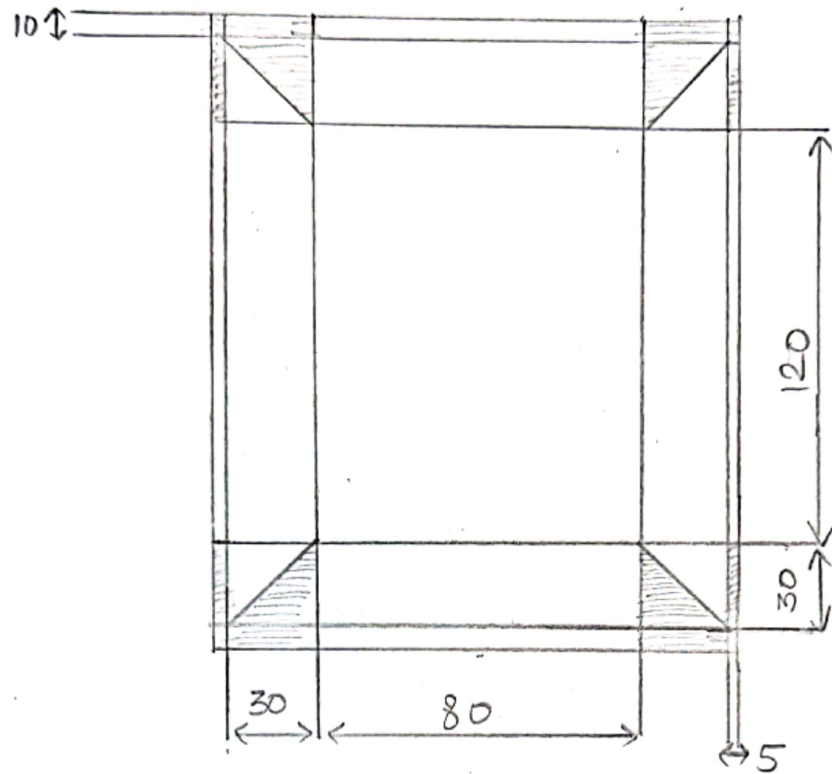


# RECTANGULAR TRAY MAKING

## (1) LAYOUT OF RECTANGULAR TRAY.

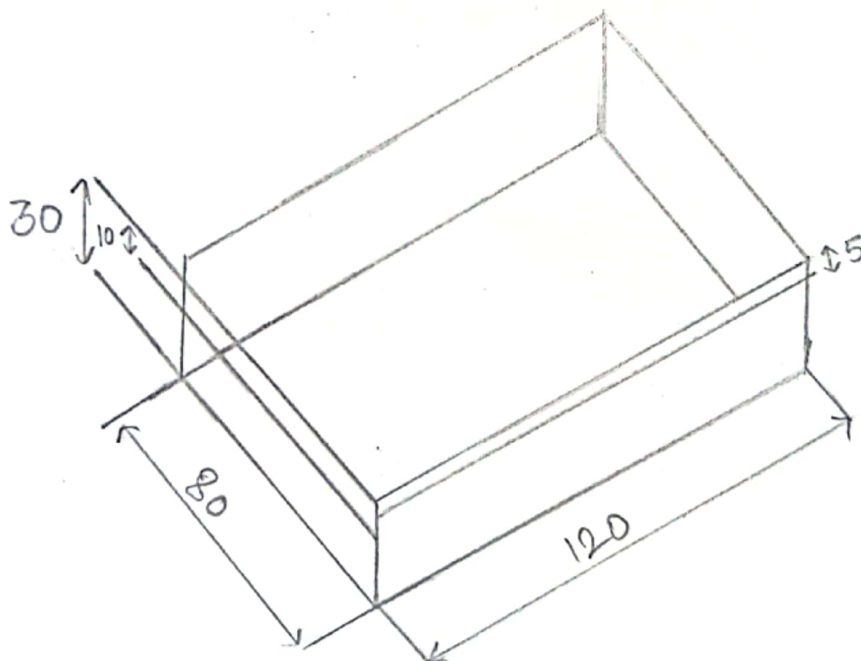
ALL DIMENSIONS IN mm.

▨ → UNWANTED PORTION



## (2) FINISHED RECTANGULAR TRAY.

ALL DIMENSIONS IN mm.



EXP NO: 1

DATE: 22.09.21

## RECTANGULAR TRAY MAKING

**Aim:**

To make a rectangular tray of given size from a sheet metal piece.

**Application:**

Cabinets of stabilizer, computer, UPS and use it store tools or other accessories.

**Material Specification:**

Material: Galvanised Iron

Sheet of dimension: 200 mm X 150 mm thickness 33 gauge.

