



ME-160

# Mechanical Engineering Drawing

## Sectional Views

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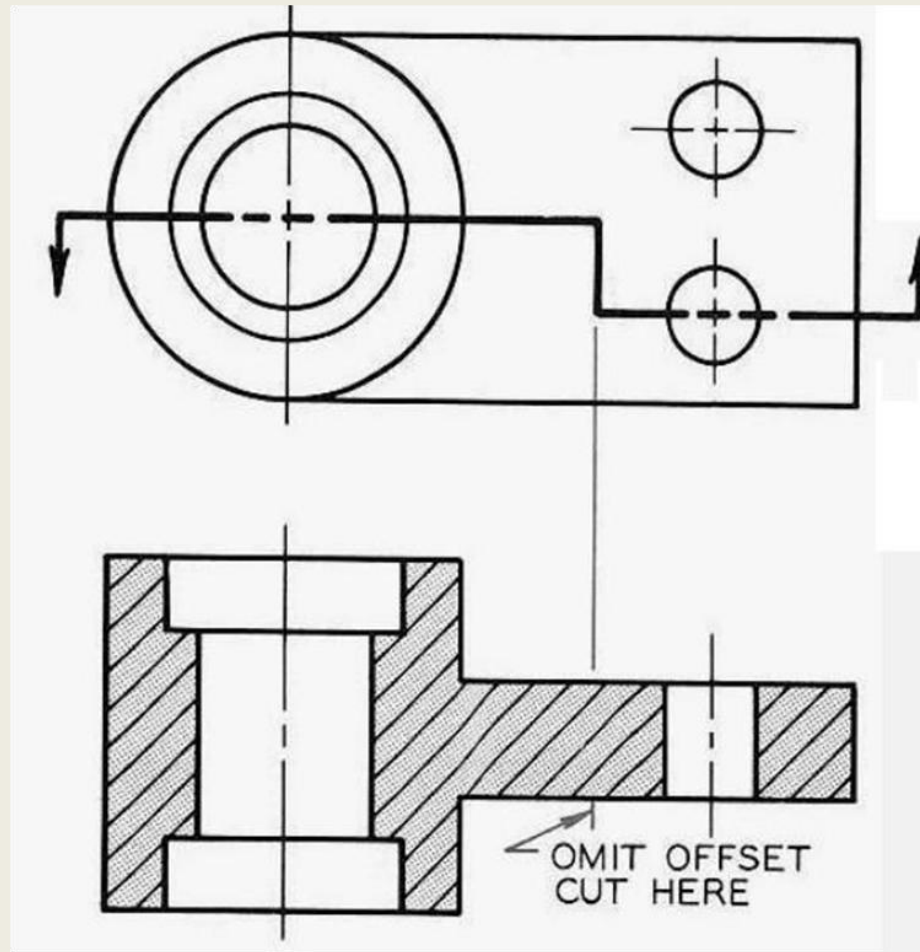
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Abdul Aziz Shuvo

# What is Sectional View?

- A sectional view is that , which is seen beyond the **imaginary cutting plane** through an object at right angle to the direction of sight .
- The exposed or cut surface is identified with the help of **section lining or cross hatching**.

