



**ME-160**

# **Mechanical Engineering Drawing**

## **Orthographic Projection Drawing**

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**Md. Tanvir Hossain**

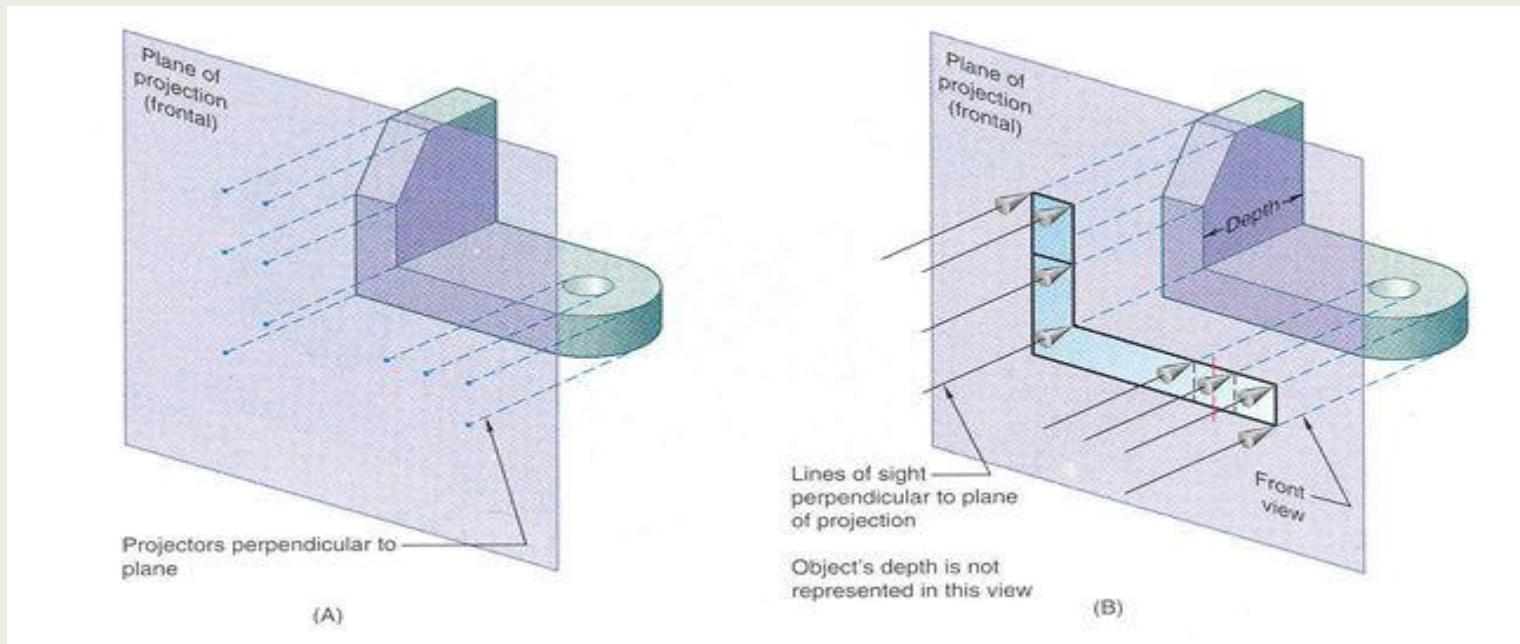
**Course Teachers:**

**Dr. Mohammad Nasim Hasan**

**Musanna Galib**

# Orthographic Projection

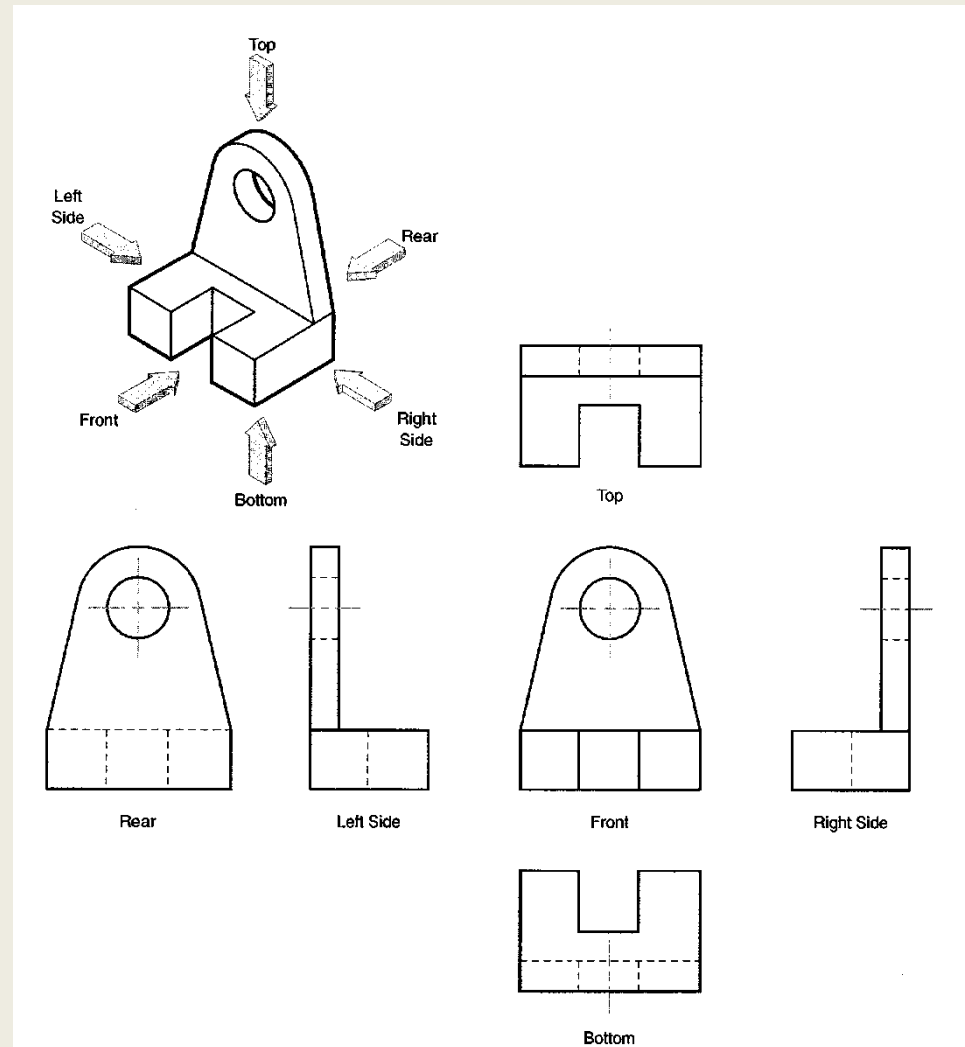
- Orthographic Projections are a collection of 2-D drawings that work together to give an accurate overall representation of an object.



# Six Principle Views

The 6 views of projection include:

- Front
- Right Side
- Top
- Bottom
- Left side
- Rear

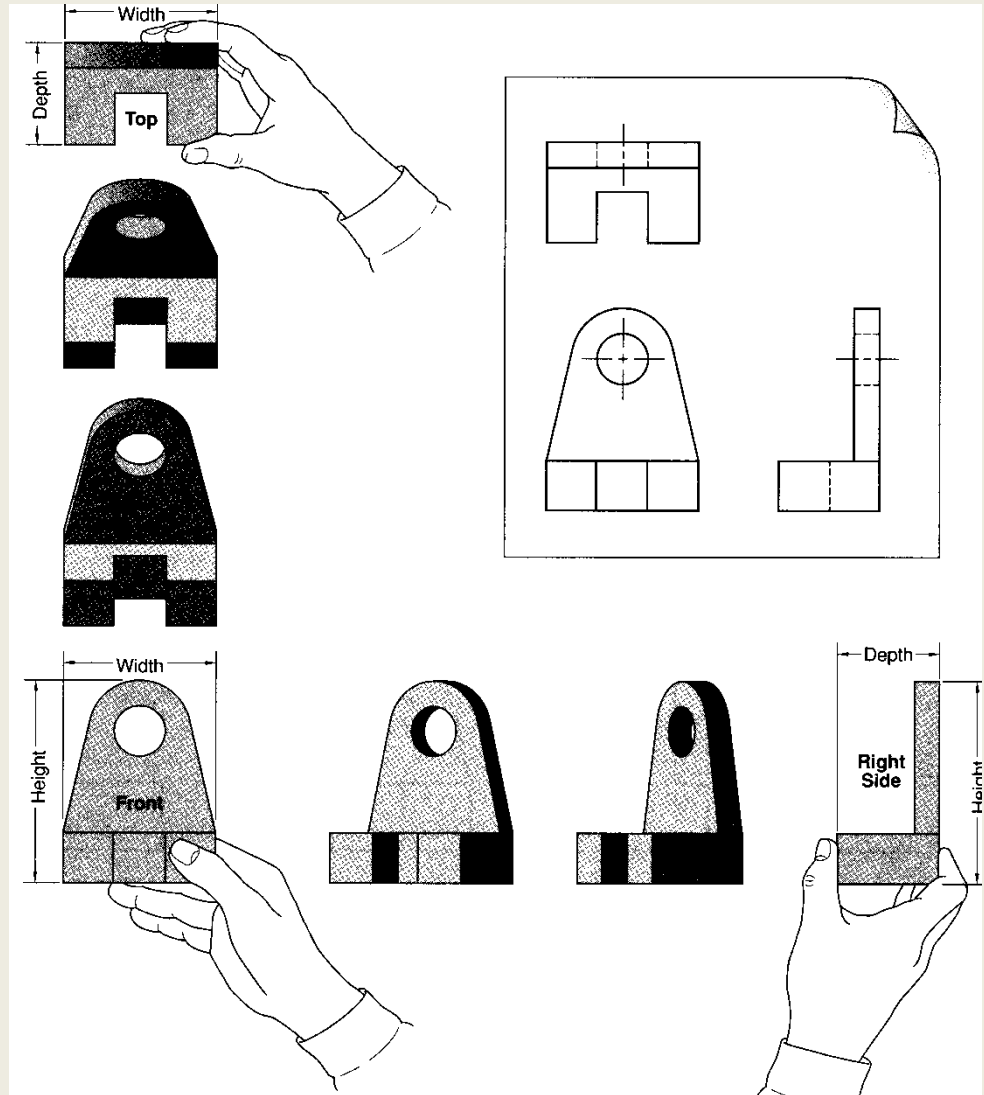


# Rules of Orthographic Drawing

- Pick a Front View that is most descriptive of object, normally the longest dimension is chosen as the width (or depth)
- Most common combination of views is to use are Front, Top, and Side View

# Principle Views

- Front, Right Side and Top are views that simply represented by rotating the object

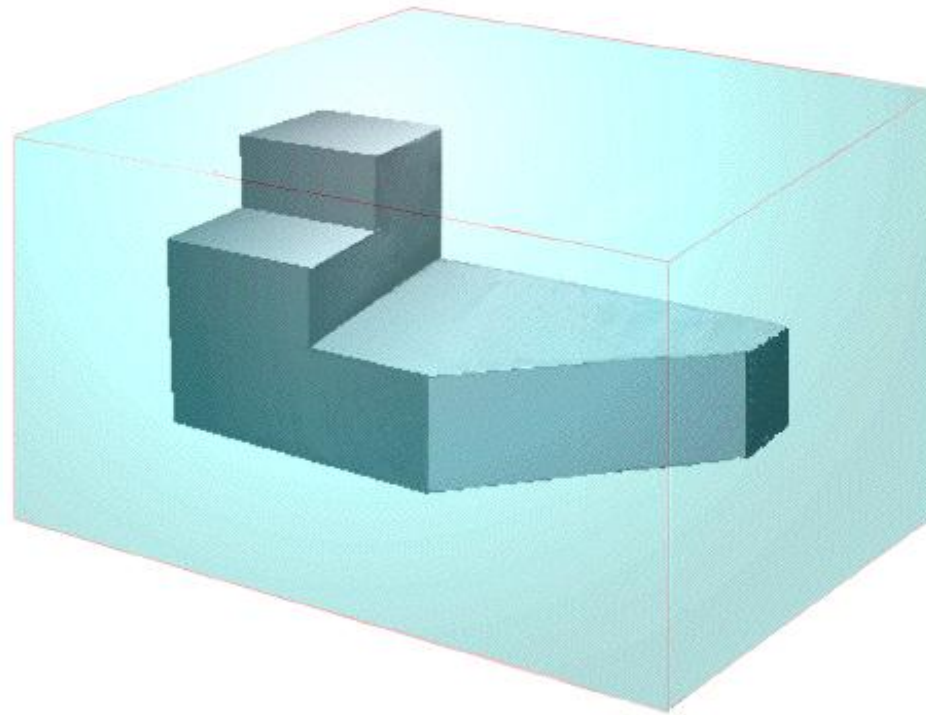


# Glass Box

- Most powerful technique to understand orthographic projections
- Suspend the object with transparent strings inside a glass box
- Freeze the view from each direction (each of the six sides of the box) and unfold the box

