Bangladesh University of Engineering andTechnology

ME 174 (CSE):

Lecture 2: Dimensioning

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Meaning of Lines

Visible lines represent features that can be seen in the current view

Hidden lines represent features that can not be seen in the current view

Center line represents symmetry, path of motion, centers of circles, axis of axi-symmetrical parts

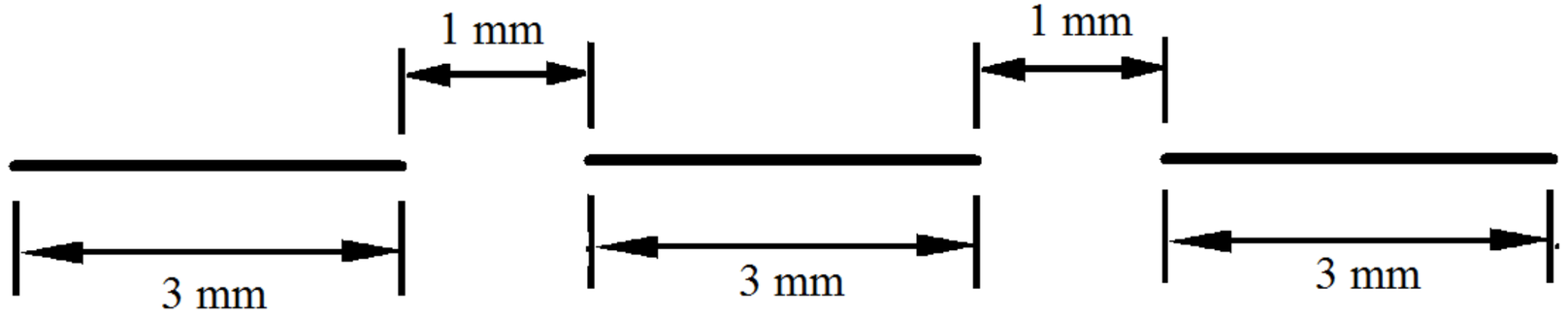
Dimension and Extension lines indicate the sizes and location of features on a drawing