# An example

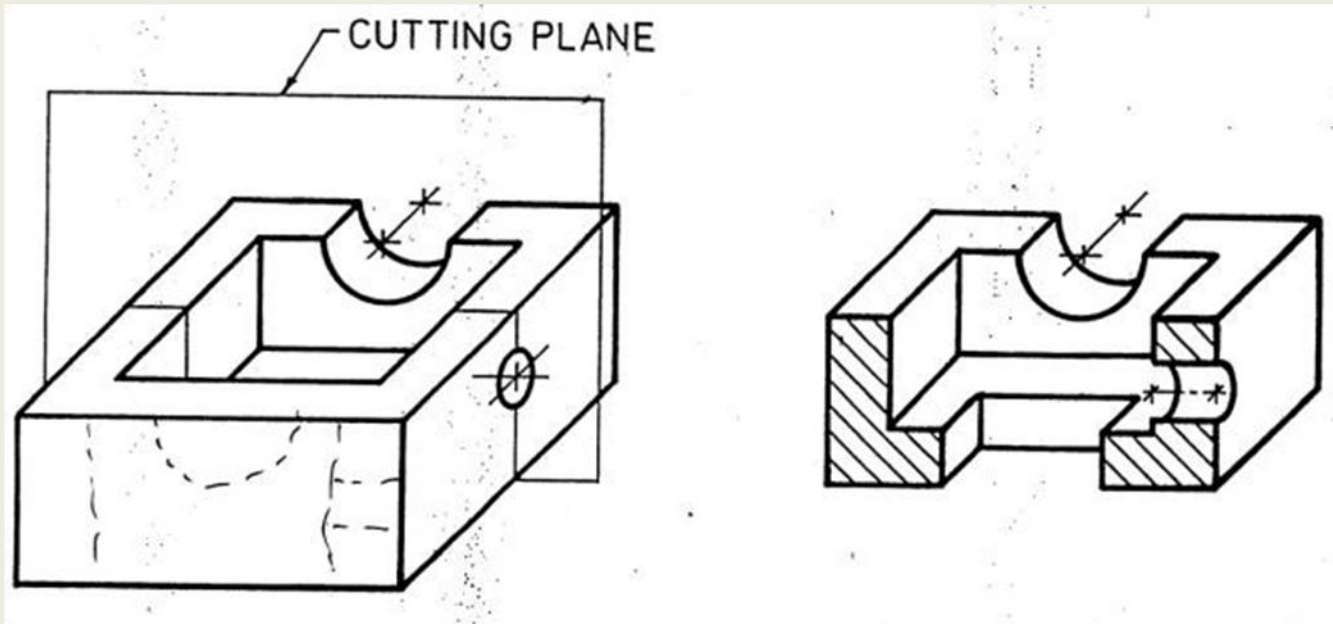


# Purposes of use :

- The external features of an object can be shown fully in Orthographic Views.
- However, the internal details can not be shown clearly by means of hidden lines.
- The **Internal details** of complex machine parts can shown **by cut away sections** or views

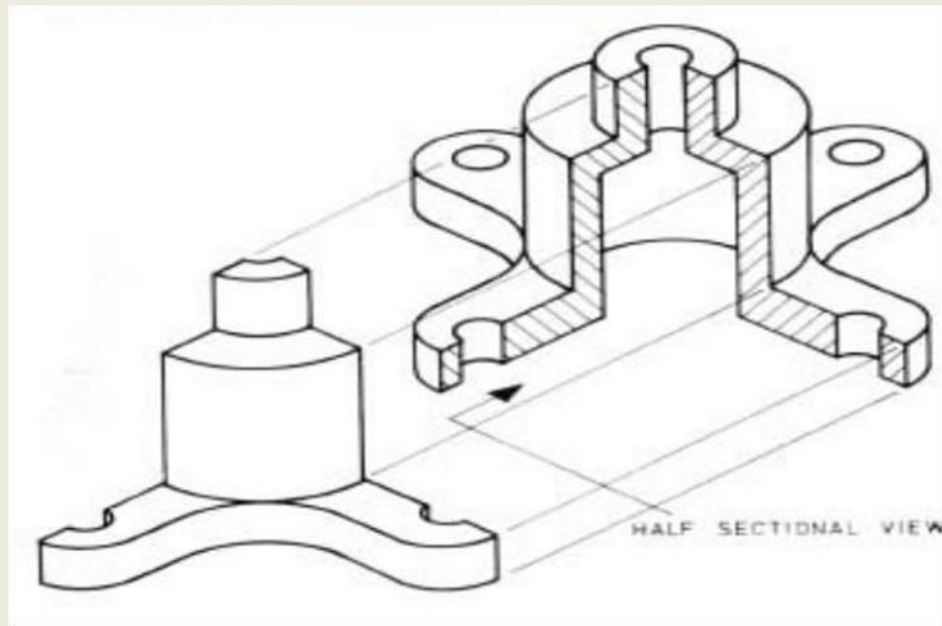
# Sectioning Planes

The Object is assumed to be cut by one or more Planes usually parallel to the Principal Planes.