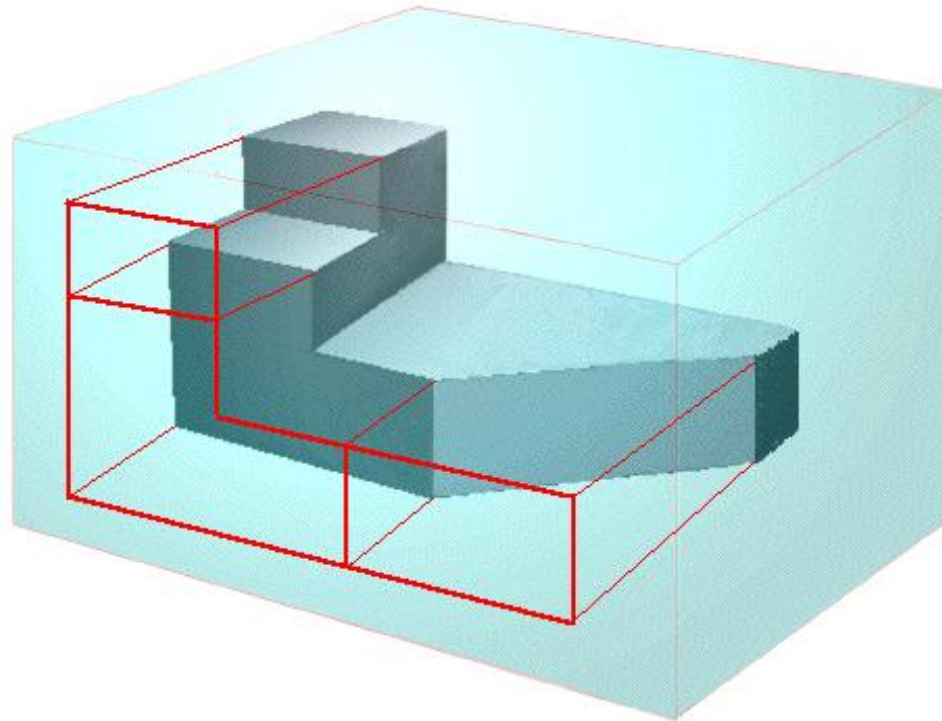
# Glass Box

Projection of points to the three views



# Glass Box

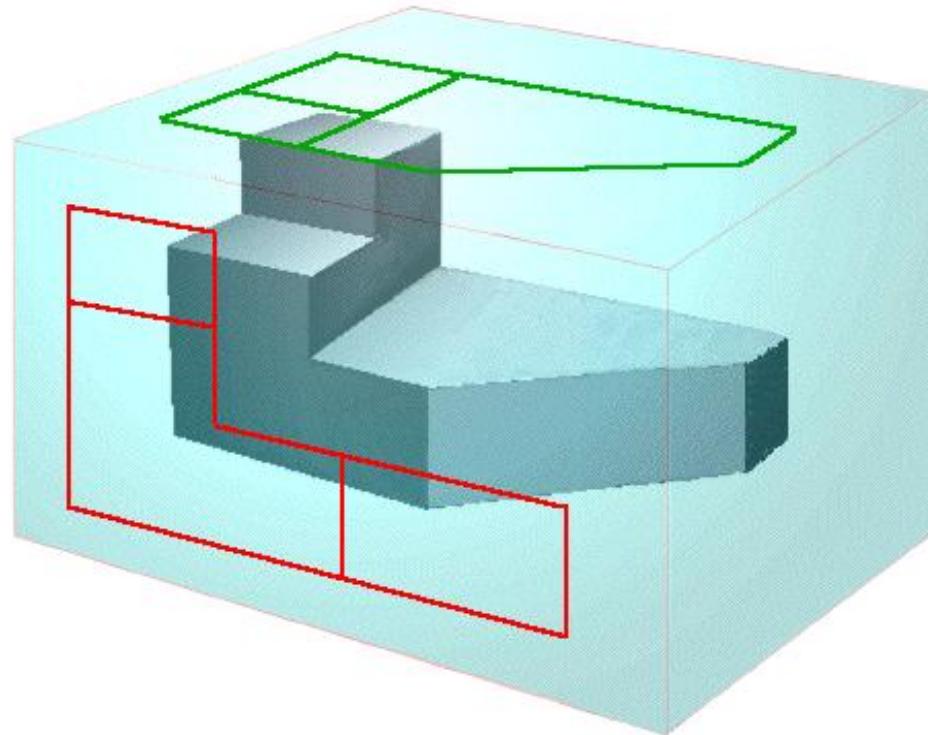
**Projection of points to FRONT VIEW**





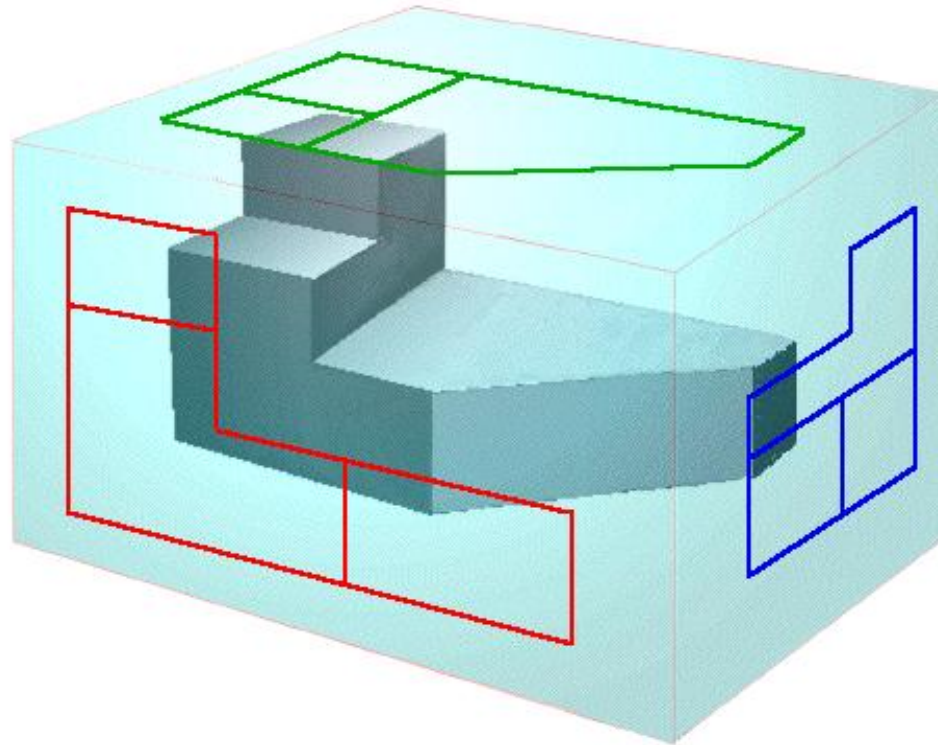
# Glass Box

Projection of points to TOP VIEW



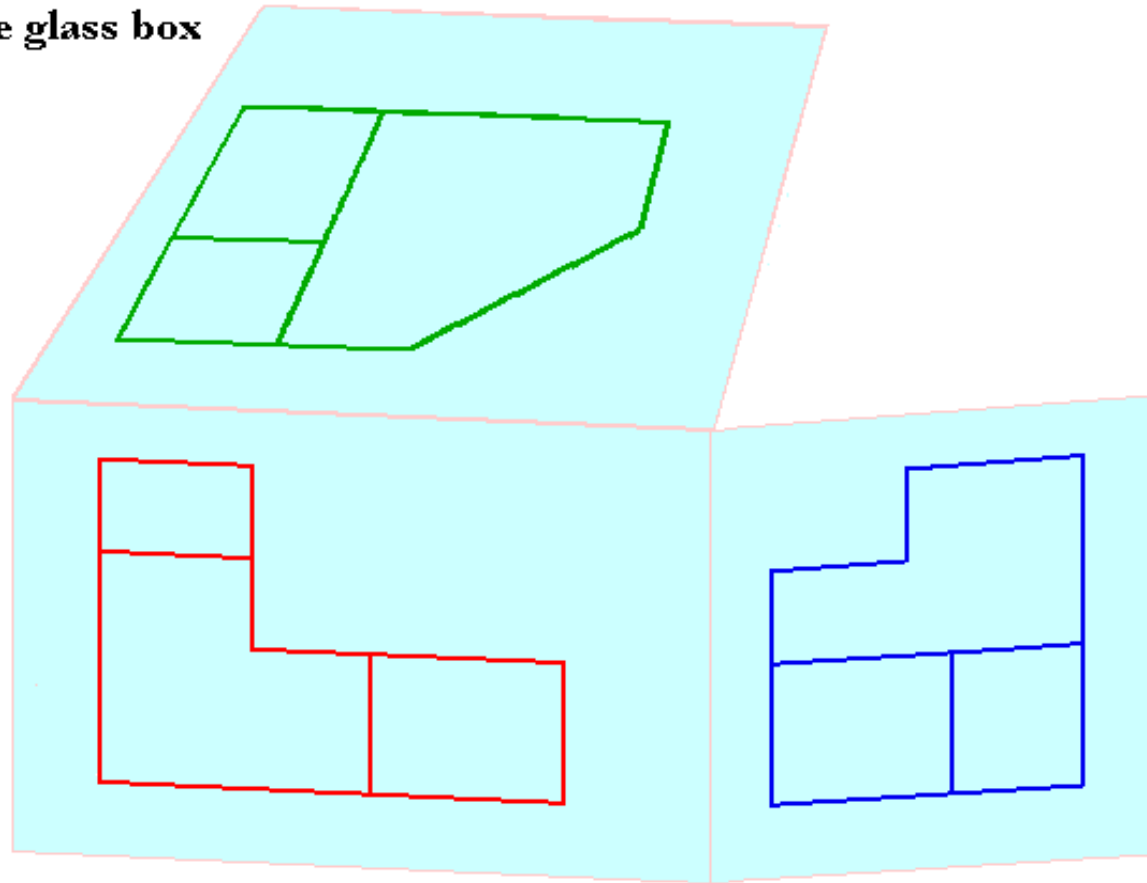
# Glass Box

Projection of points to RIGHT SIDE VIEW



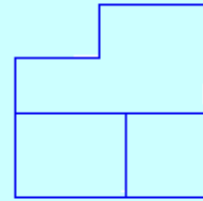
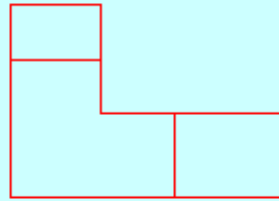
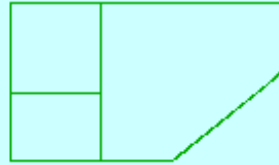
# Glass Box

