8. Mention the angle for dot punch.
Ans= 60° is the angle of dot punch.

Q9. What is the use of mallet ?

Ans= Mallets are used to secure pieces of wood together by bluntly striking the pieces until they fit into holes and other openings.

Q10. How to call the shape forming tools ?

Ans= Shape forming tools are used for gripping, forming and bending metal. They are generally made up of steel or aluminium. Generally forming tools contain 2 parts in between which metal is positioned. By pressing 2 parts together, the desired shape of the metal is obtained.

★ RESULT:

Thus the required hopper is made out of the given sheet metal piece.

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★ 3D MODEL