# Sectioning Planes

The Object is cut by two orthogonal Planes

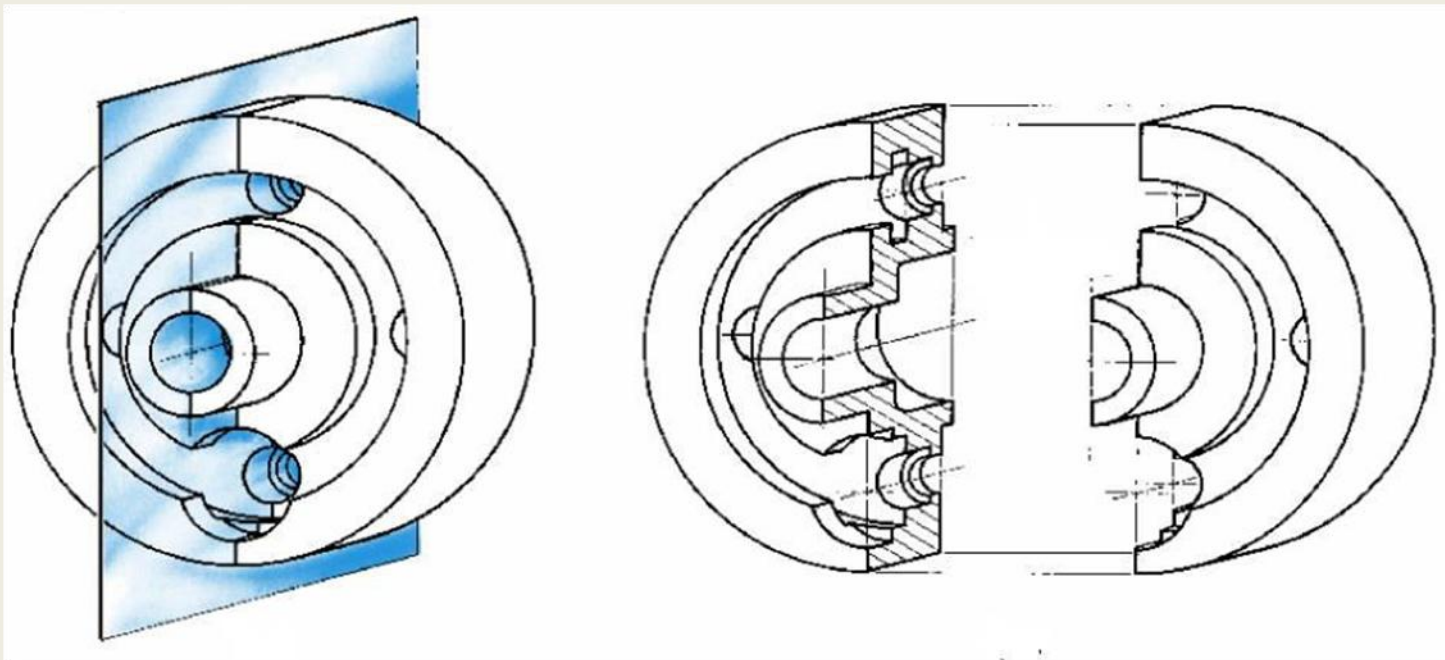


# Types of Sections

- Full Sectional Views
- Half Sectional Views
- Offset Sectional Views

# Full Sectional Views

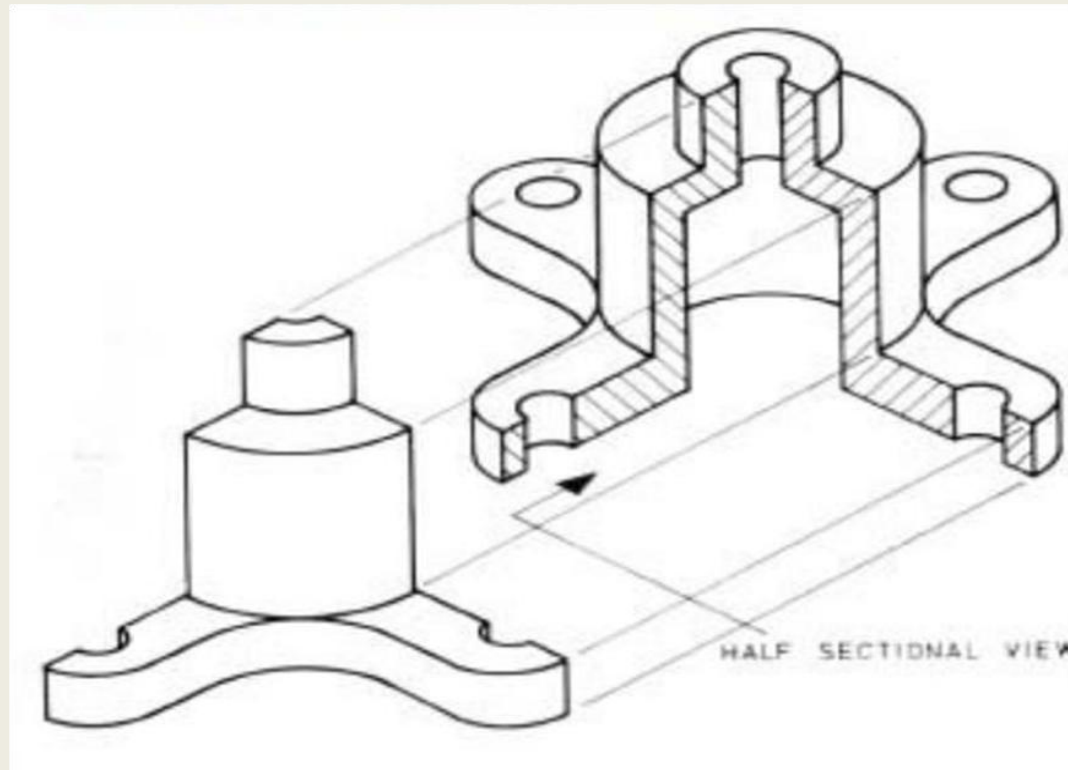
The cutting plane cuts the part into two halves.





