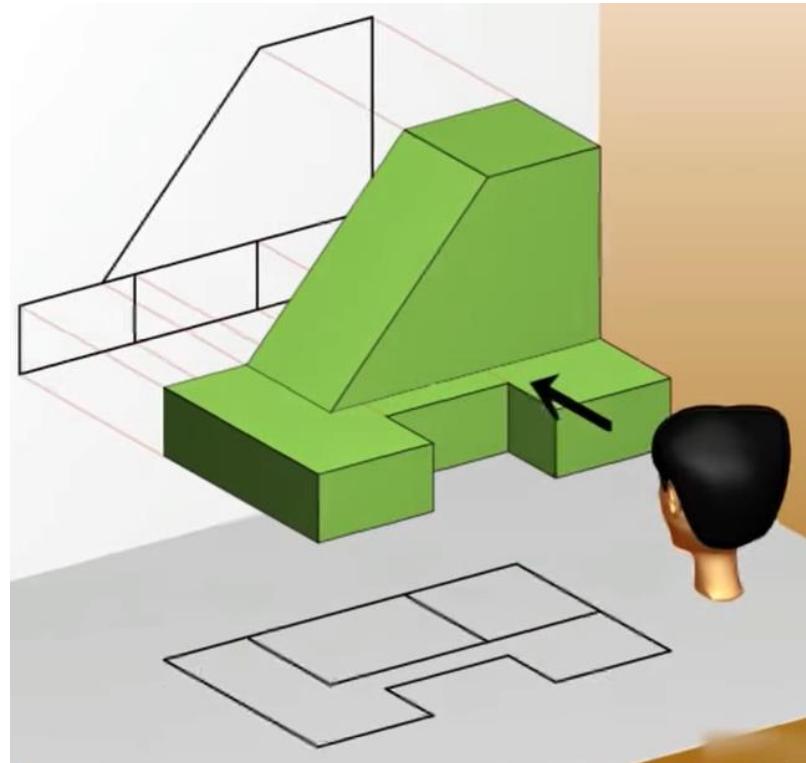


# Unit-3

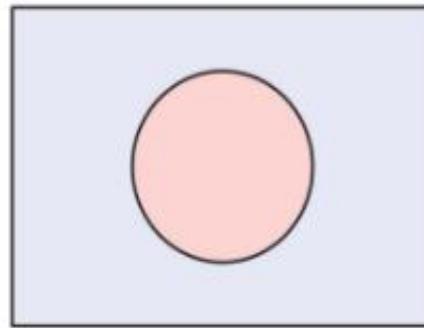
## ORTHOGRAPHIC PROJECTION

*“When the projectors are parallel to each other and also perpendicular to the plane, the projection is called orthographic projection”*

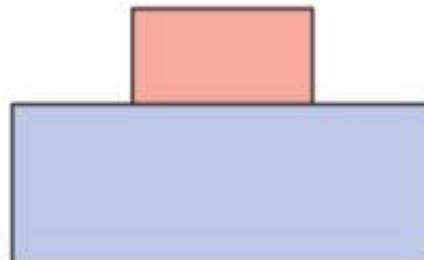


# Objective

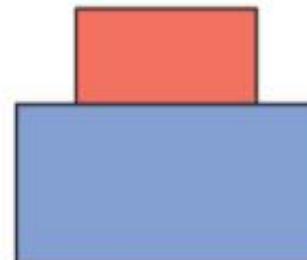
An orthographic drawing represents a three-dimensional object using several two-dimensional views of the object. Three-dimensional drawings can be used to show the overall concept and design, but they are often not able to explain actual shape, size and other details of object which are required for the purpose of manufacturing . Orthographic drawings can help to overcome those challenges.