Object Line

Thickness: 100 %

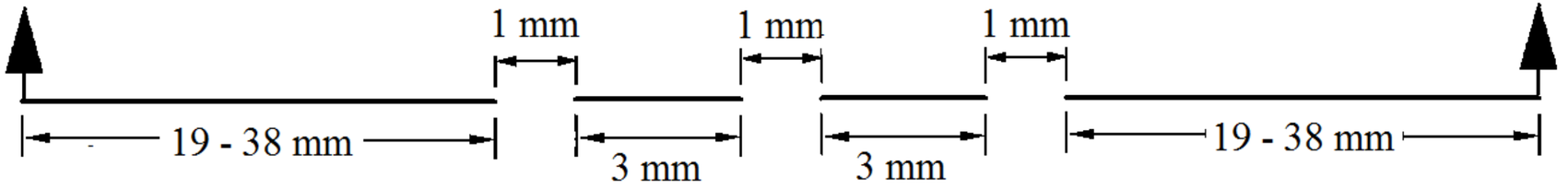
Hidden Line

Thickness: 50 %



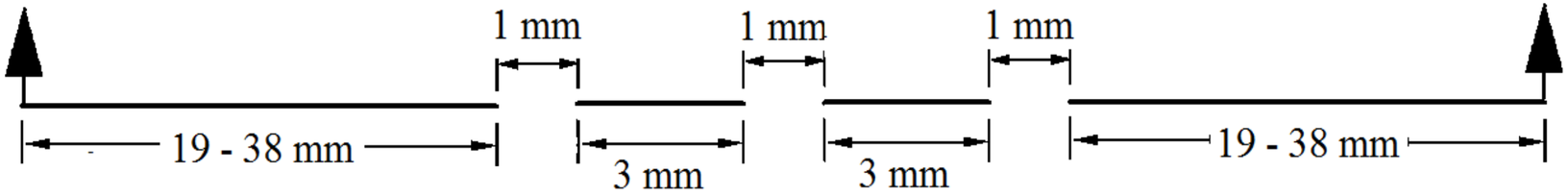
Center Line

Thickness: 50 %



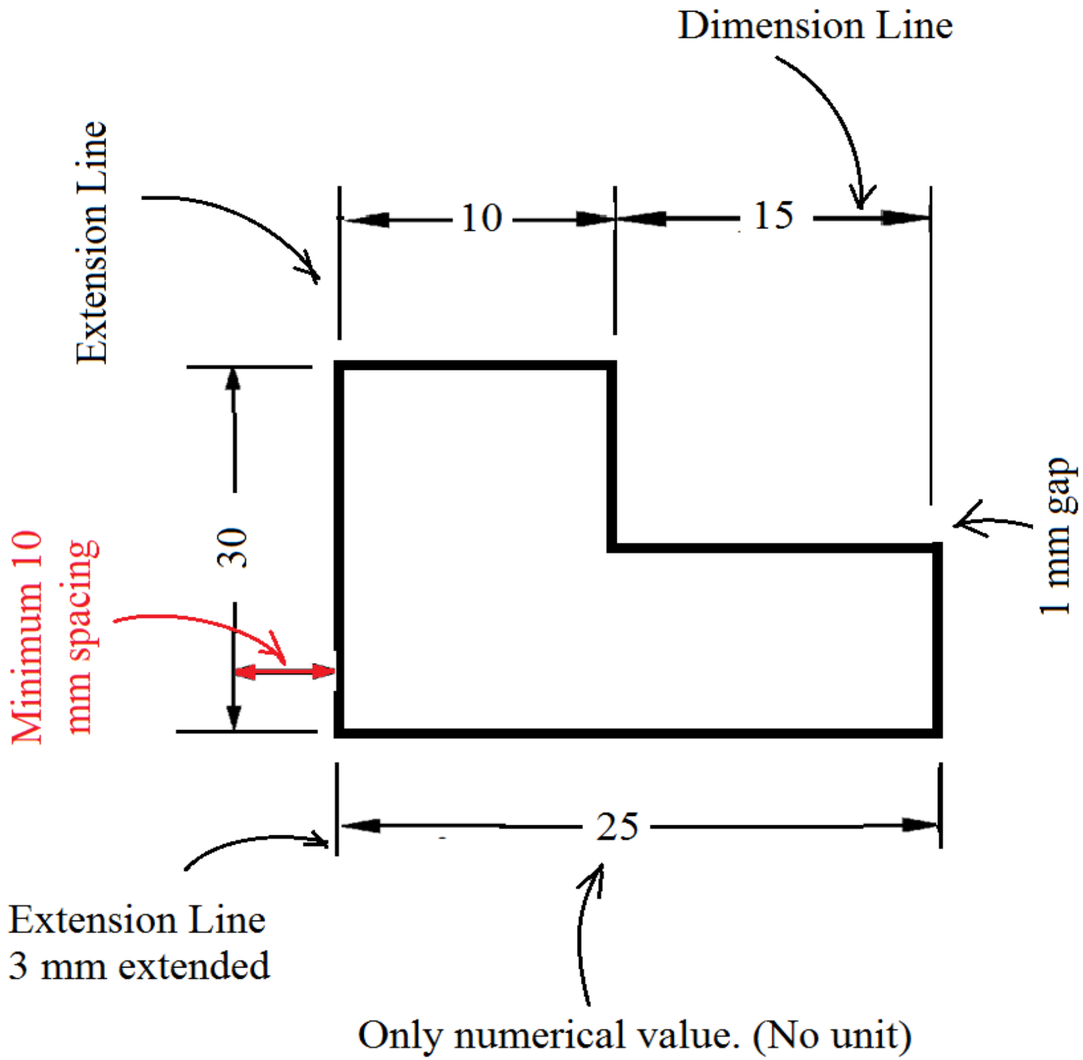
Thickness: 25 %

Thickness: 125 %



N.B.: All Percentages are with respect to the object line

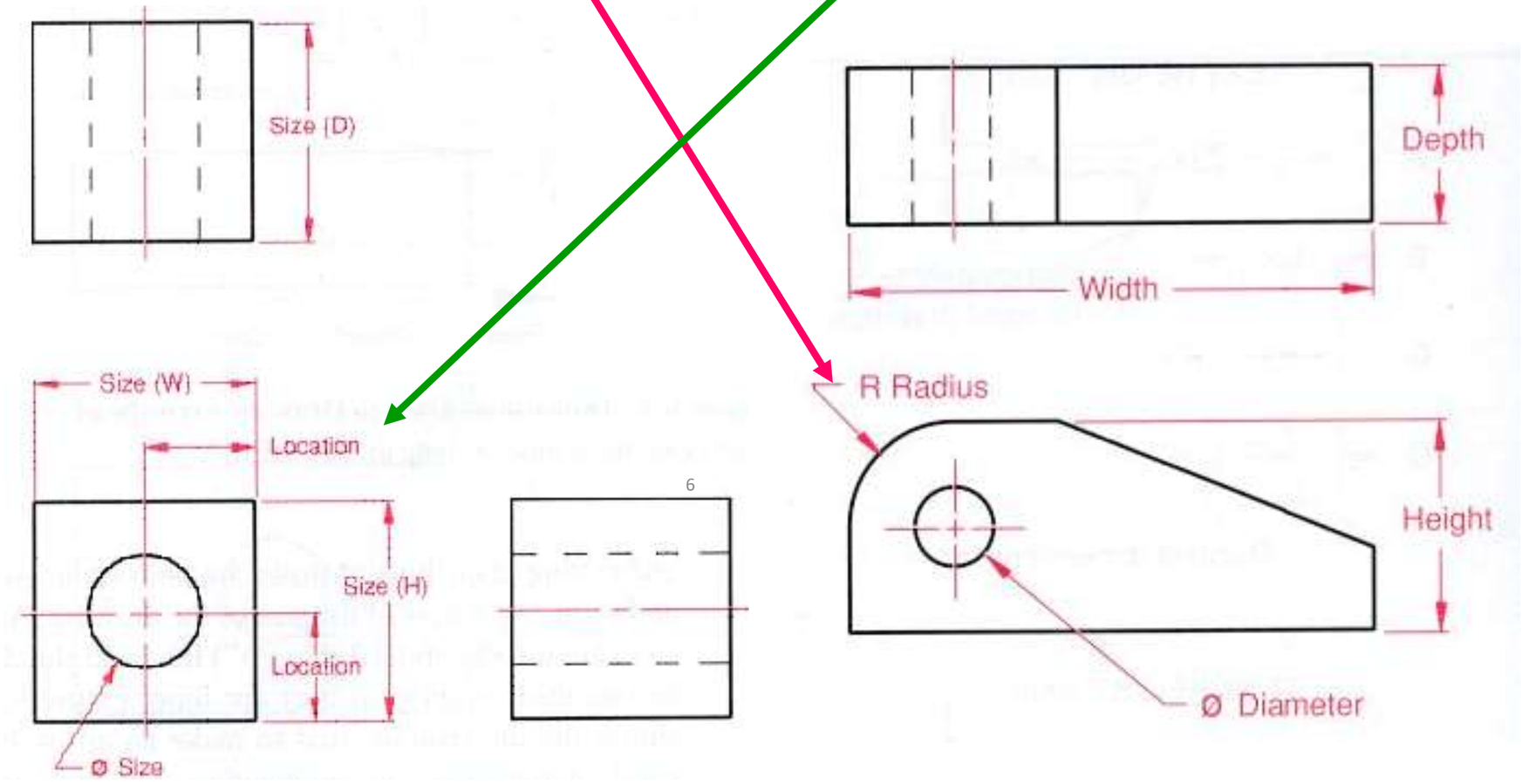
Dimensioning Guidelines



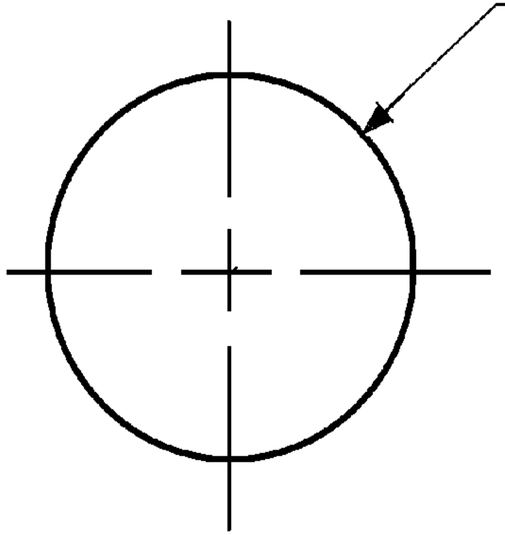
1. Dimension and extension lines must be either horizontal or vertical.
2. No dimension/extension line can cross over another dimension/extension line.
3. There must be one arrowhead at each end of dimension line.
4. The thickness of both extension and dimension line is 25%.
5. No dimensioning is allowed inside the object.