# Half Sectional Views

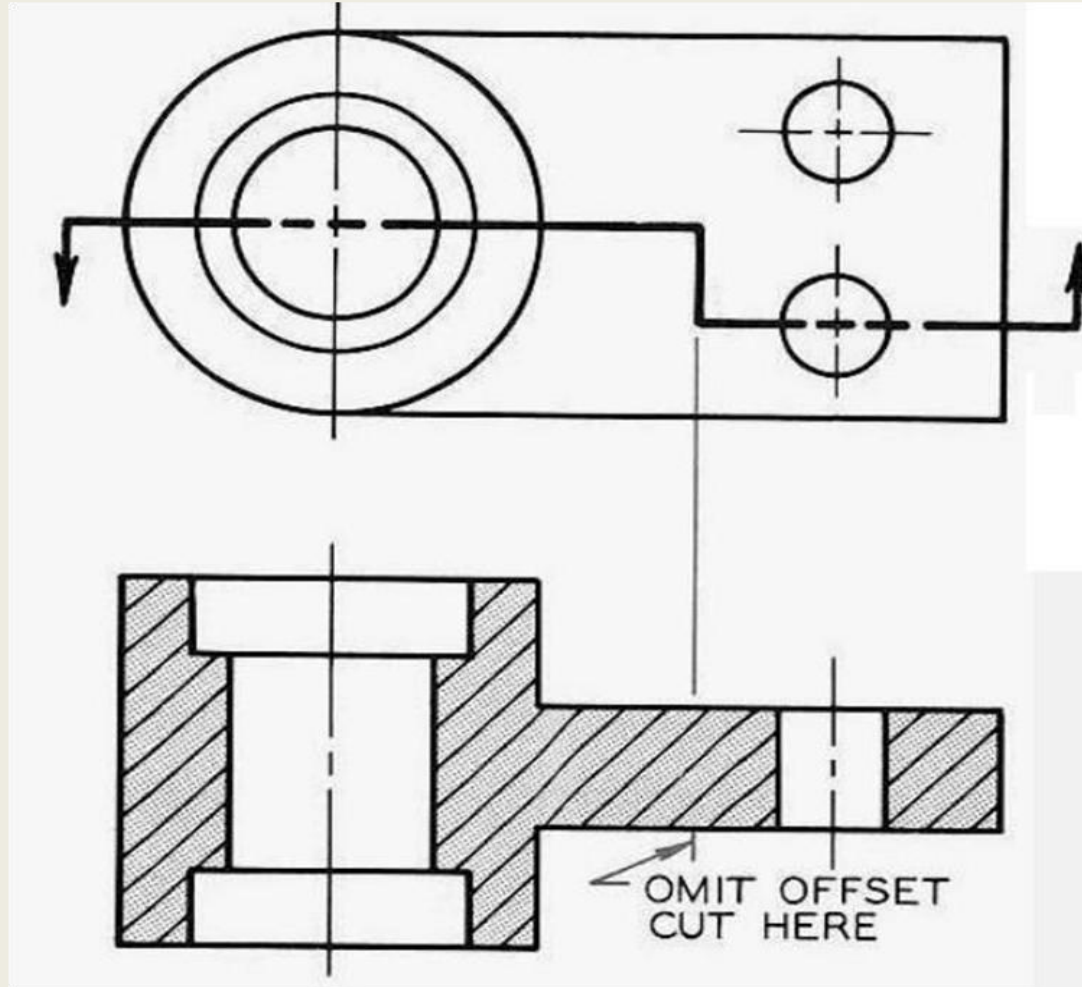
- A Quarter portion of the object is removed ( or Half of the view is sectioned )