**Tools Required:**

(1) Steel rule (2) Scribe (3) Straight snip (4) Mallet (5) Stake (6) Anvil.

**Sequence of operation:**

(1) Checking (2) Layout Marking (3) Shearing (4) Folding (5) Locking and Finishing.

**Working Steps:**

(1) Checking:

Check whether the given sheet is having its dimension as 200 mm X 150 mm. If the dimension is excess, trim off using shear. If it's less, change the given sheet metal.

(2) Layout Making:

(1) Keep 200 mm horizontal position and start marking from bottom left side.

(2) Using steel rule and scribe, draw four vertical lines at a distance of 10 mm, 40 mm, 160 mm and 190 mm from reference vertical edge.

(3) Now in your worksheet you have four lines and five spaces.



(4) The first and last 10 mm provide for hemming (safety folding)

(5) Second and before last 30 mm spaces provide for height and side of job.

(6) Third 120 mm space provide for height and side of base of the job.

(3) 150 side marking:

(1) Keep 150 mm side horizontal position and start marking from bottom left side.

(2) Using steel rule and scriber draw four vertical lines at a distance of 5 mm, 35 mm, 115 mm and 145 mm from reference horizontal edge.

(3) Now you have 5 spaces, first and last 5 mm space providing for hemming second and before last 30 mm space providing for height and side of the job third 80 mm space provide for base of the job.

(4) After completing both side (150 mm & 120 mm) marking in each corner one square in 30 mm x 30 mm with in the square draw diagonal line from the base corner. Now you have two triangles in the square, then identify and shade the unwanted portions as shown in the figure which is called as seam allowances.

(4) Shearing:

(1) Remove the unwanted portion shown in figure/layout.  
(2) While cutting, cut along the proper line and remove the unwanted portions.

(5) Folding:

(1) First fold 200 mm side hem portion 5 mm by keeping the pattern over the anvil edge for  $180^\circ$  towards the marking, repeat this step for opposite edge.

(2) Use rectangular stake, fold along base line 80 mm x 120 mm for  $90^\circ$  opposite to the marking. Now you get base and four sides of the tray, repeat this step for other edges.

(3) The incomplete tray is having four corners in align with the corner of stake. Using the mallet, fold the triangular shape projection  $90^\circ$  towards the tray. Repeat this step for all the other corners.

(6) Looking and Finishing:

- (1) Fold the remaining portion 10 mm  $180^\circ$  outwards using stake and mallet to lock the triangular folds.
- (2) Use mallet makes it perfect shape.
- (3) Check for the dimensions.

### Pre Lab Questions

Q1. How to cut the sheet metal?

Ans: Sheet metal is cut through snips (hand shear).

Q2. List out the metals used in sheet metal work?

Ans: The two main groups of sheet metal are steel and non-ferrous.

- (1) Steel is most commonly used material in sheet metal shop.
- (2) Copper, Aluminium, Lead and zinc are the most common non-ferrous metals used in the sheet metal shop.

Q3. Why mallet is made of wood?

Ans: Mallet is made of wood as it will not damage the surface of the tool or metal as readily as heavier mallets. The wood also acts as a shock absorber and takes much of the impact. So, mallets made of wood can typically withstand the heavy hits needed to set joints.

Q4. Define Galvanising.

Ans: Galvanising is the process in which metal is coated with a protective layer of zinc to prevent corrosion of metal.

Q5. What is the use of tray?

Ans: Tray can be used to store tools or other accessories. It is also used in cabinet stabilizers, computer and UPS.



Q6. Why is scribe used for marking?

Ans: Scribe is used to mark because the latter are hard to see, easily erased and imprecise due to their wide mark but scribe lines are thin and semi-permanent.

Q7. Name the various sheet metal operations.

Ans: Different types of sheet metal operations are:

- (1) Shearing operation
- (2) Blanking & Fine Blanking operation
- (3) Punching operation
- (4) Piercing operation
- (5) Slotting operation
- (6) Bending operation
- (7) Perforating operation
- (8) Notching operation.

Q8. What is hemming?

Ans: Hemming refers to the process of folding over the edge of a piece of sheet metal and then pressing it to make it flat. This stiffens the sheet and creates safer, non-jagged edge.

Q9. Name the striking tools used in sheet metal work?

Ans: Striking tools used are:

- (1) Riveting hammers
- (2) Raising hammers
- (3) Setting hammers
- (4) Ball peen or Machinist's hammers
- (5) Nail hammers
- (6) Mallets.

Q10. How to identify the thickness of the sheet metal?

Ans: Gauges are used to measure the material thickness of a sheet of metal.

Result:

Thus the required rectangular tray is made out of the given sheet metal piece as per the specification

— X —