Unfold the glass box

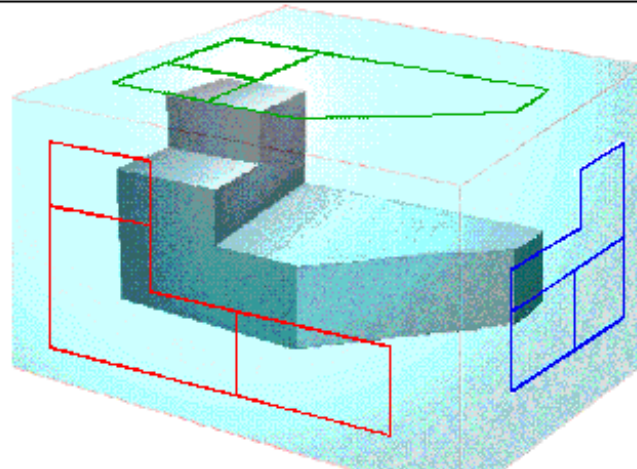


# Glass Box

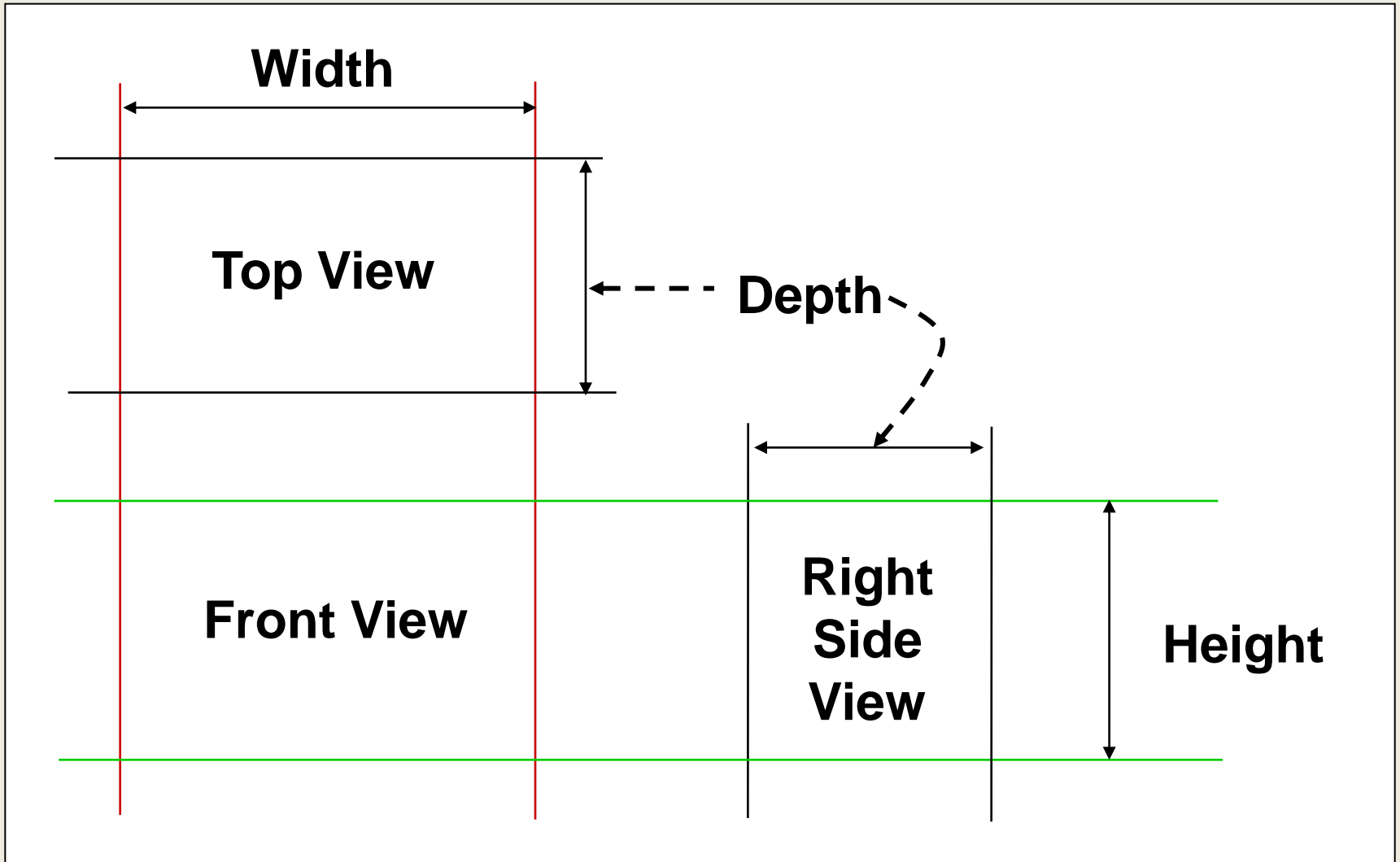
**Unfolded  
glass-box**



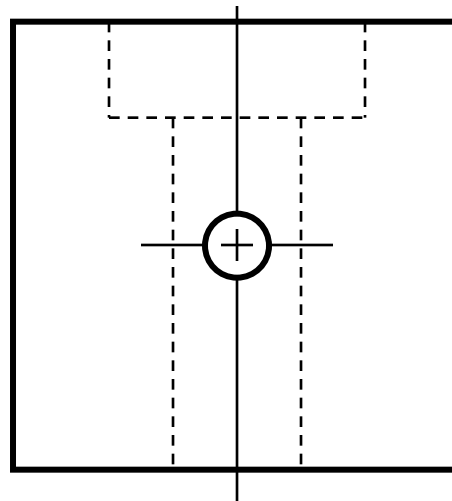
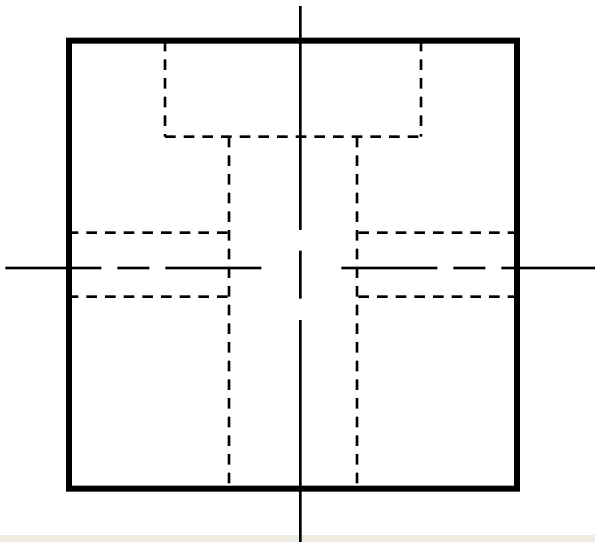
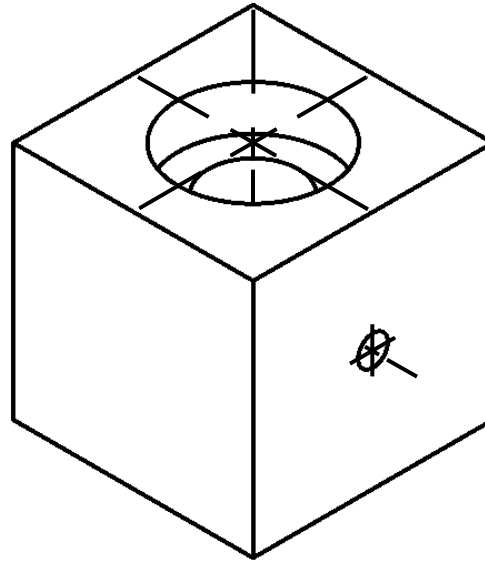
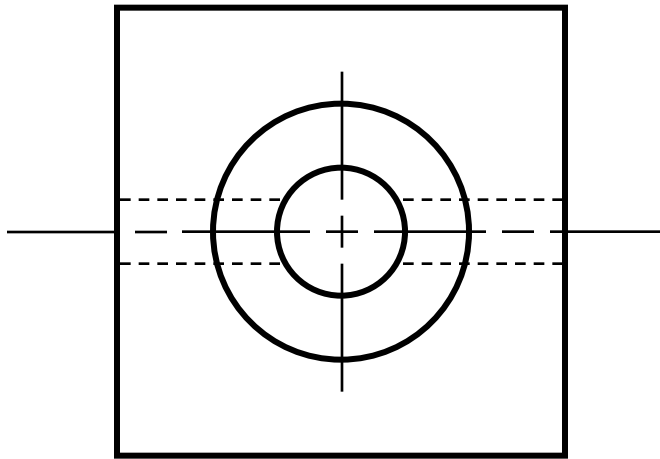
**Object in the  
glass-box**



# Front, Side and Top Views



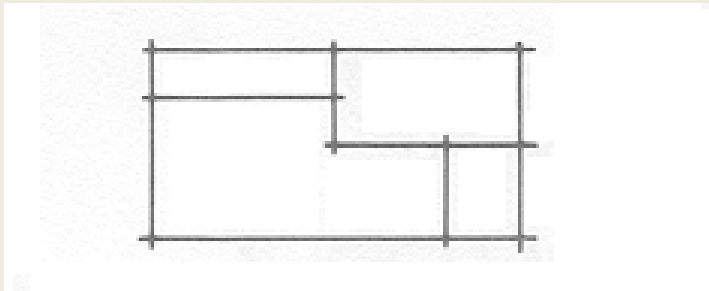
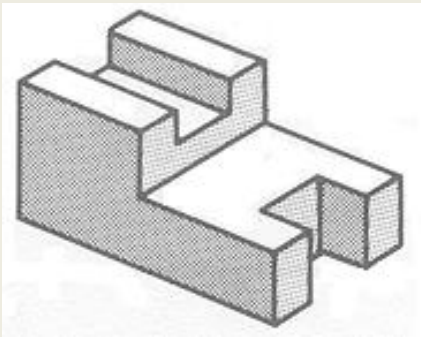
# Example



1. Visible
2. Hidden
3. Center

# Drawing the Views

To complete an orthographic projection drawing follow these steps.

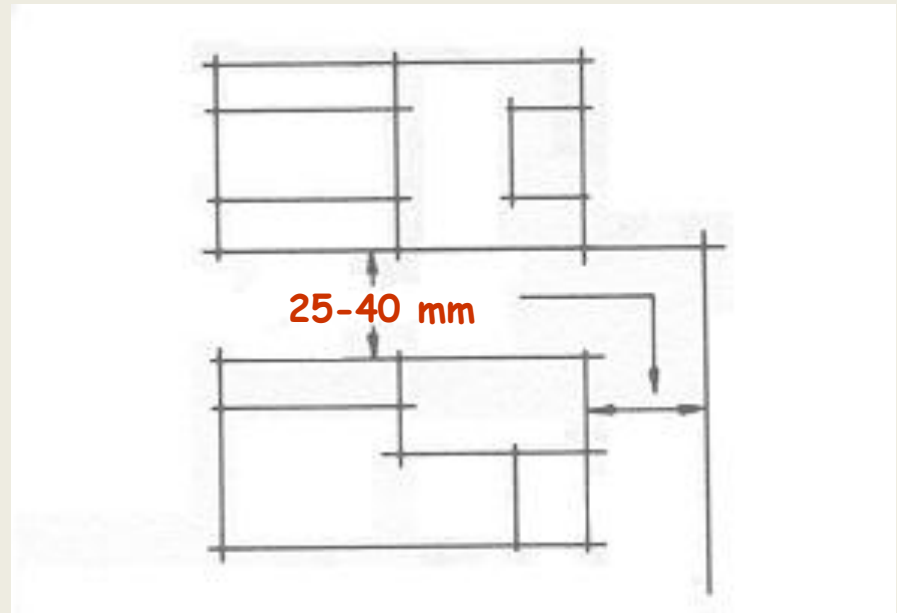


**Step 1:**

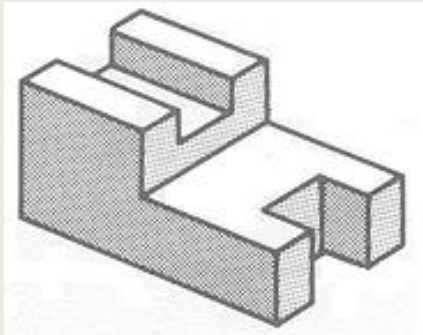
Lightly construct the front view.

**Step 2:**

Space the top view 25-40 mm above the front view. Lightly construct the top view directly over the front view. Extend the lower side of the top view to intersect a vertical line drawn to the right of the front view.



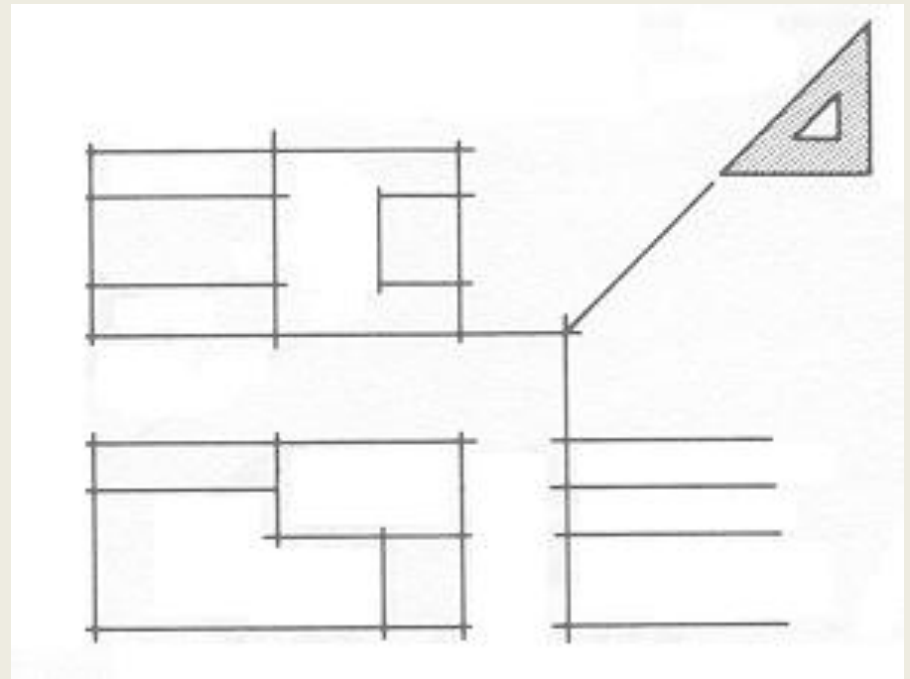
# Drawing the Views



The use of a 45° miter line helps to project features from the top view to the side view.

## Step 3:

Project the features of the front view to the right of the vertical line. Draw a line at 45° from the point of intersection as shown.