# Offset Sectional Views

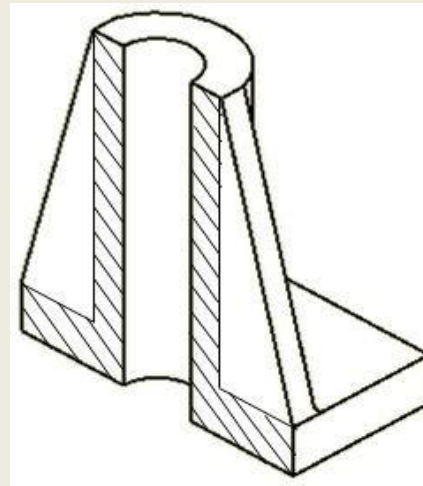
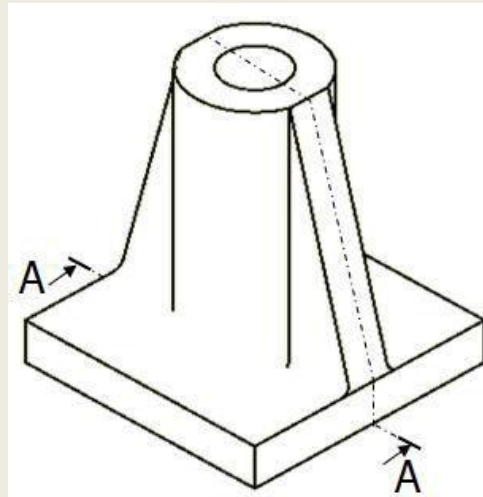
- Several features of an object that **do not lie in a straight line** .
- Such features can be shown by “**offsetting**” or **bending the cutting plane** .
- The section is then called an **OFFSET SECTION**.

# Offset Sectional Views



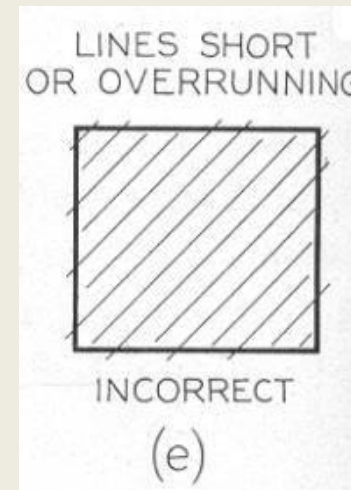
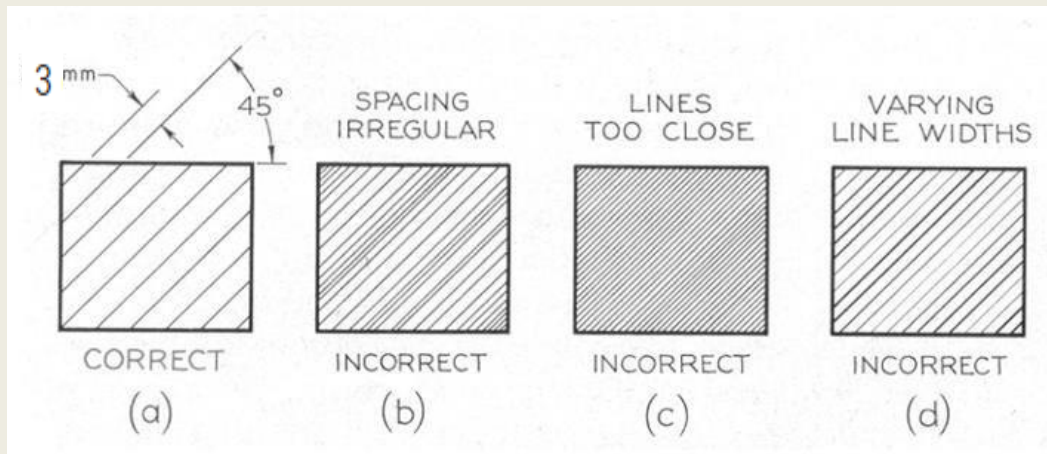
# Parts should not be sectioned !

- When the cutting plane passes through **Thin features** such as **rib** or a web, shafts, keys & splines, nuts, bolts & rivets - such parts are not sectioned .



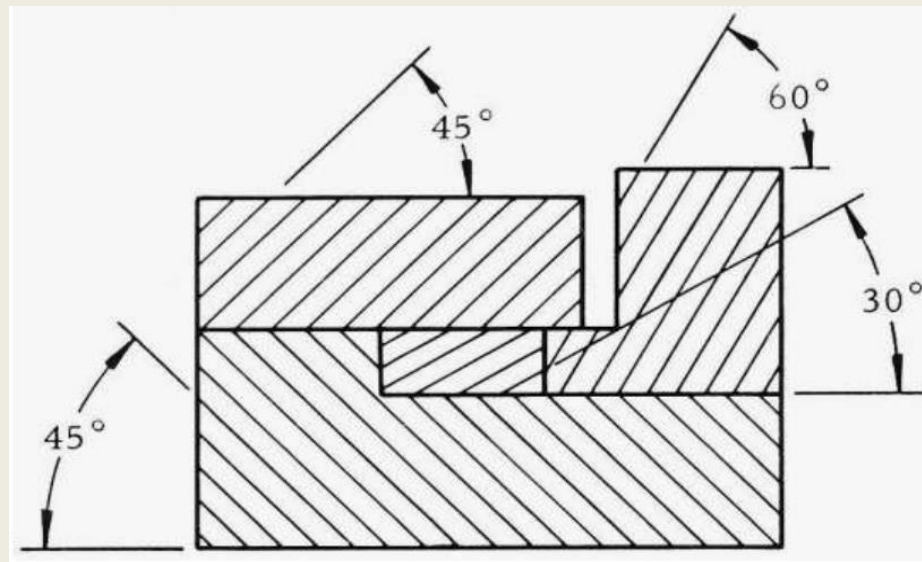
# Hatching

- Material which has been cut by the cutting plane is hatched.
- Dimensions are NOT inserted in hatched areas.