Important elements of dimensioning

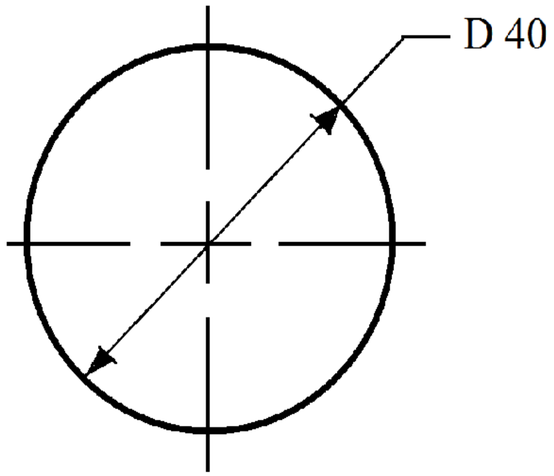
Two types of dimensioning: (1) Size and location dimensions and (2) Detail dimensioning



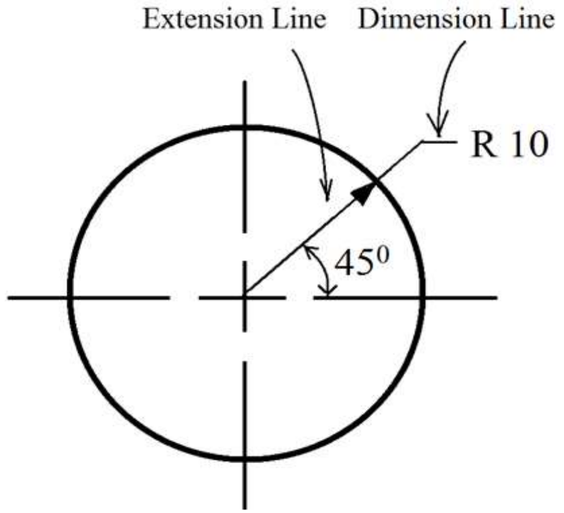
CIRCULAR DIMENSIONING



D = Diameter;



R = Radius;



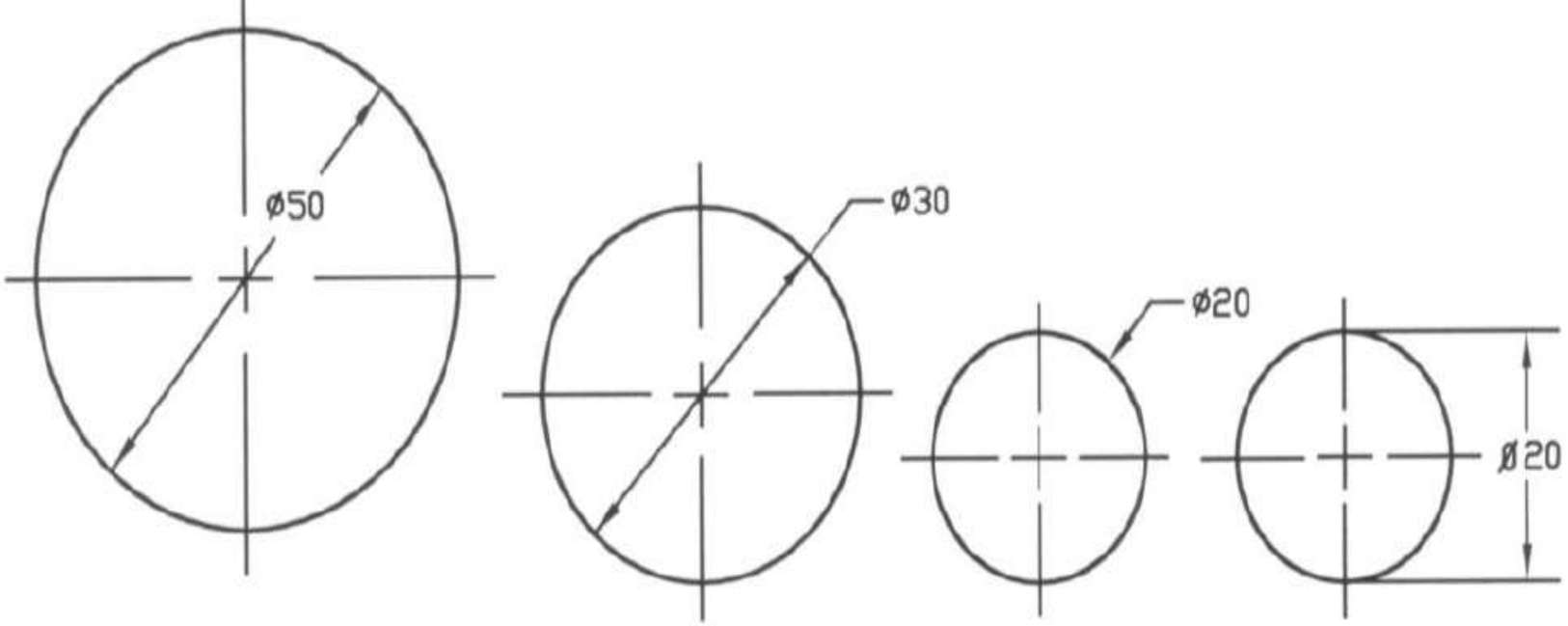
Length of dimension line 3 - 6 mm
R 10 represents Radius = 10
Before dimensioning Centerline must be drawn.

DRILL = Diameter;

REAM = Diameter;

The projection of the extension line in first figure must go through the center of the circle

The arrowhead must touch the circle whose dimension is being shown.