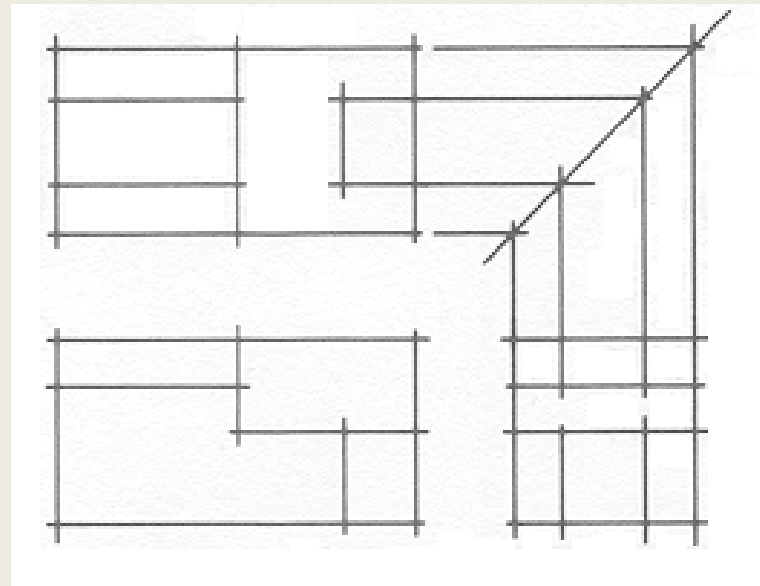
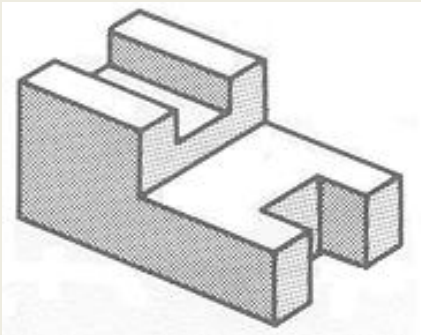




# Drawing the Views

## Step 4:

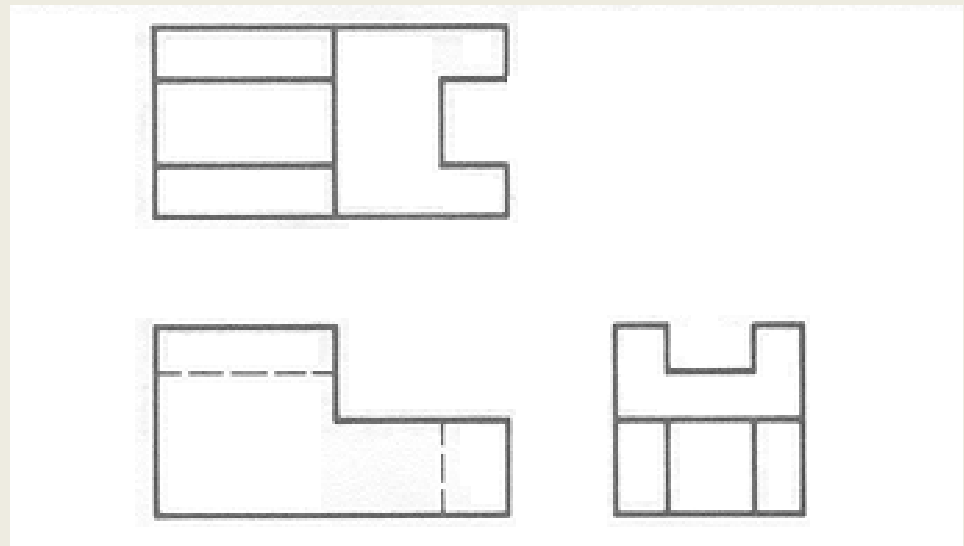
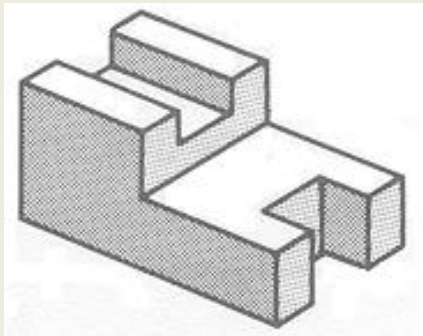
Where the horizontal projection lines of the top view intersect with the miter line, draw vertical projection lines to the side view.



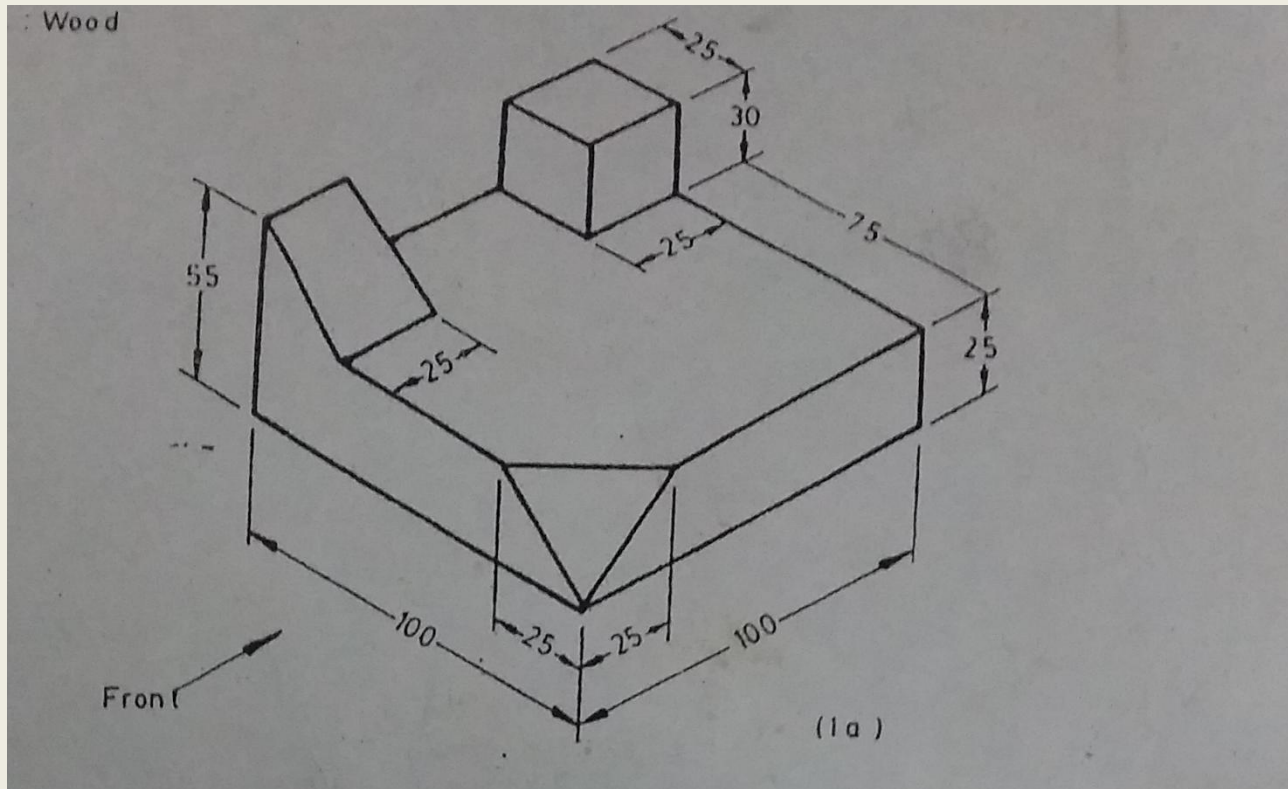
# Drawing the Views

**Step 5:**

**Erase all unnecessary lines. Complete the finished linework to complete the required orthographic views. Add the necessary information into the title block.**



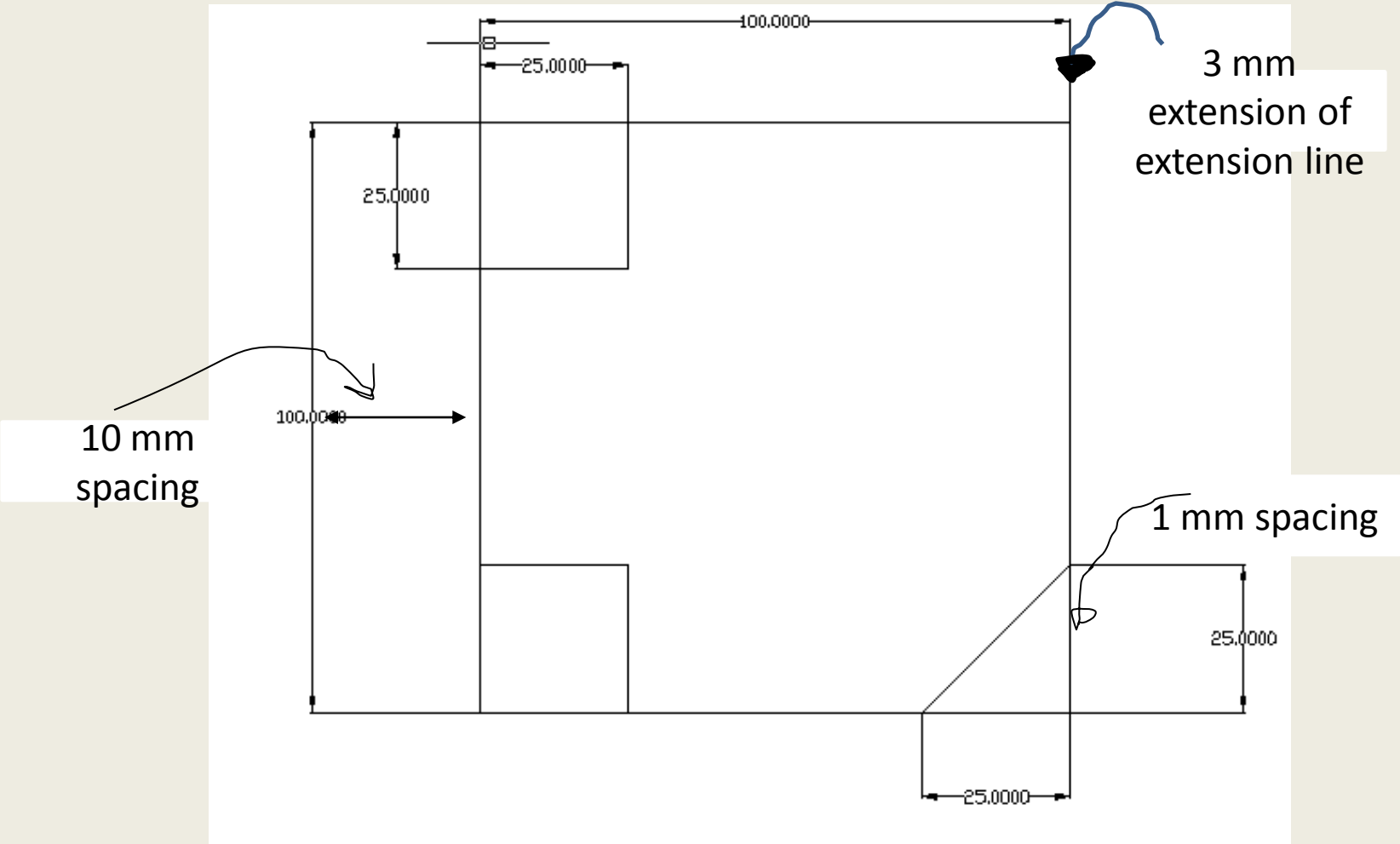
# First Problem



To draw FRONT, TOP and R.H.S views

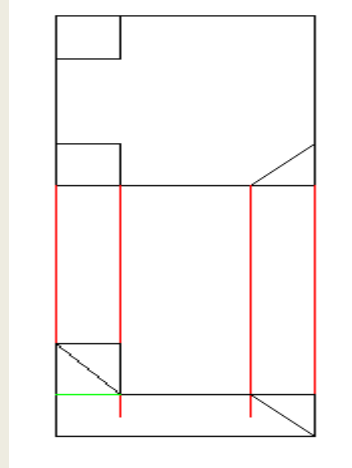
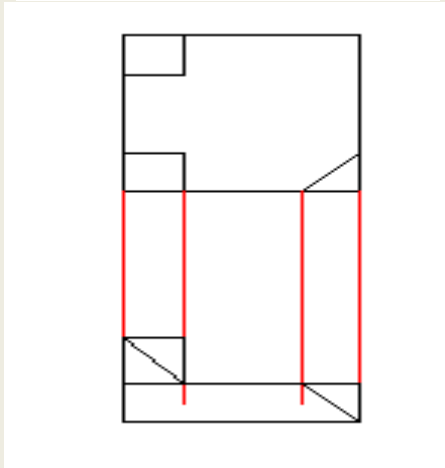
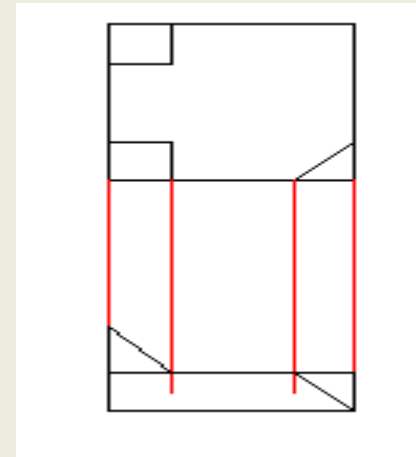
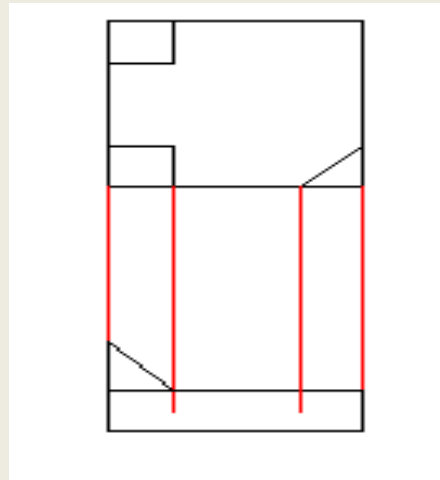
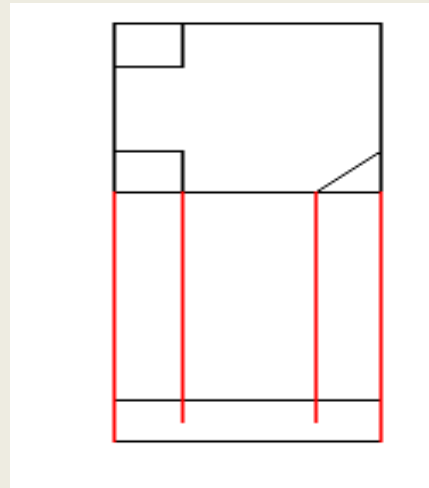
**Step 1:**

Lightly construct the top view.