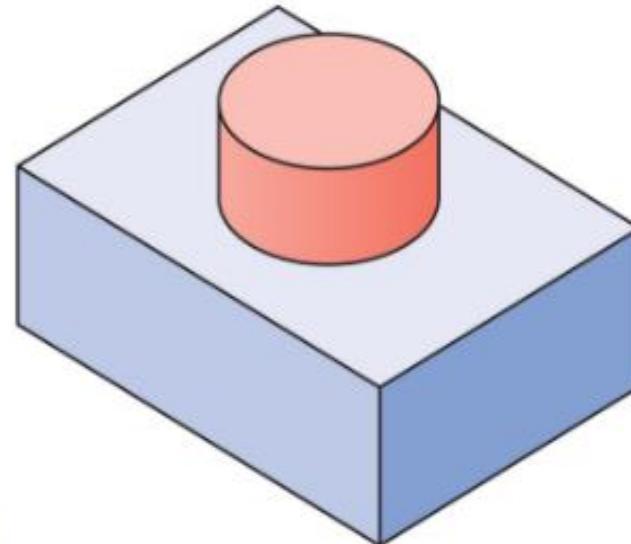
top view



front view



side view



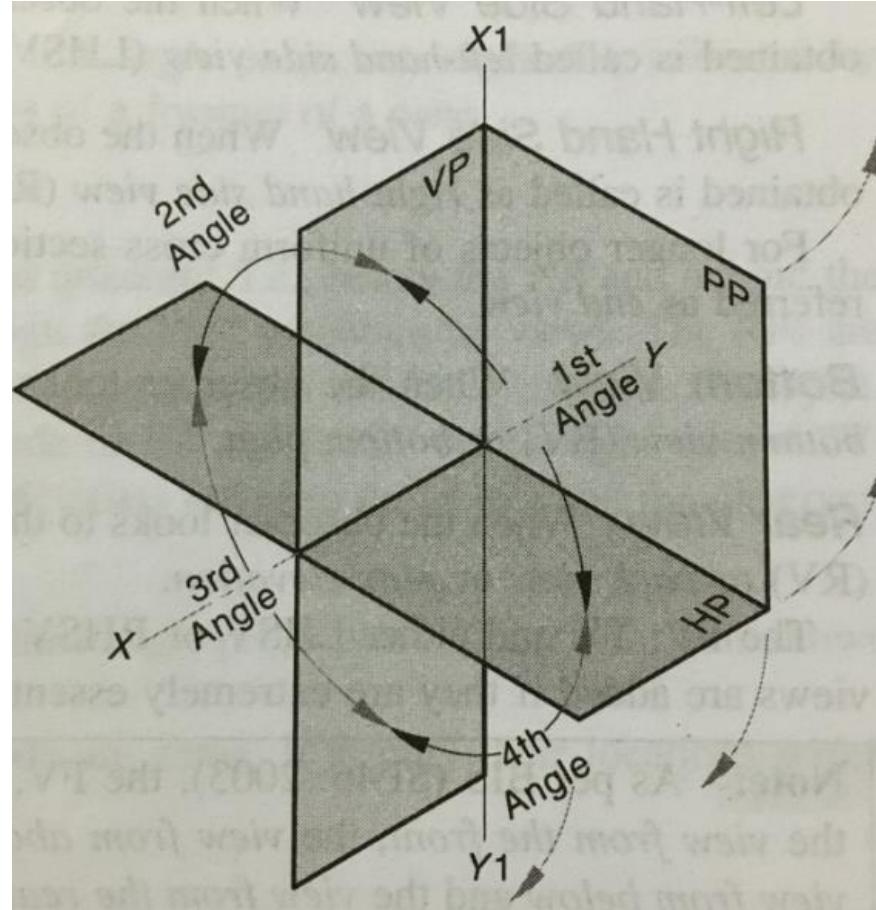
3-dimensional isometric projection

# Three Reference Planes:-

VP- Vertical Plane

HP- Horizontal Plane

PP- Profile Plane



# Orthographic Views

Front View- FV

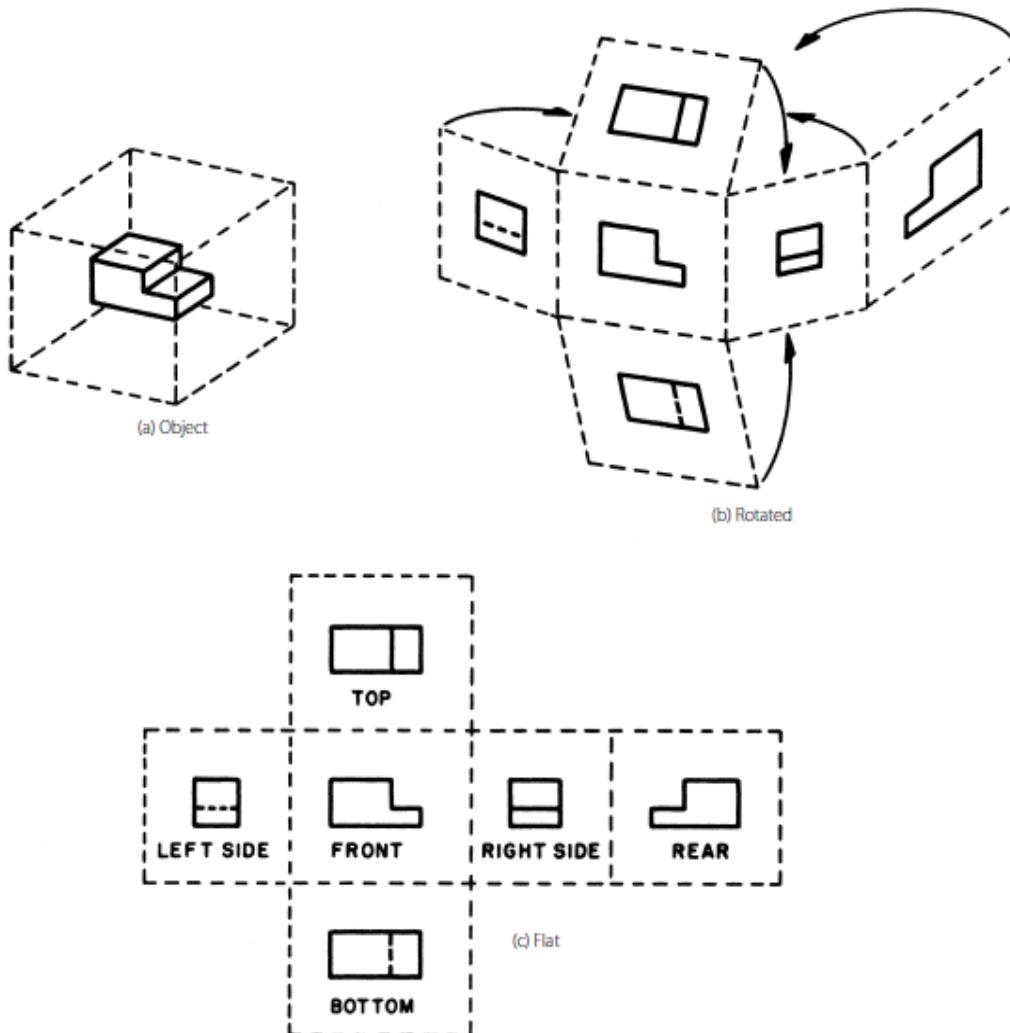
Top View- TV

Left Hand Side View-LHSV

Right Hand Side View- RHSV

Bottom View- BV

Rear View- RV



**Note:-** As per BIS (SP: 2003), the FV, TV, LHSV, RSHV, BV and RV should be referred as the view from the front, the view from above, the view from left, the view from right, the view from below and the view from rear respectively.