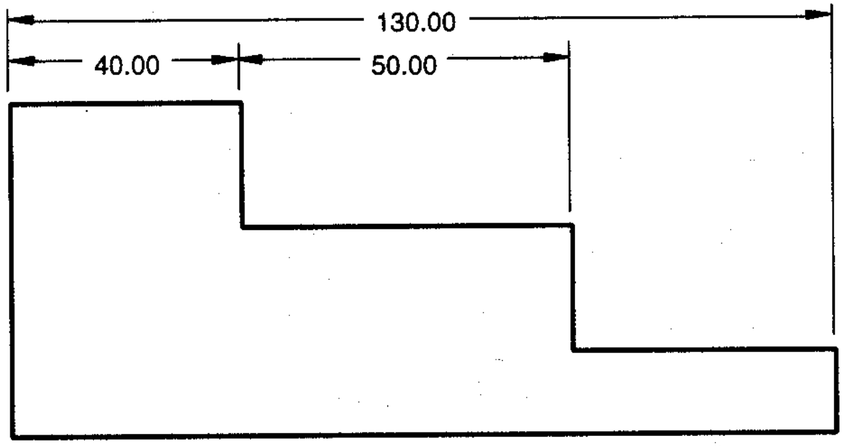


Dimensioning of Circles

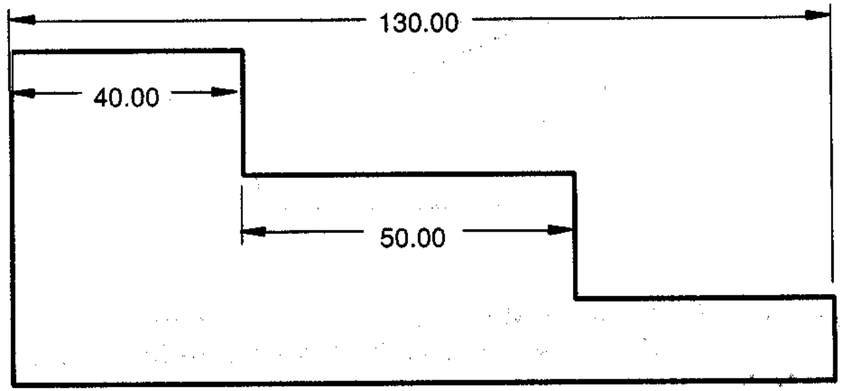
Dimensioning of Angles

Grouping Dimensions

- Dimensions should always be placed outside the part

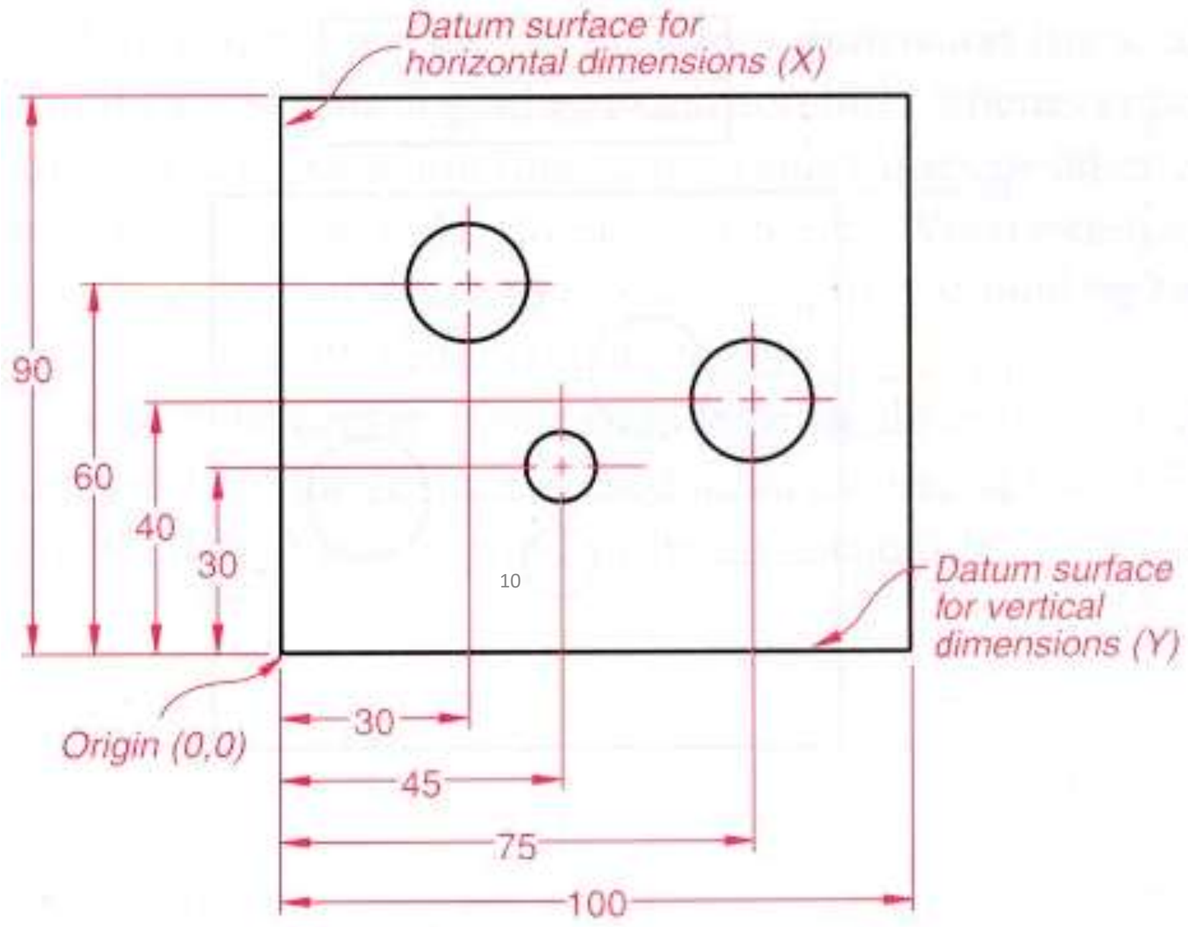


Yes

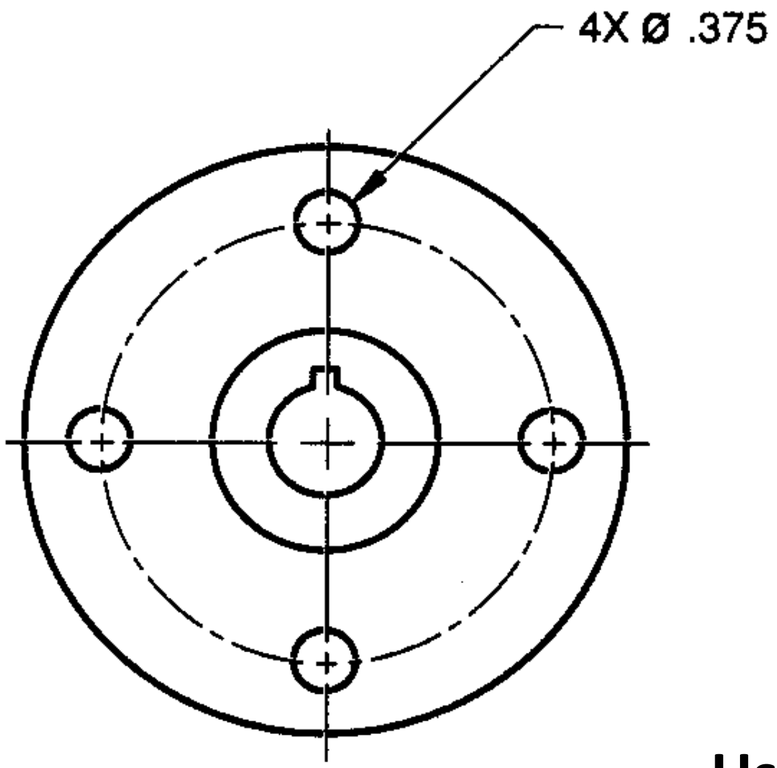


No

Where and how should we place dimensions when we have many dimensions? (cont.)