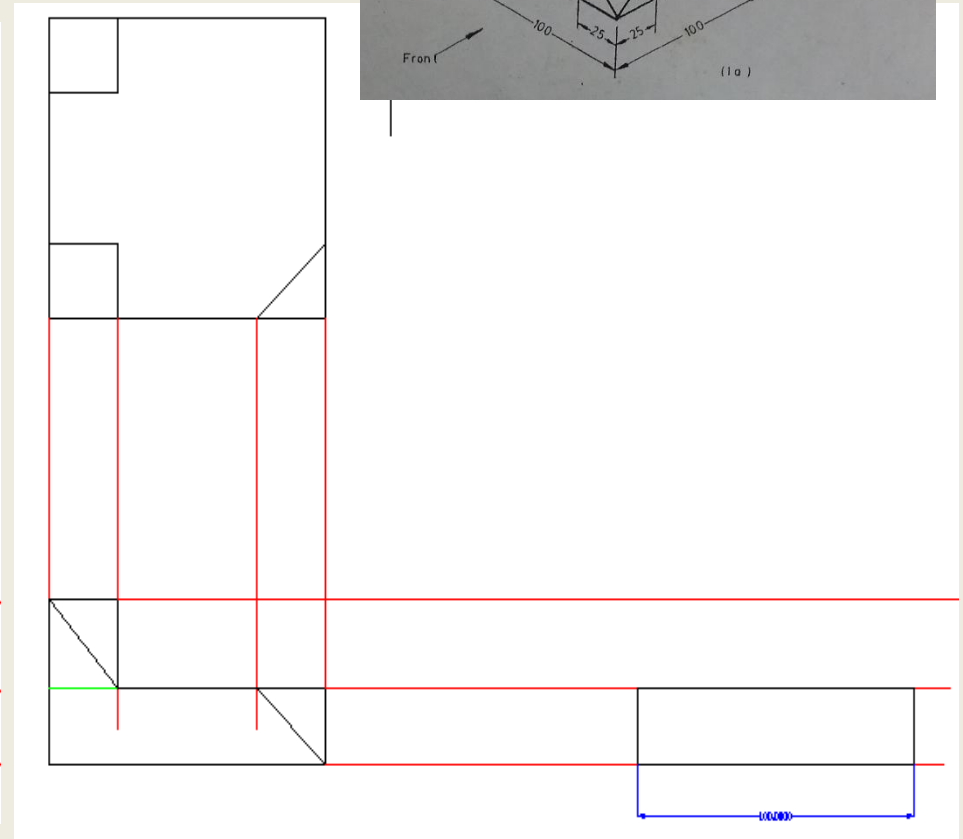
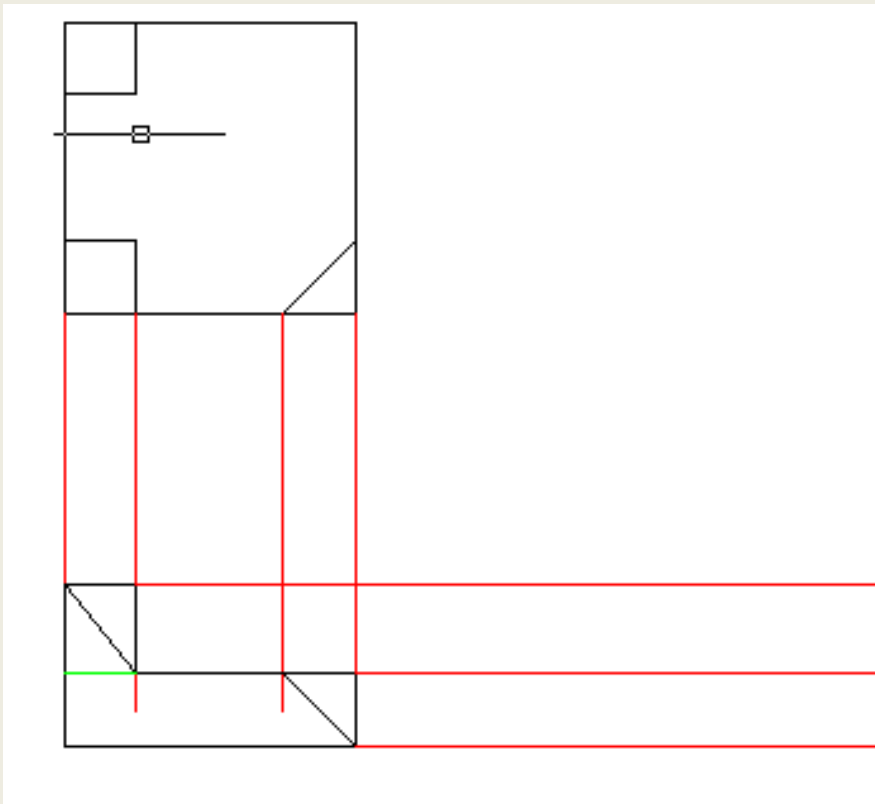
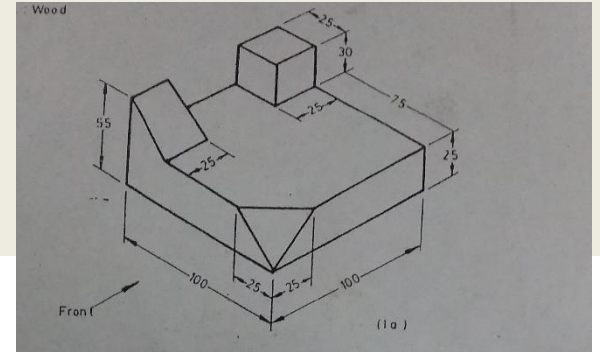
## Step 2:

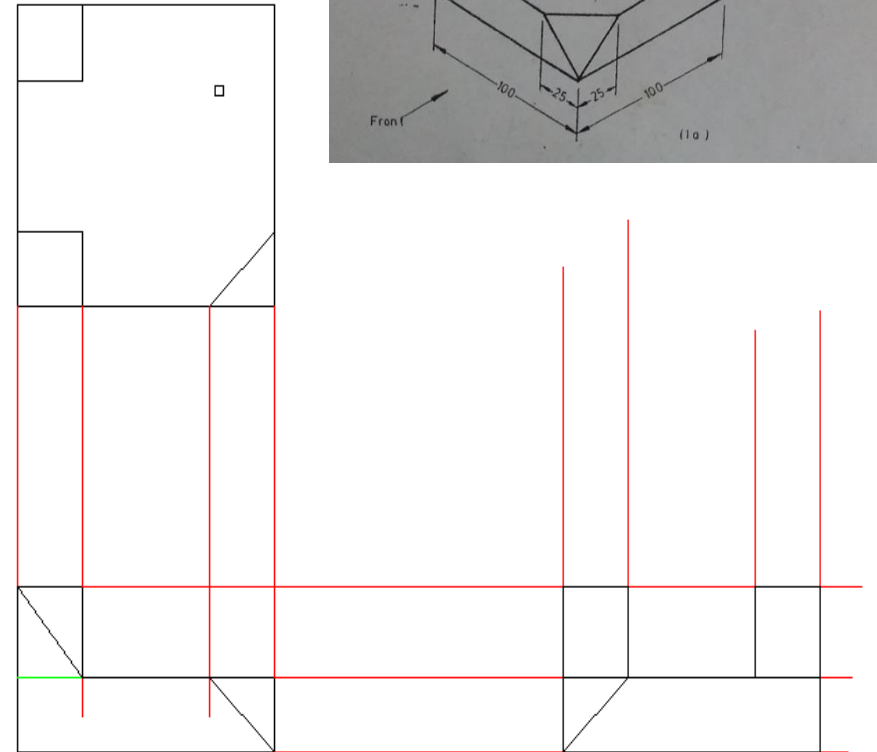
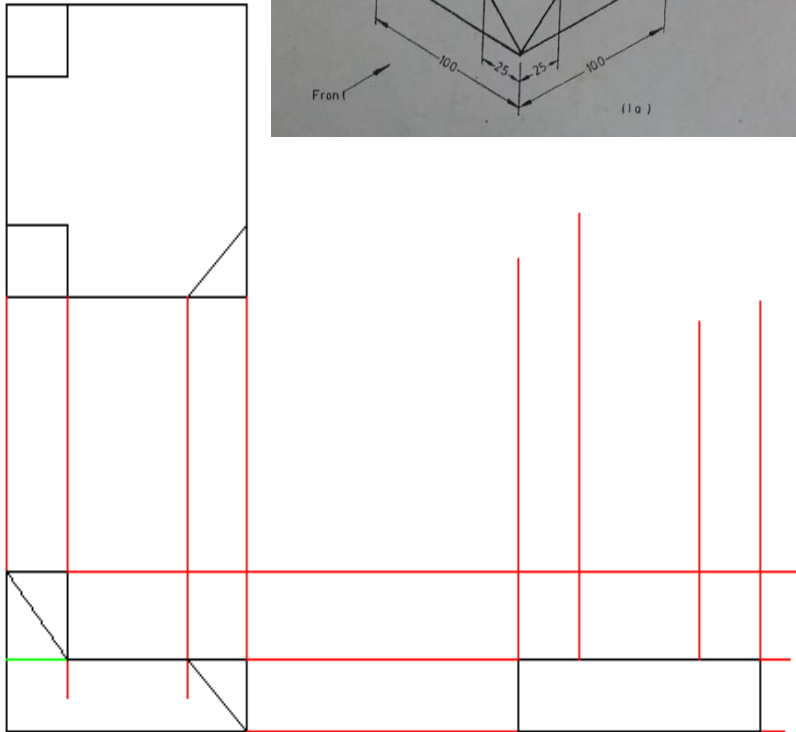
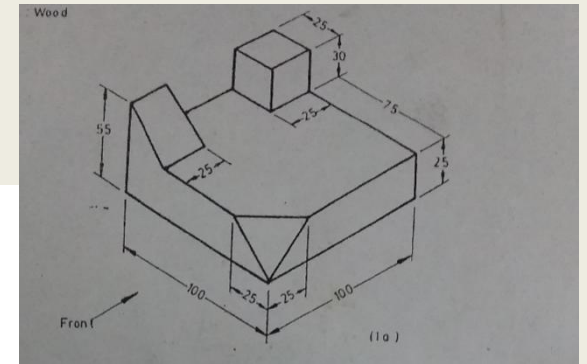
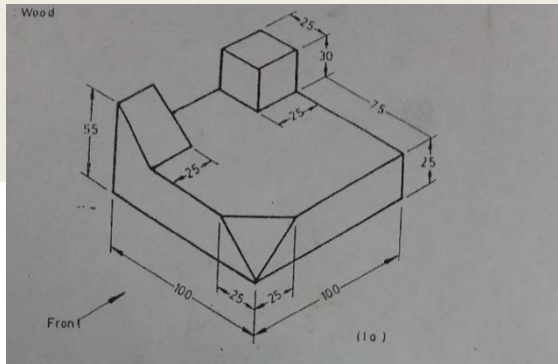
Space the front view 25-40 mm below the top view. Lightly construct the front view directly under the top view.