# Hatching

- Section lines on two adjacent parts should slope at  $45^\circ$  in opposite directions.
- If there are more than two parts/materials, they ordinarily cross-hatched at  $30^\circ$  and  $60^\circ$ .

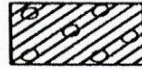


# Hatching

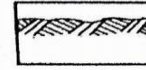
## Section Lining



Cast Iron



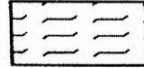
Sound Insulation



Earth



Steel



Cork, Felt,  
Leather & Fiber



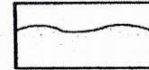
Rock



Bronze, Brass,  
Copper and  
Compositions



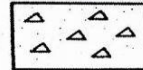
Fire Brick  
and Refractory  
Materials



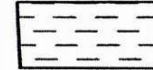
Sand



White Metal,  
Zinc, Lead,  
Babbit and  
Alloys



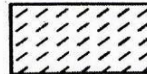
Concrete



Water &  
Other Liquids



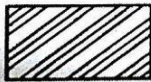
Magnesium,  
Aluminium



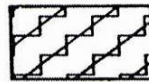
Marble, Slate,  
Glass, Porcelain



Electric  
Windings,  
Electromagnets etc.



Rubber, Plastic,  
Electrical Insulation



Thermal  
Insulation



Wood

Symbols for Section Lining

# Lines

- Object Line : 100% thick
- Hidden Line: 50% thick
- Dimension, Extension Line: 25% thick
- Center Line : 50% thick
- Cutting Plane Line : 125% thick
- Hatchet line :25% thick