Repetitive Features



Use the Symbol ‘x’ to Dimension Repetitive Features

Reference Books

The most common book to follow:

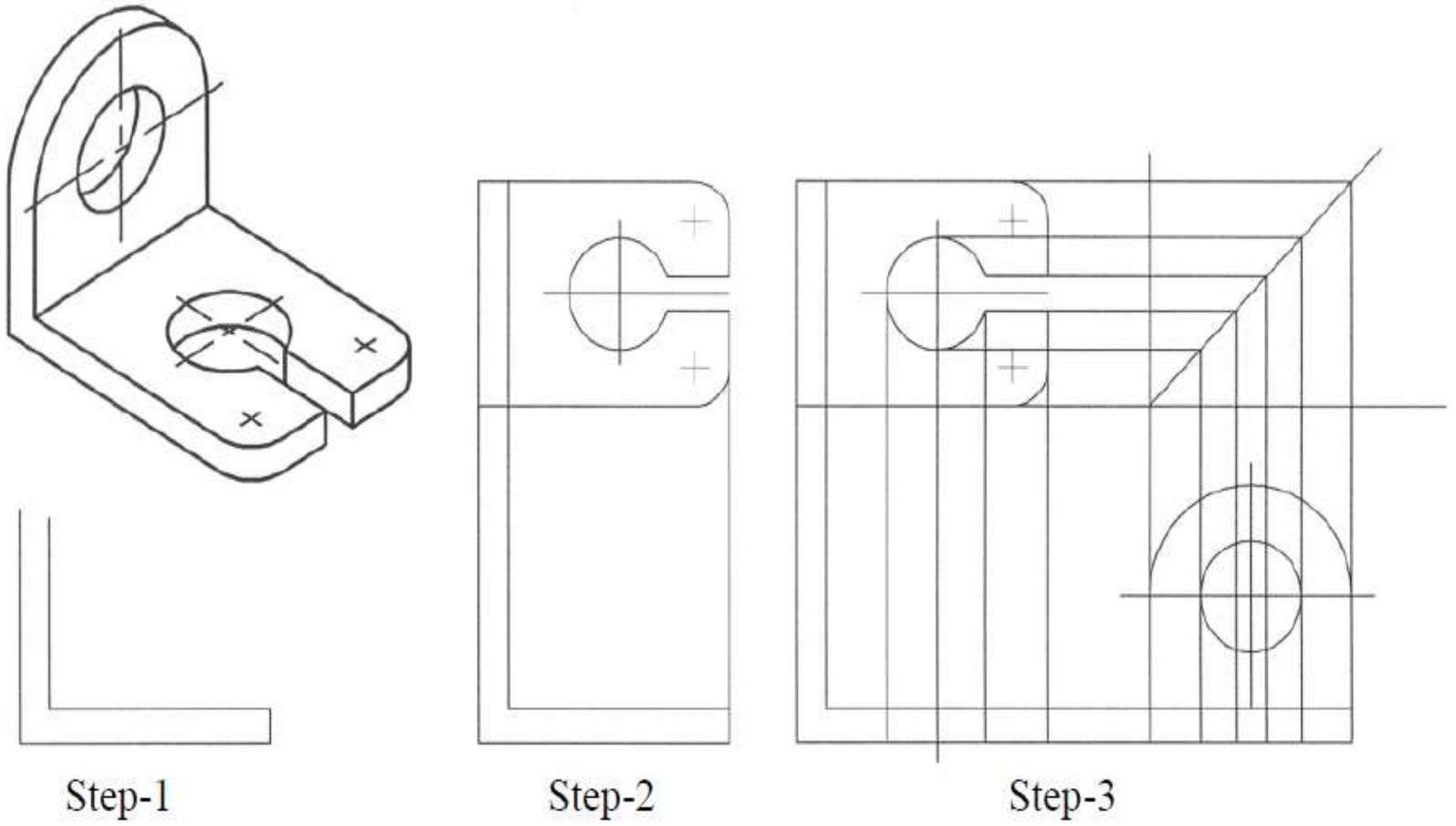
Mechanical Engineering Drawing

-Dr. Amalesh Chandra Mandal

-Dr. Md. Quamrul Islam

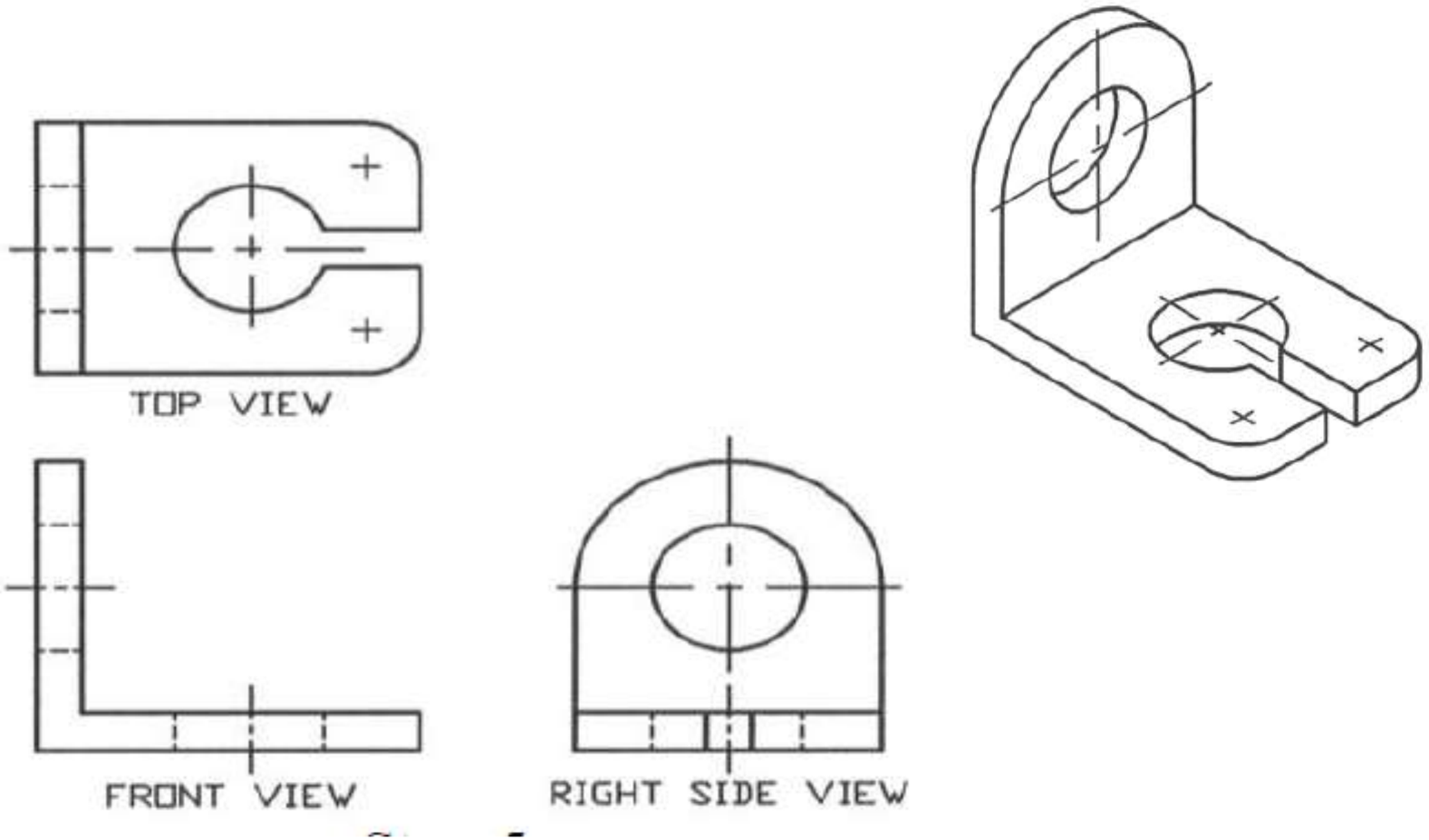
You may also look for resources online.