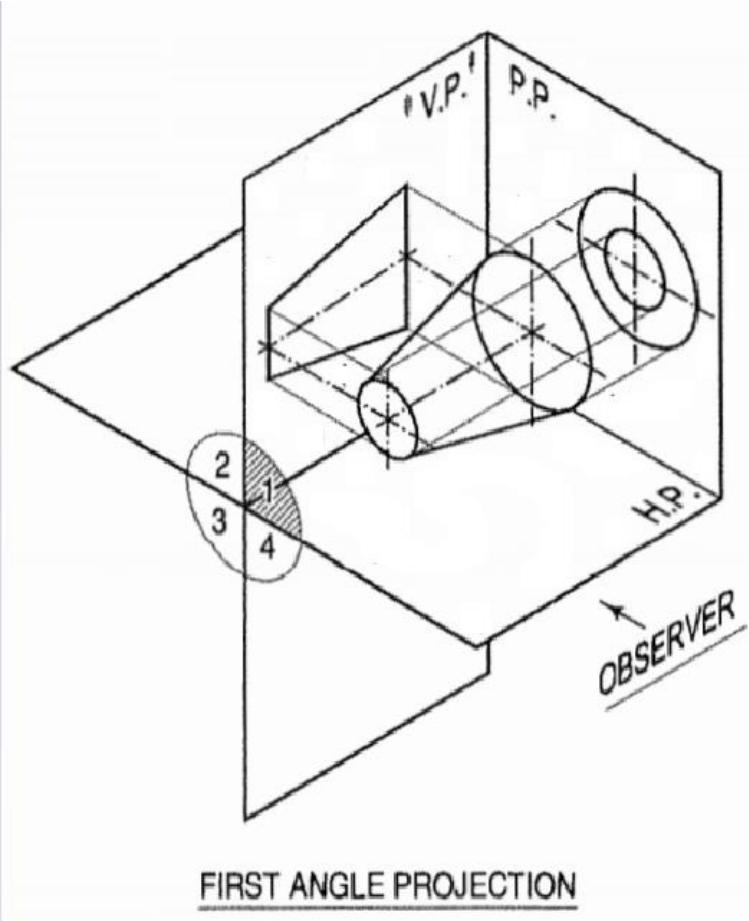
# Methods of Multiview Projection



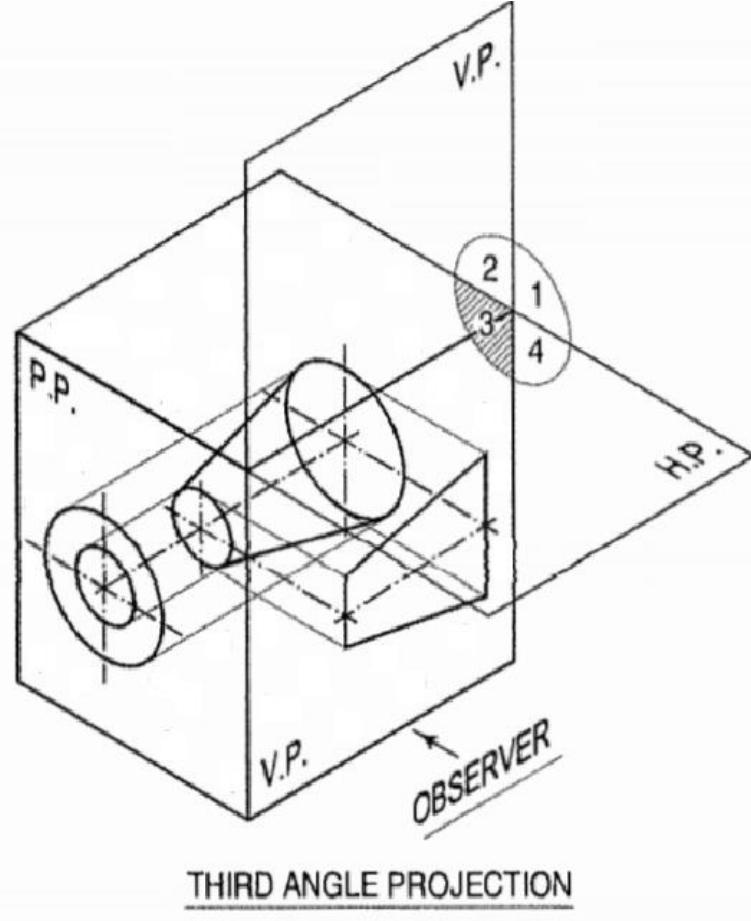
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First Angle of Projection

Third Angle of Projection

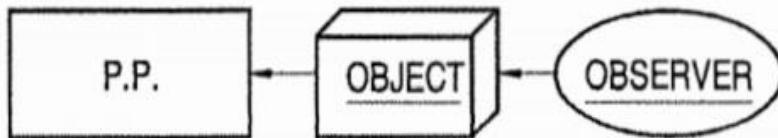


FIRST ANGLE PROJECTION

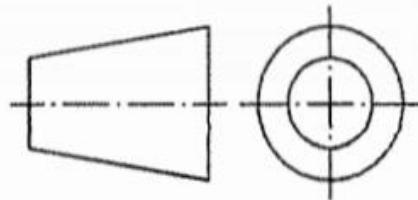


THIRD ANGLE PROJECTION

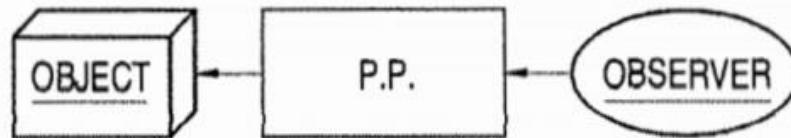
# Methods of Multiview Projection



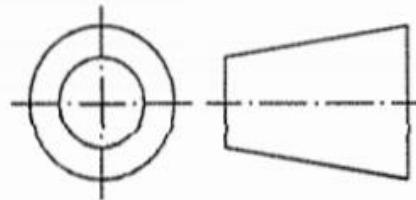
RELATION BETWEEN OBSERVER, OBJECT AND P.P.



F.V.            L.H.S.V.  
IDENTIFYING GRAPHICAL SYMBOL OF  
FIRST ANGLE PROJECTION



RELATION BETWEEN OBSERVER, OBJECT AND P.P.