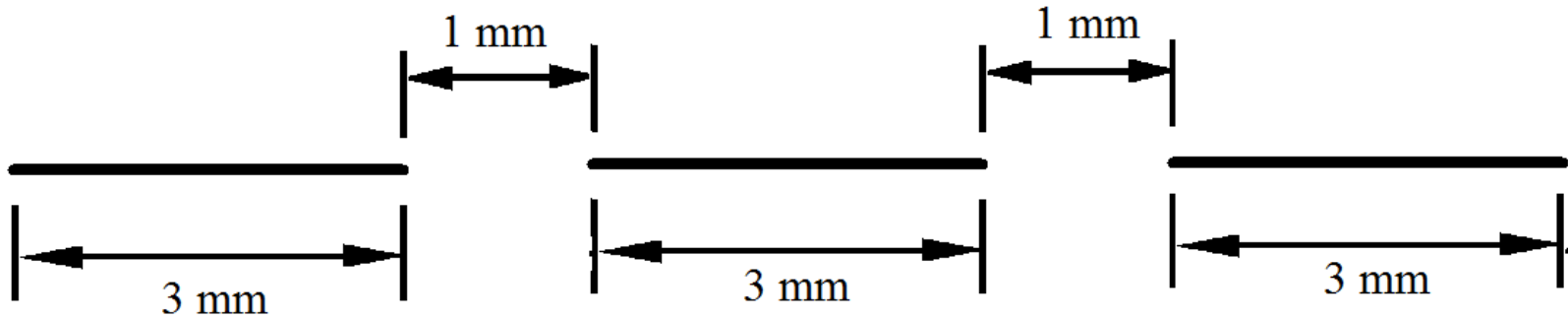


**Object Line**

**Thickness: 100 %**

**Hidden Line**

**Thickness: 50 %**



**Center Line**

**Thickness: 50 %**

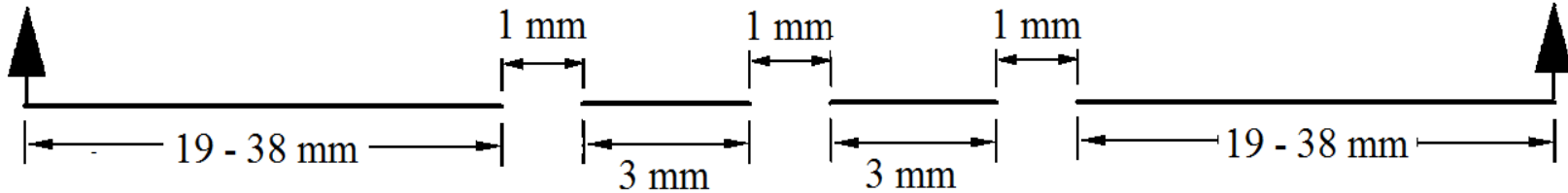
Dimension and  
Extension Lines

Light  
3.000

Thickness: 25 %

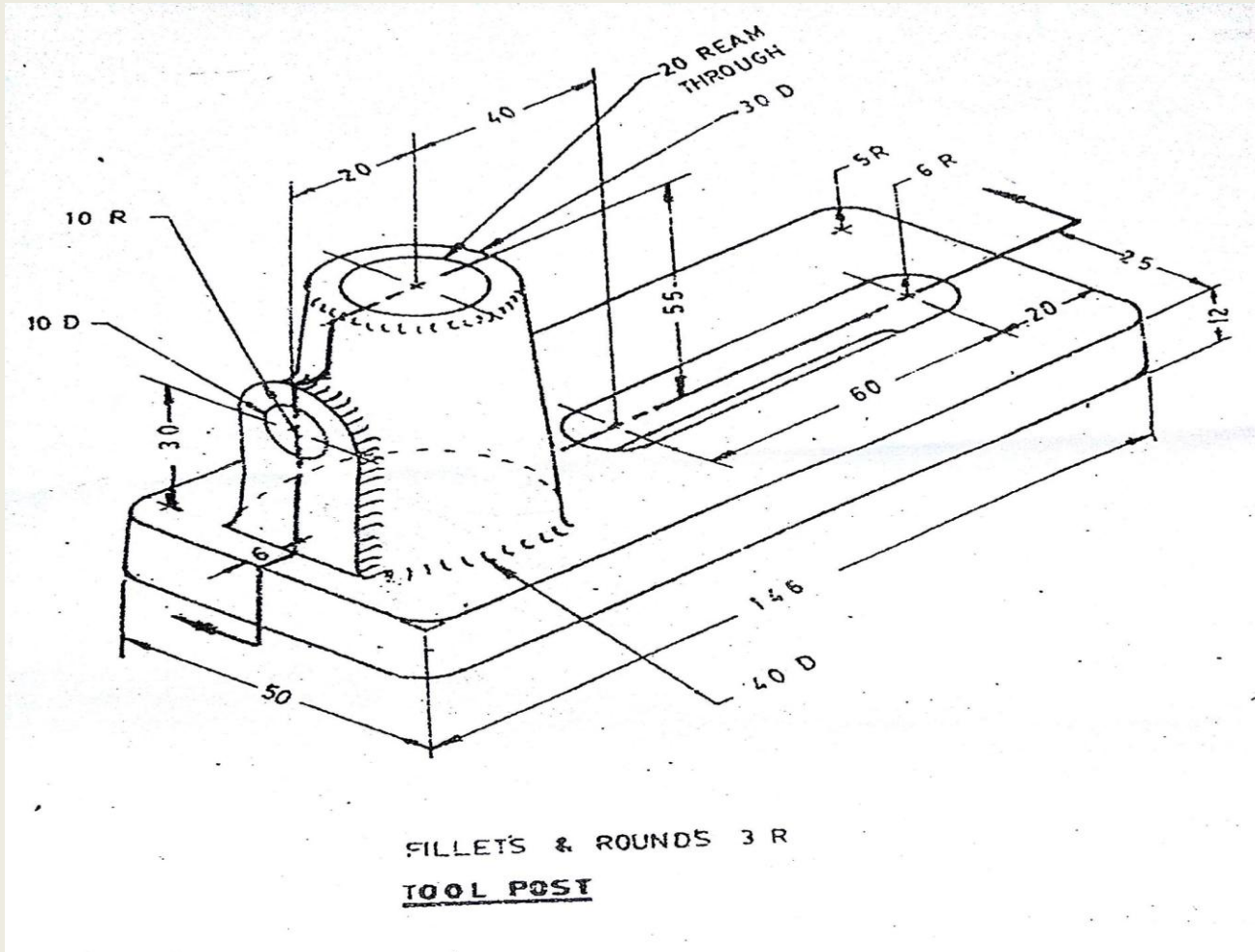
Thickness: 125 %

Section Line