How to Start Drawing???



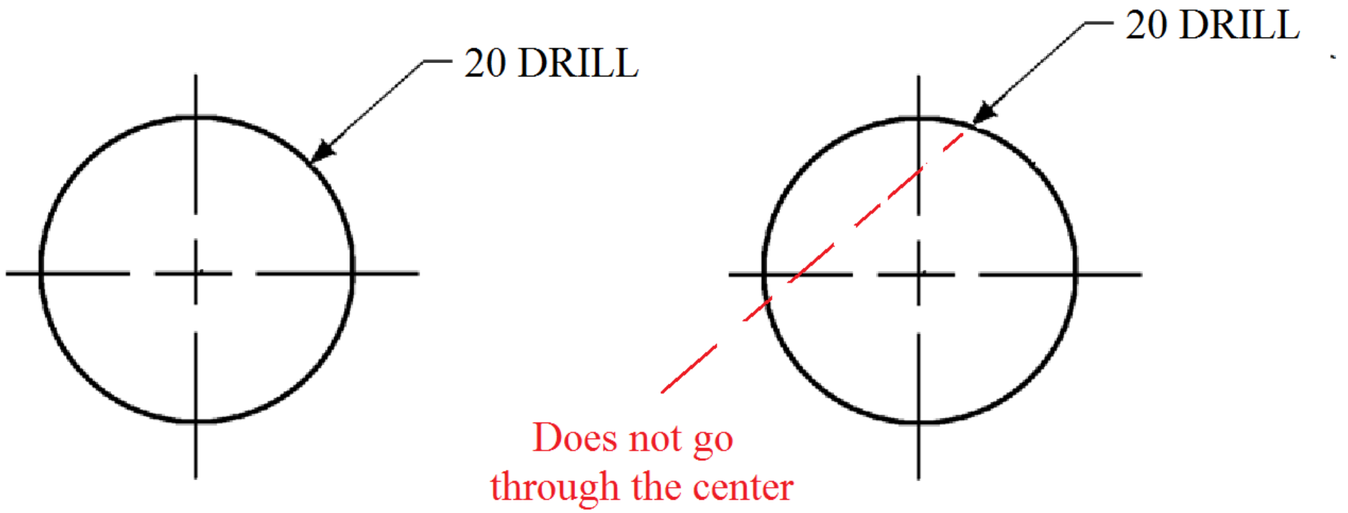
Front View

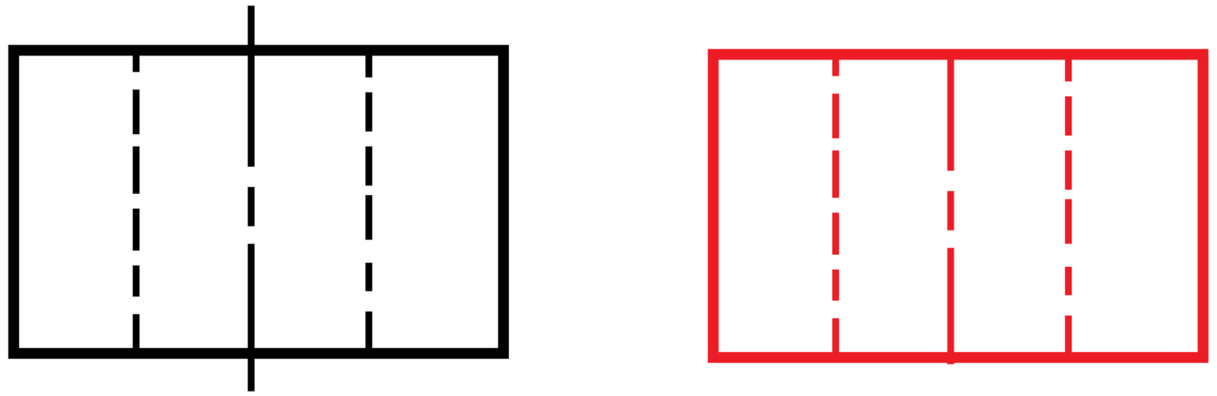
How to Start Drawing???



Its Done. Simple, right???