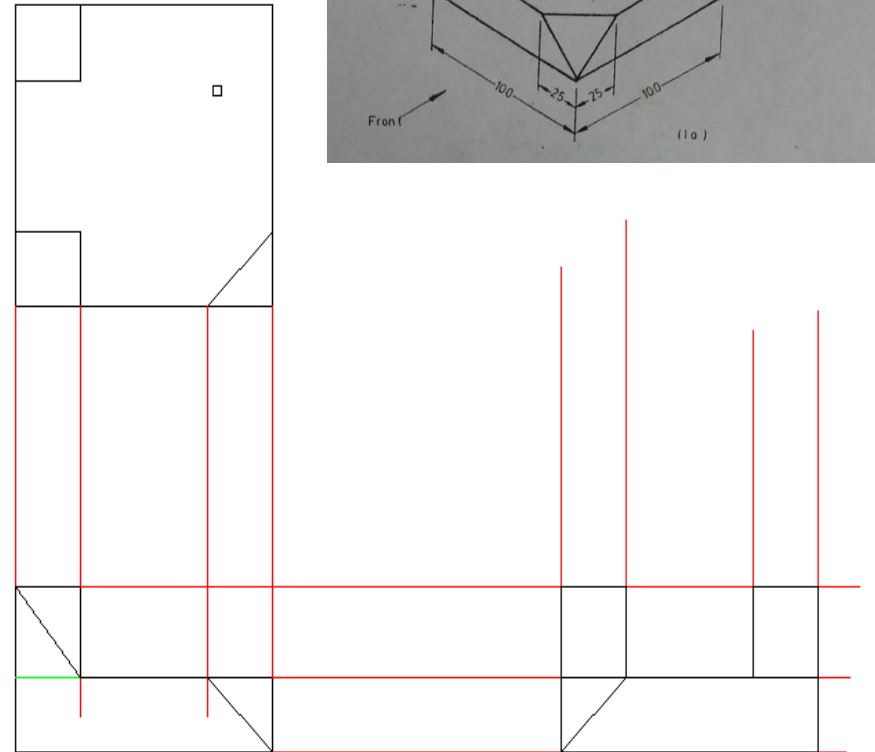
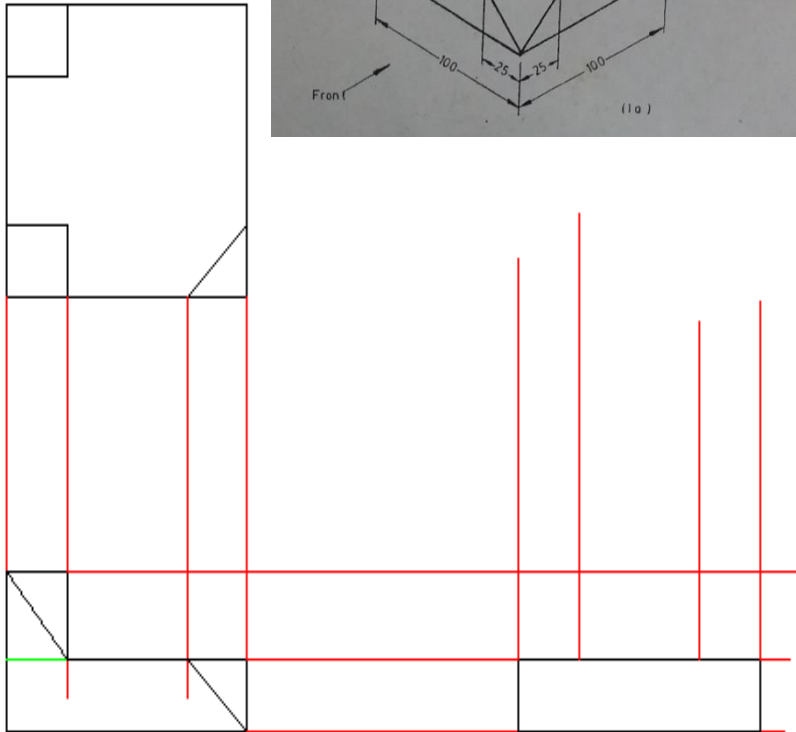
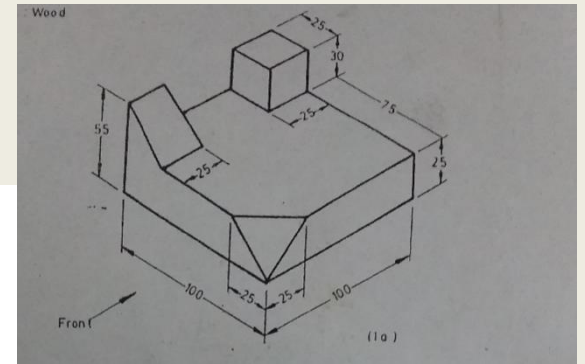
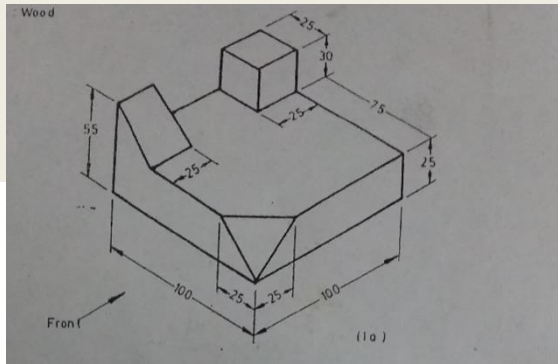
### Step 3:

Space the R.H.S view 25-40 mm right of the front view.



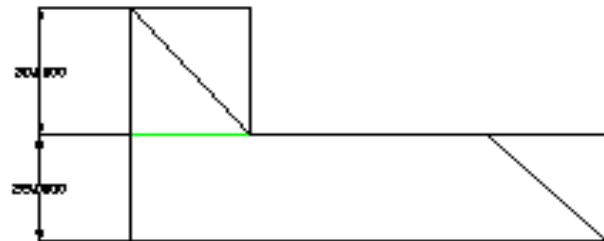
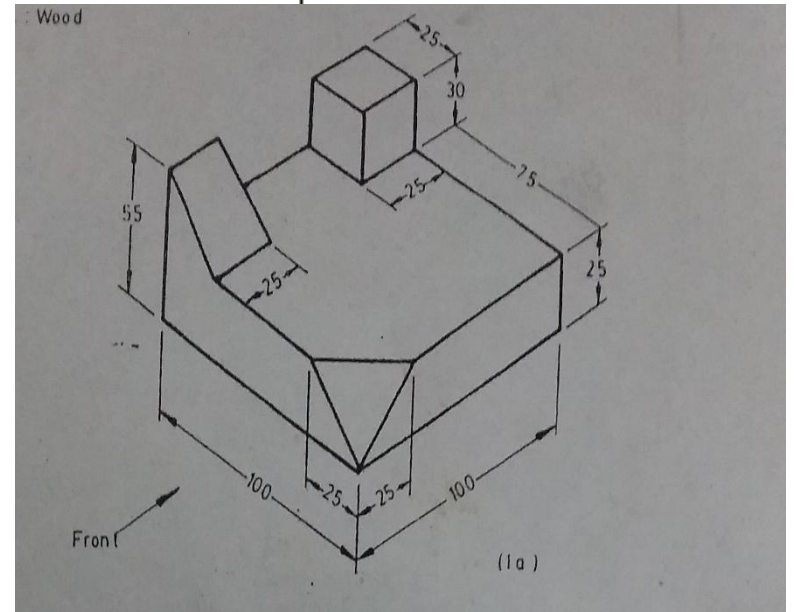
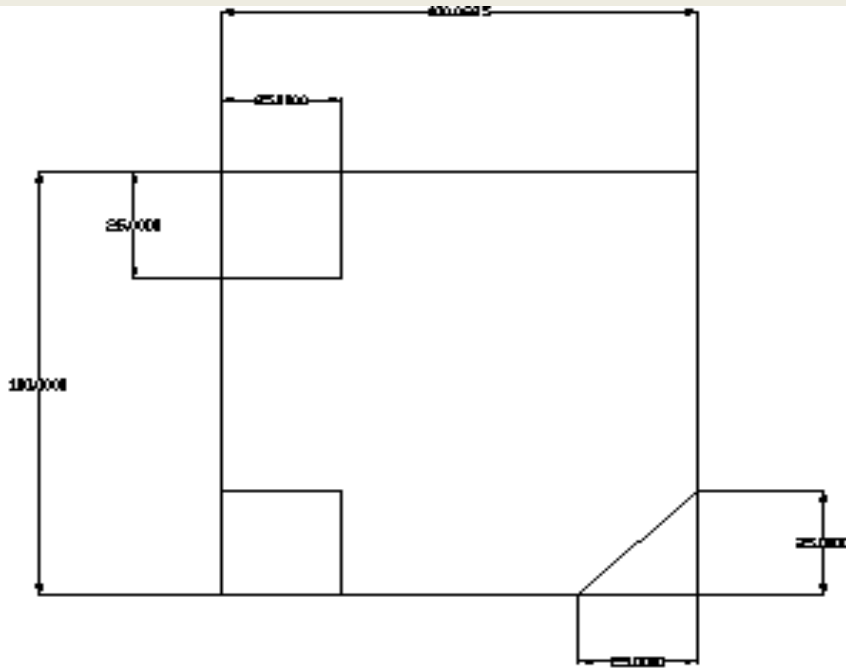