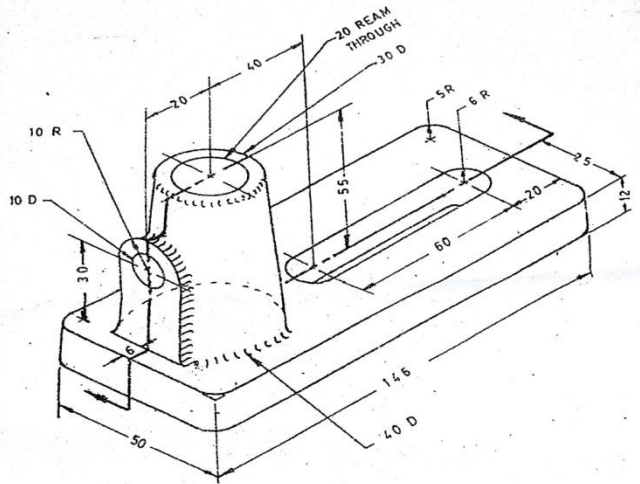


**N.B.: All Percentages are with respect to the object line**

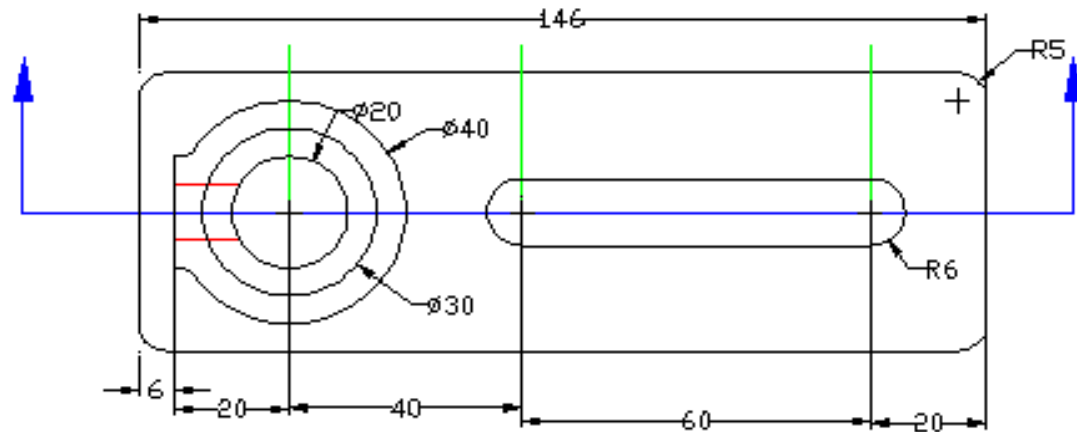
# First Problem



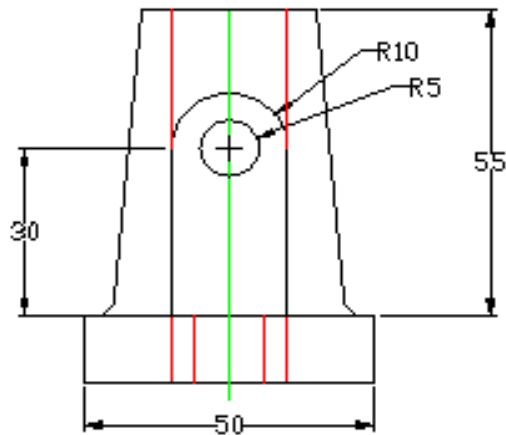
# First Problem



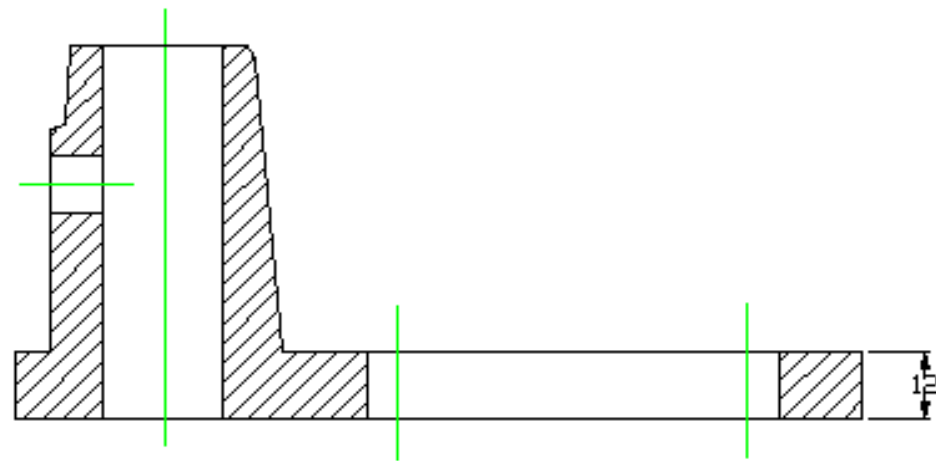
FILLETS & ROUNDS 3 R  
TOOL POST



TOP VIEW



L.H.S VIEW



FRONT SECTIONAL VIEW

**Persist Until Succeed !!!**