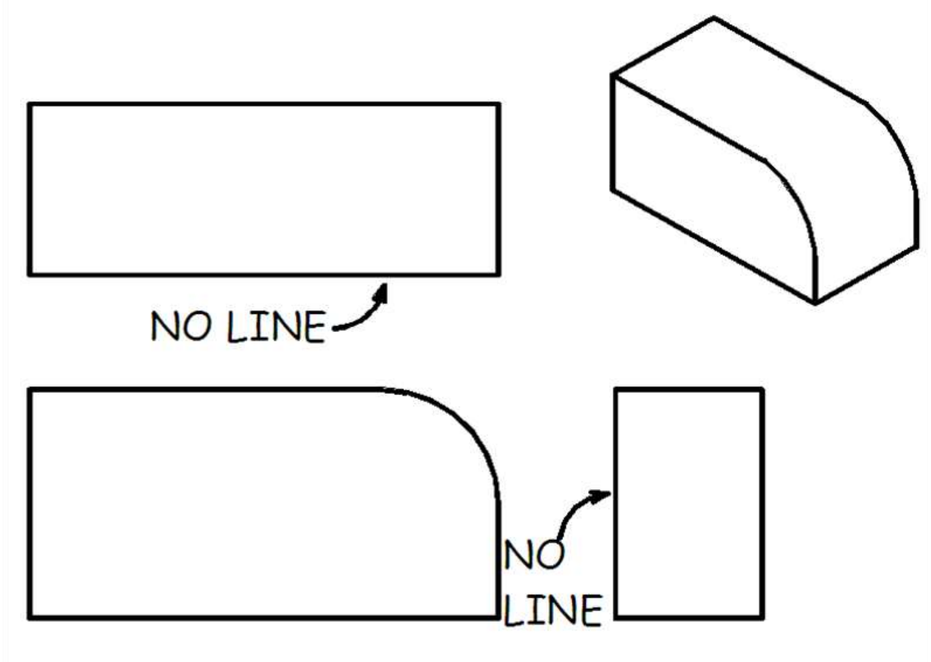
SOME COMMON MISTAKES



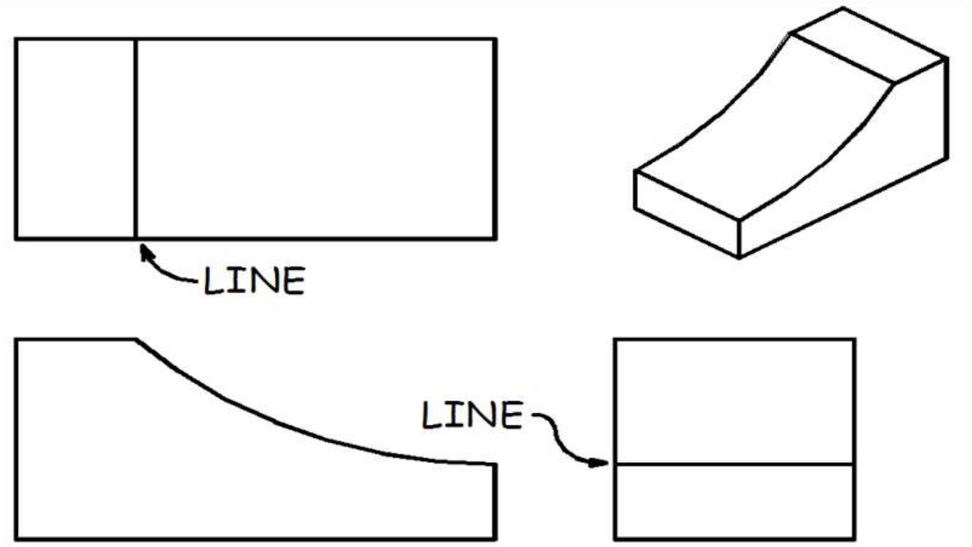


No extension for hydden line ; 3 - 6 mm extension for center line

Sharp Edge vs Curved Edge



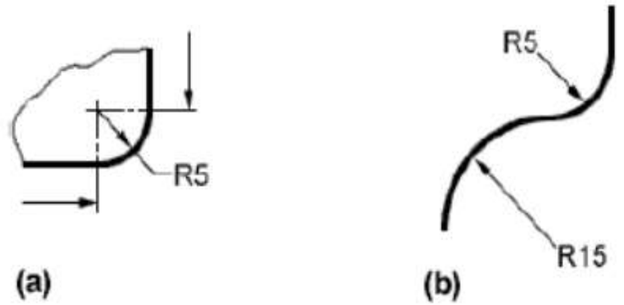
If a curved surface is tangent to a plane surface, no edge is formed.
So, there will be no line.



But if a curved surface intersects with a plane surface, an edge is formed.
So, there should be a line in the views.

Dimensioning of Arc

- All radial dimensions are proceeded by the capital **R**.



(a) shows a radius dimensioned with the centre of the radius located on the drawing.

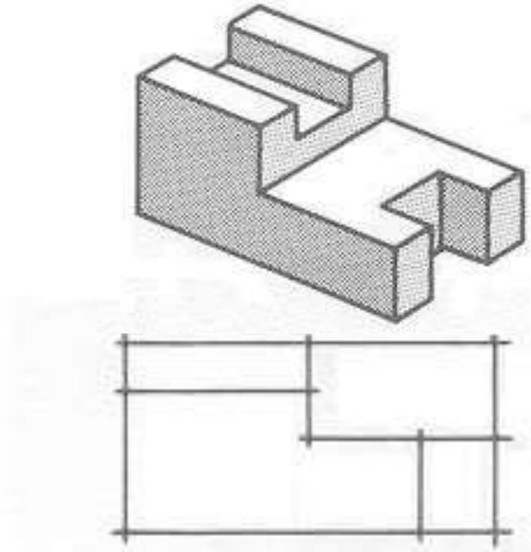
(b) shows how to dimension radii which do not need their centres locating.

Drawing the Views

To complete an orthographic projection drawing follow these steps.

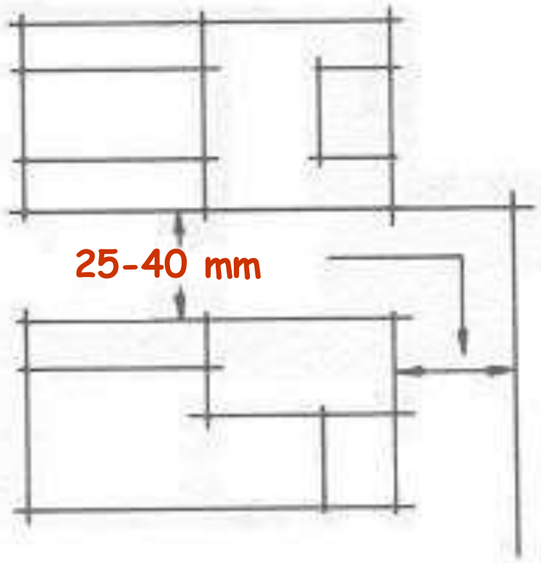
Step 1:

Lightly construct the front view.



Step 2:

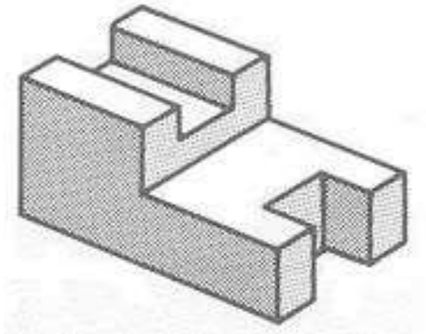
Space the top view 25-40 mm above the front view. Lightly construct the top view directly over the front view. Extend the lower side of the top view to intersect a vertical line drawn to the right of the front view.