Erase All the Red Lines & Give Dimensions

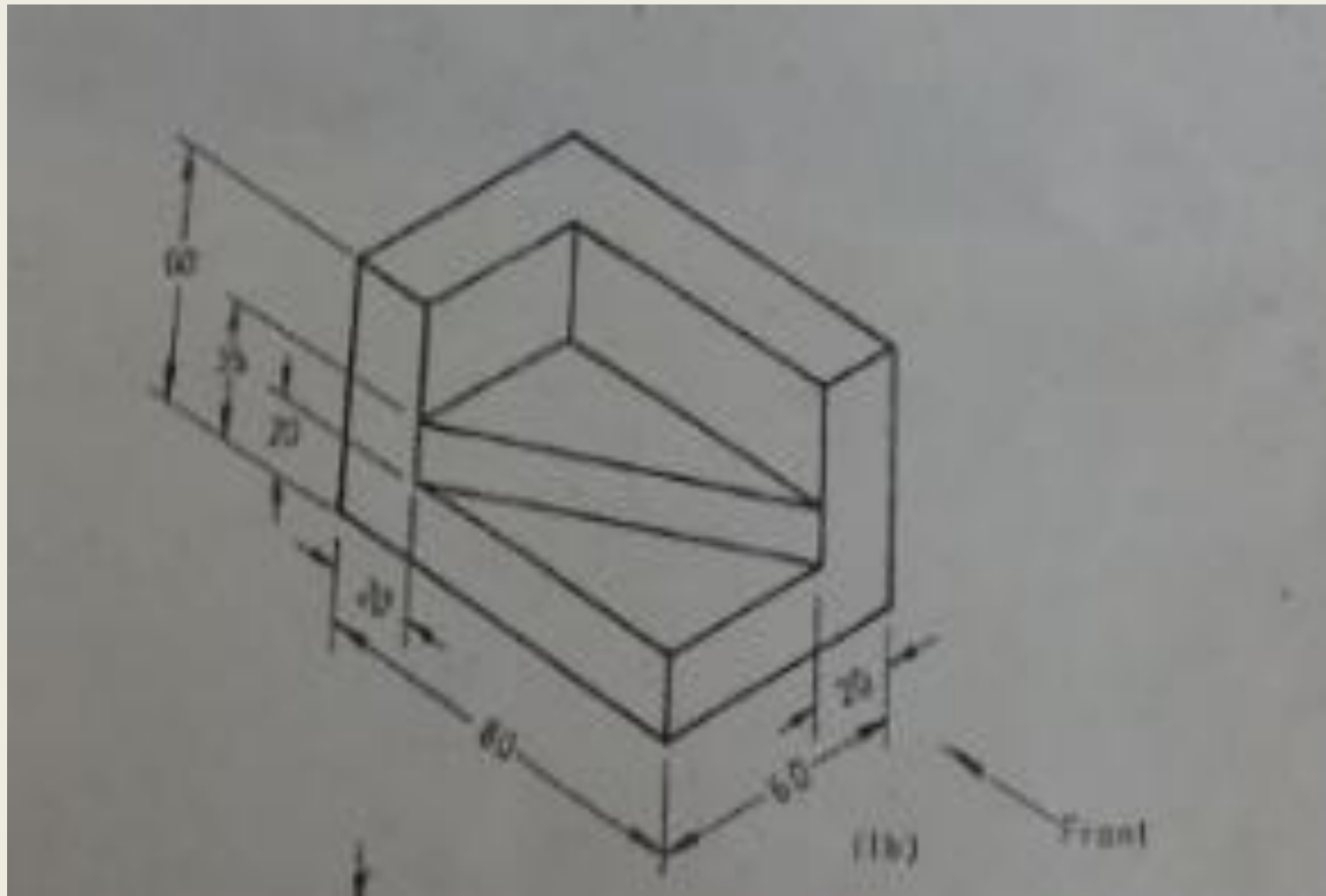


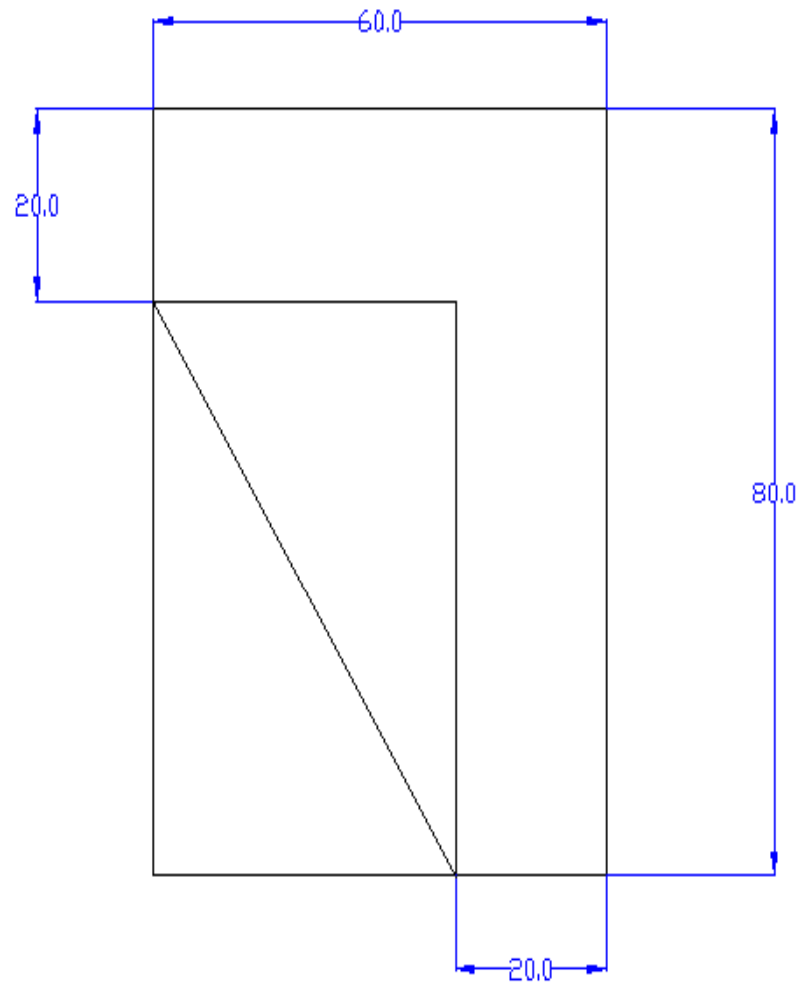
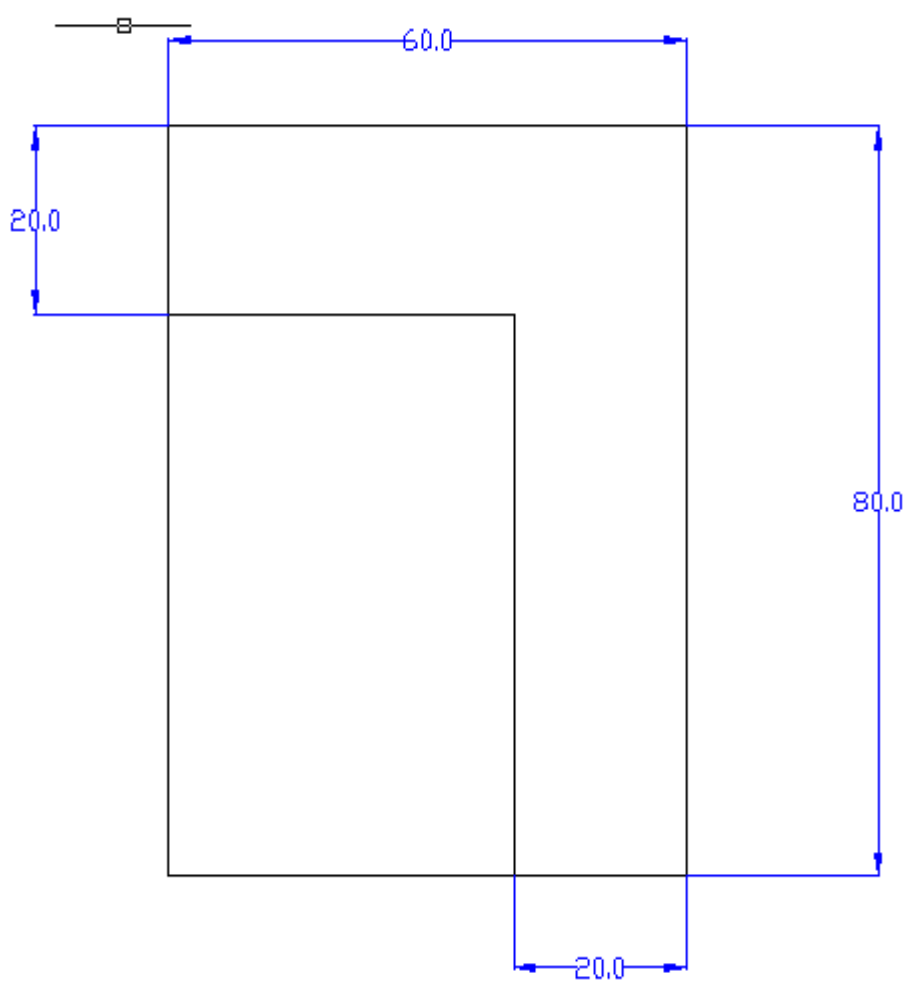
Erase All the Red Lines & Give Dimensions



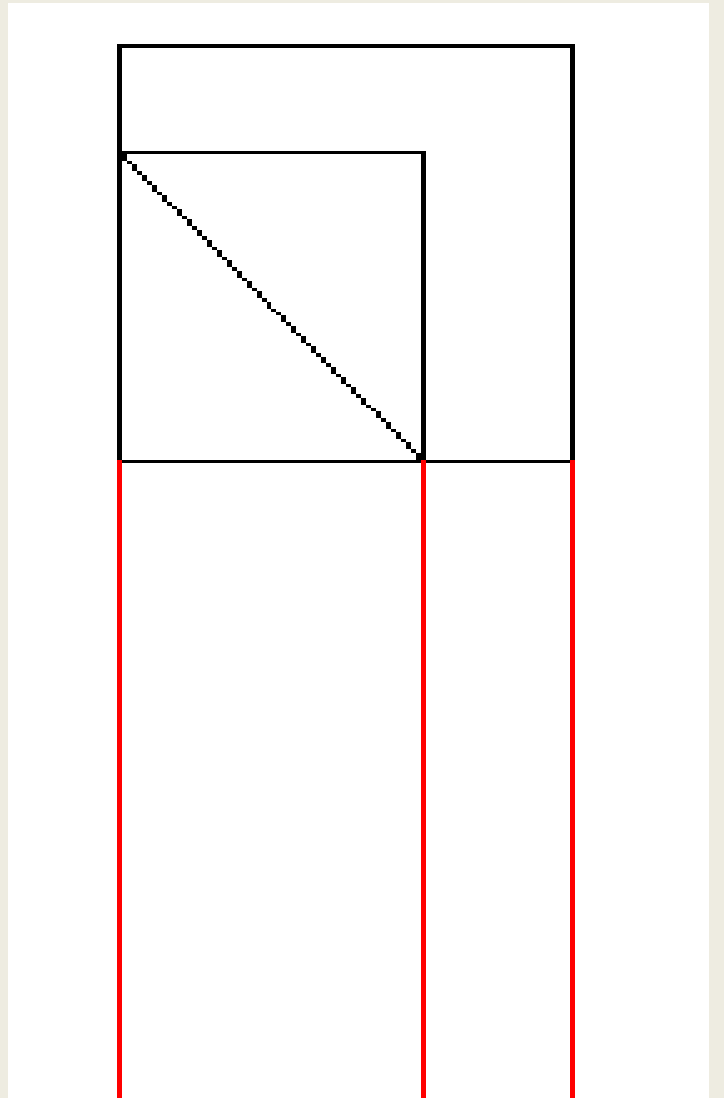
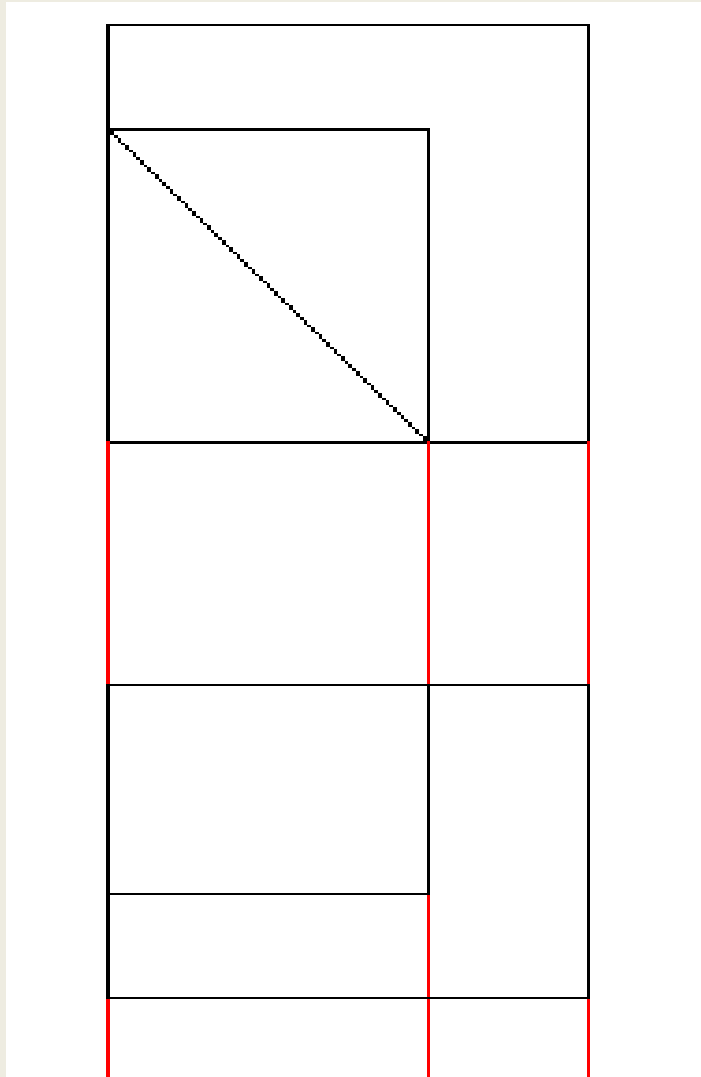


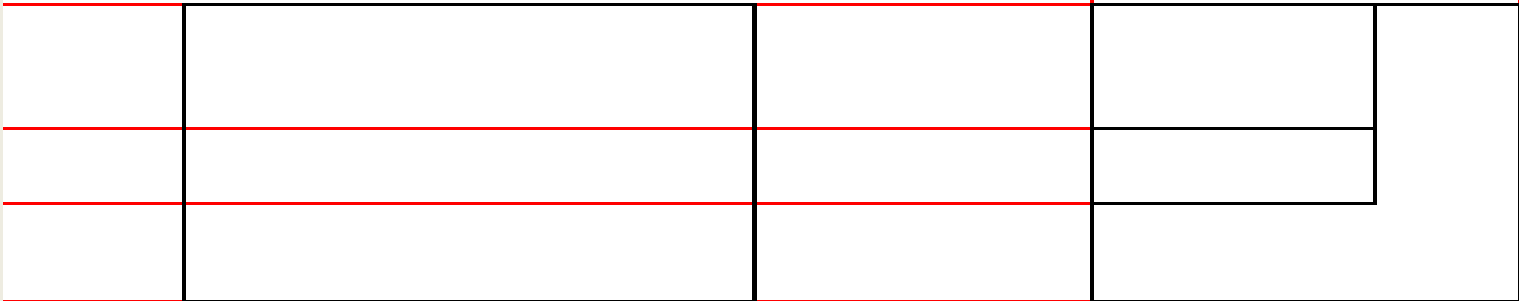
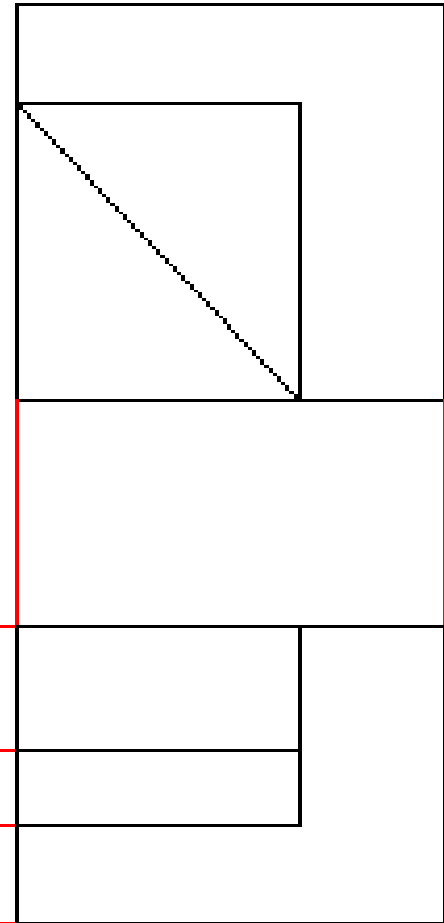
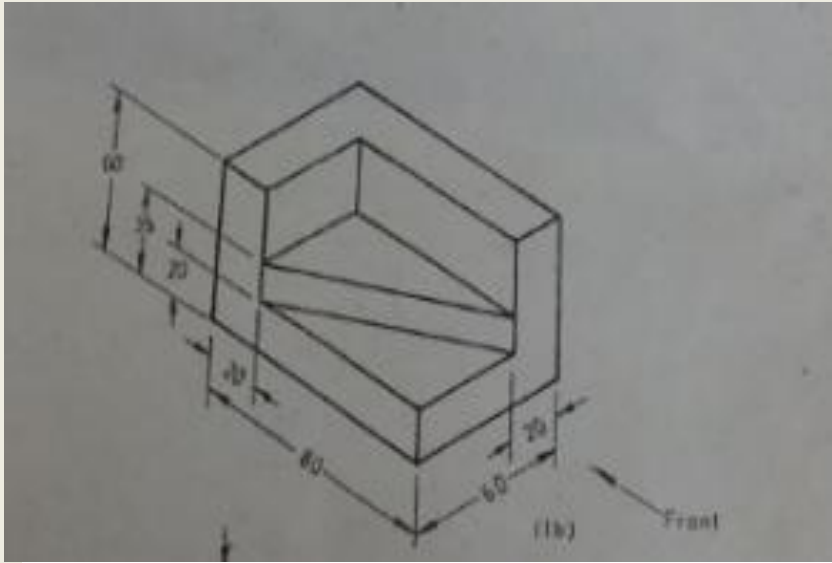
# Second Problem