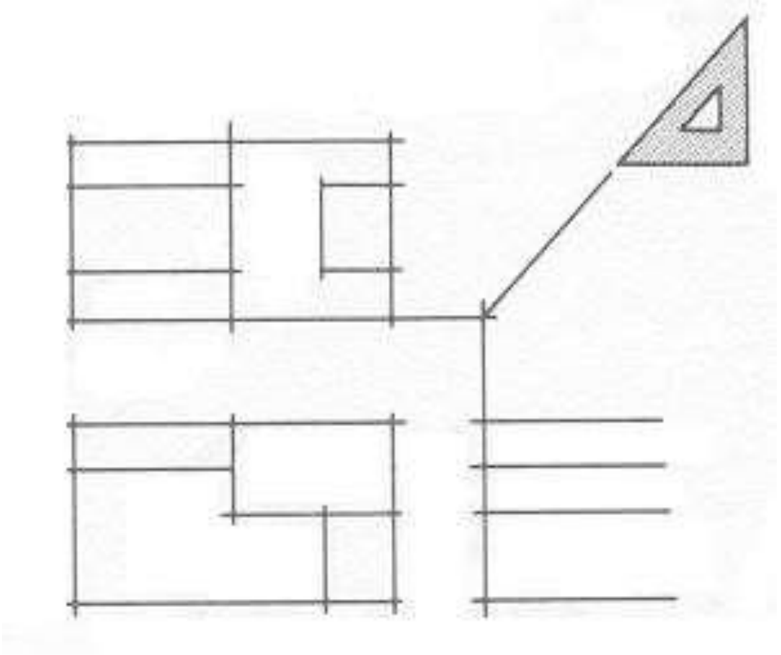
Drawing the Views

Step 3:

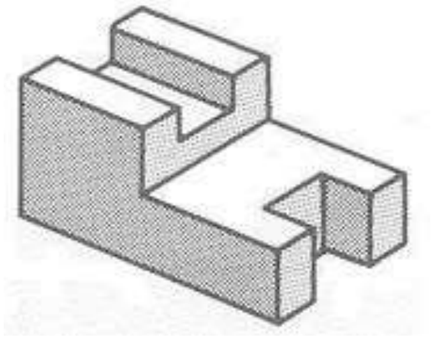
Project the features of the front view to the right of the vertical line. Draw a line at 45° from the point of intersection as shown.



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

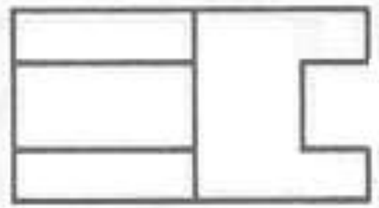


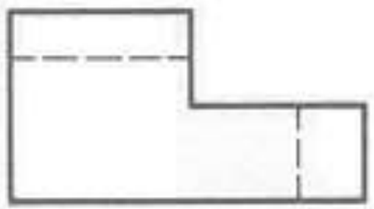
Drawing the Views

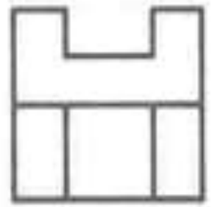


Step 5:

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





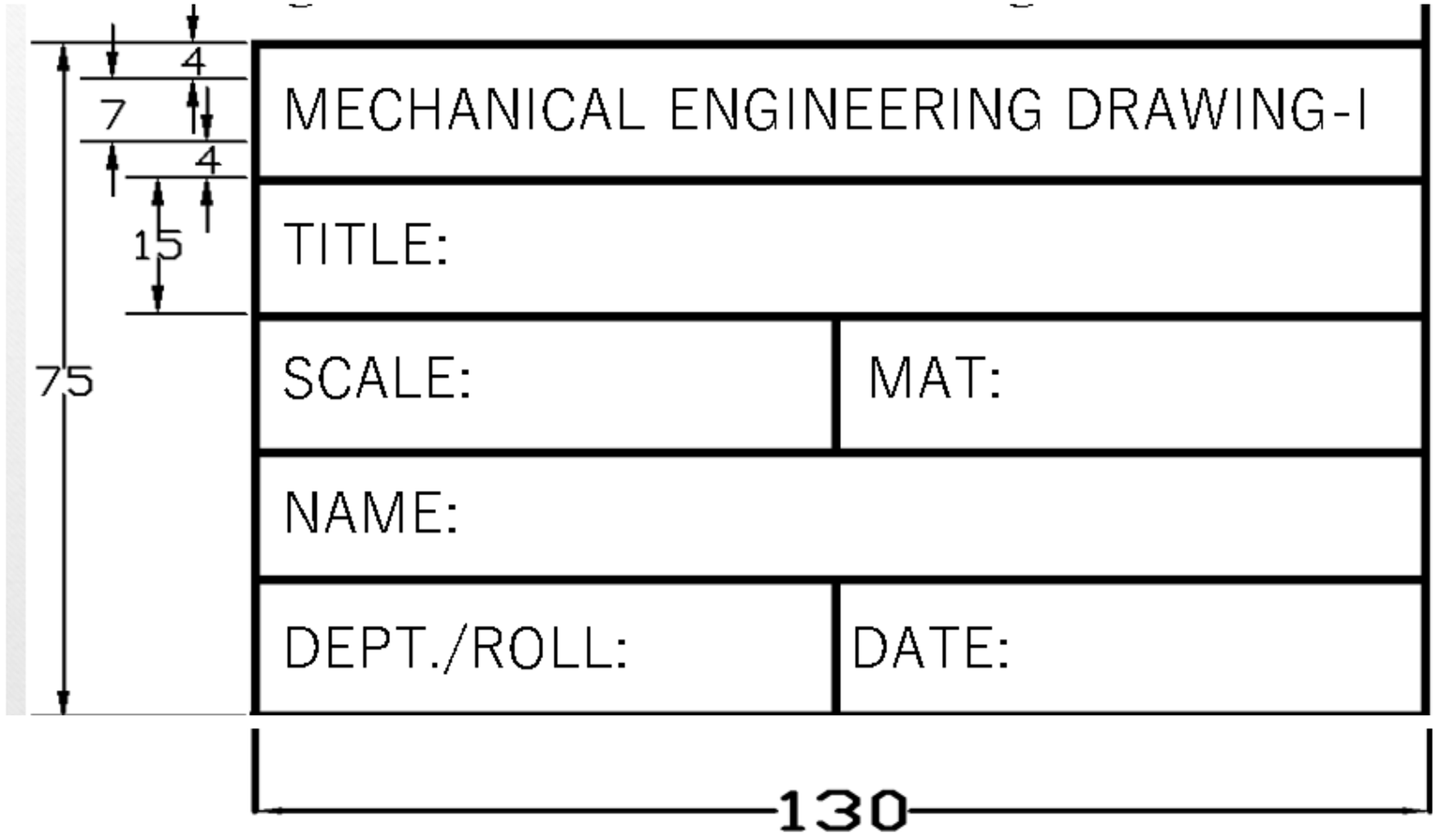


Daily Task

- Before the class starts:

Draw margins on your drawing sheet. Margins should be 10mm at all of four sides of the sheet.

At bottom right corner, sketch the following



THANK YOU