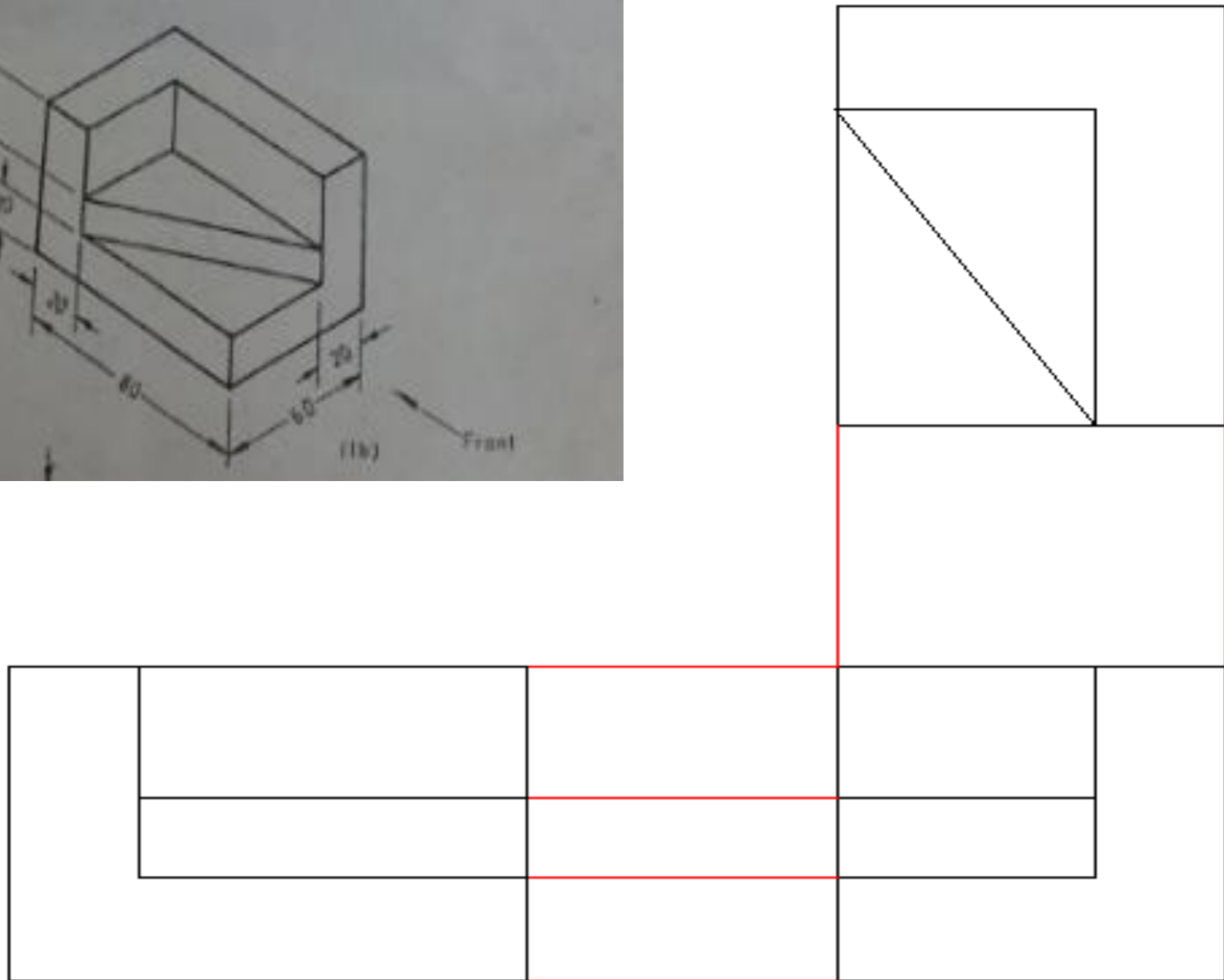
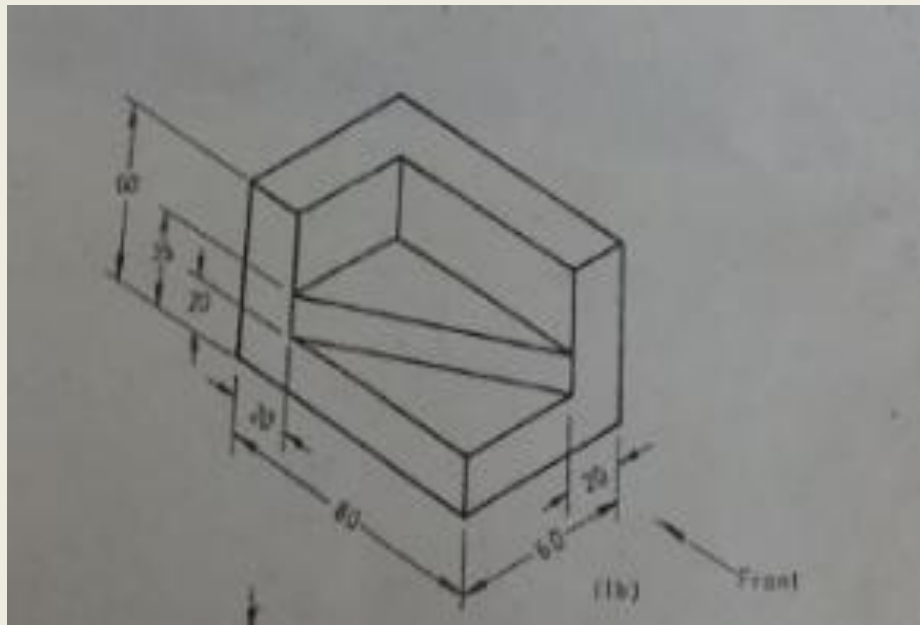


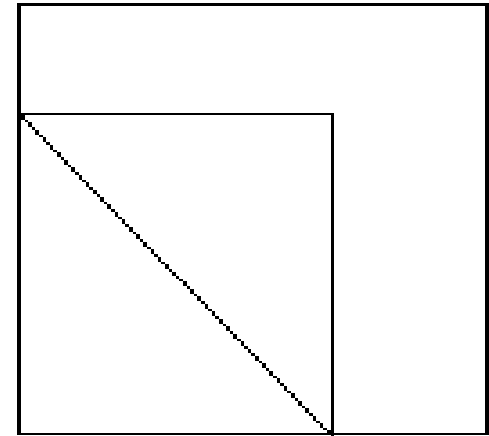
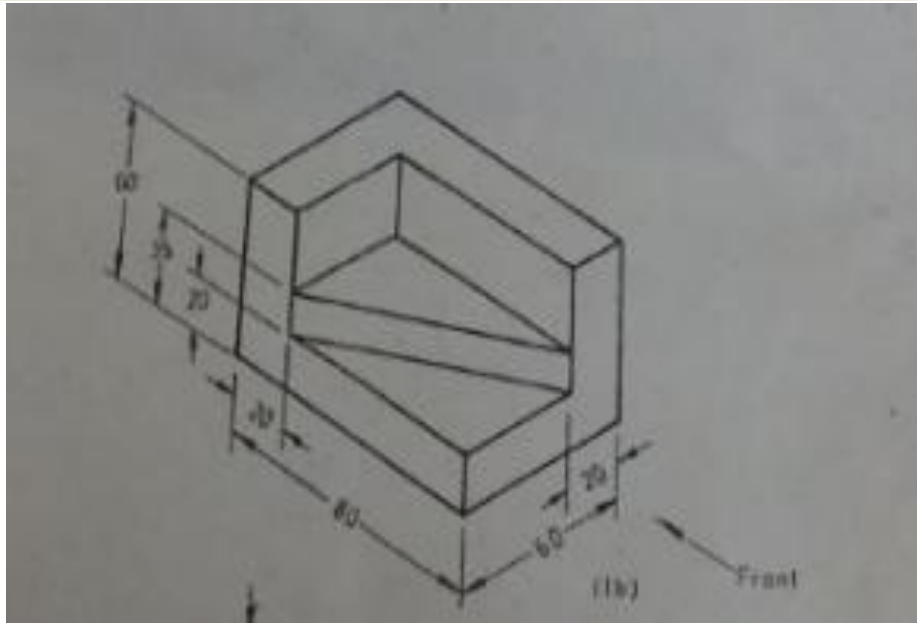


Top View

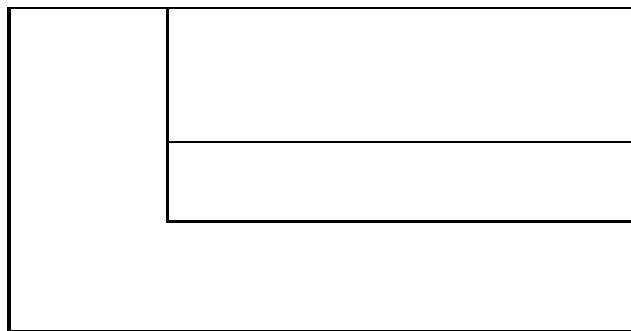




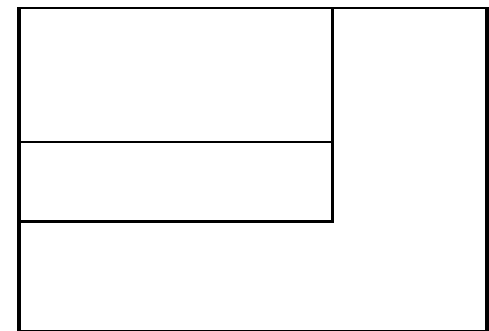




**TOP VIEW**

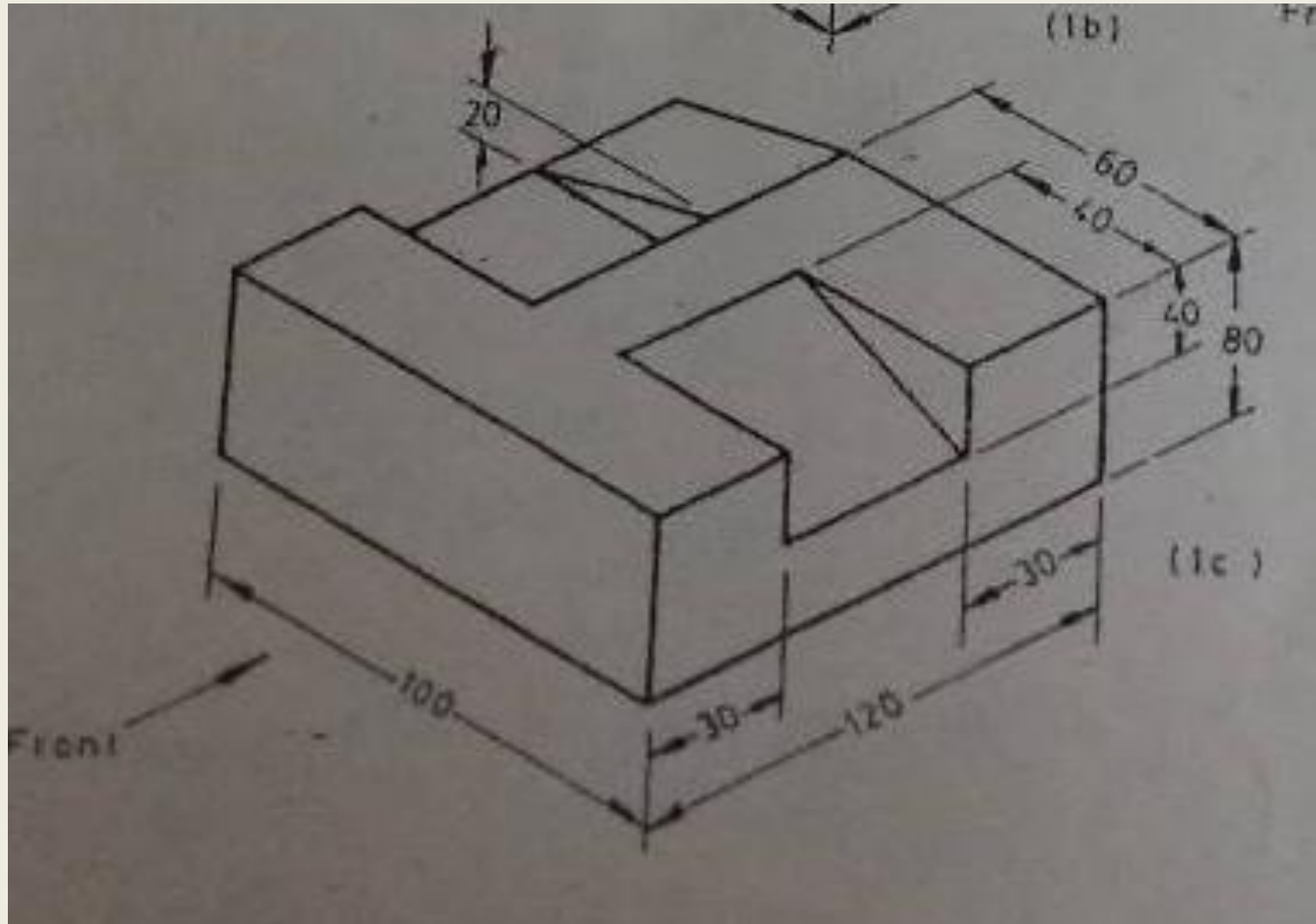


**LEFT HAND SIDE VIEW**



**FRONT VIEW**

# Third Problem





**Persist Until Succeed !!!**