L.H.S.V.            F.V.  
IDENTIFYING GRAPHICAL SYMBOL OF  
THIRD ANGLE PROJECTION

*The method of first-angle projection is the British standard practice. The third-angle projection is the standard practice followed in America and in the continent of Europe.*

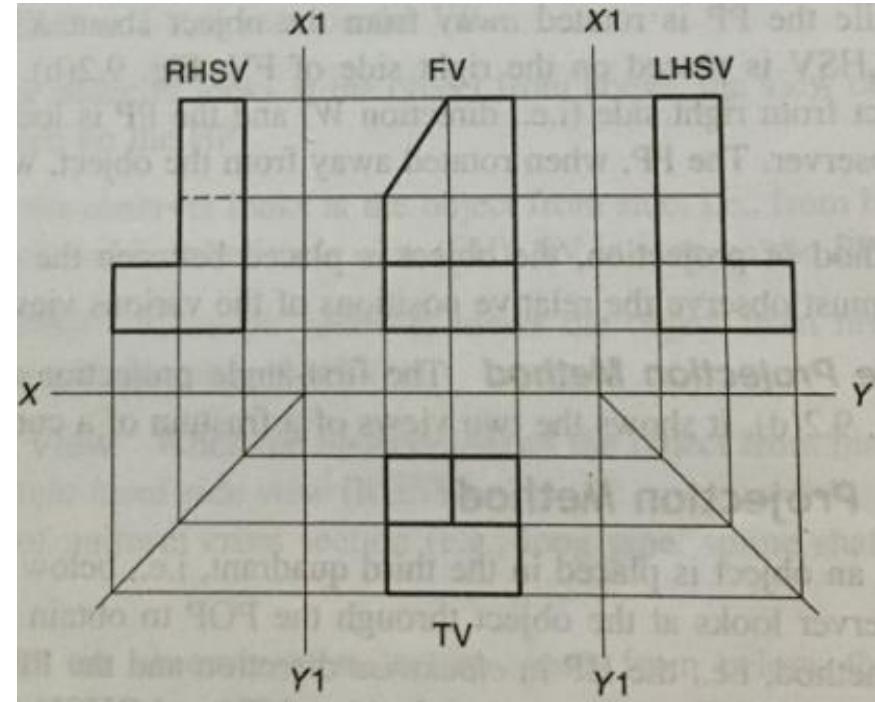
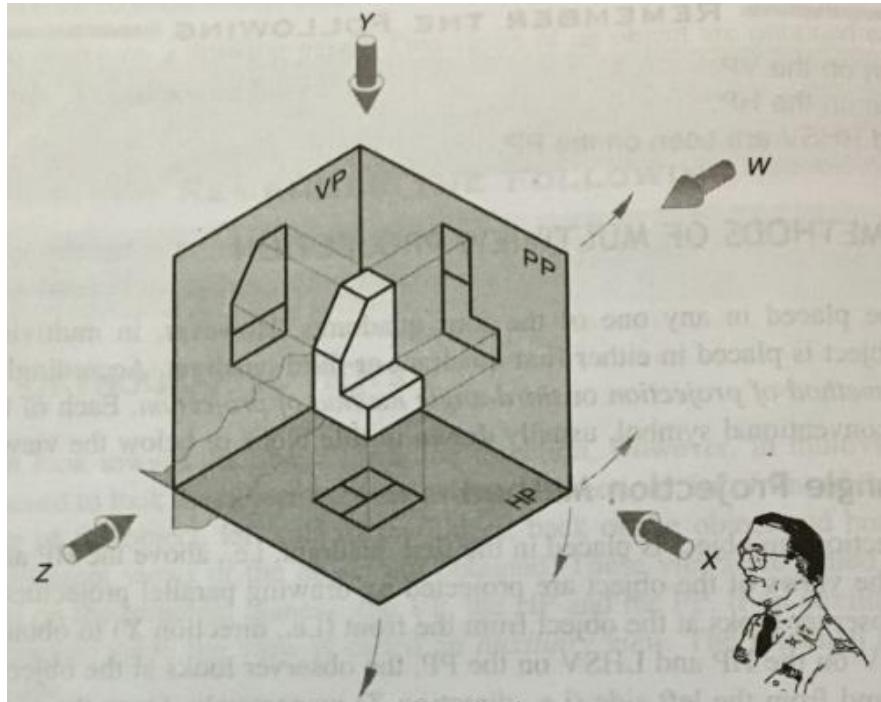
*In our country, the first-angle projection method is used as per revised SP:46-1988 and SP:46-2003 which is recommended by Bureau of Indian Standards (B.I.S.)*

# Difference Between First Angle & Third Angle

| First-Angle Projection  | Third-Angle Projection  |
|---|---|
| The object is kept in the first quadrant.   | The object is assumed to be kept in the third quadrant.   |
| The object lies between the observer and the plane or projection.   | The plane of projection lies between the observer and the object.   |
| the plane of projection is assumed to be non-transparent.   | The plane of projection is assumed to be transparent.   |
| In this method, when the views are drawn in their relative positions, the plan comes below the elevation, the view of the object as observed from the left-side is drawn to the right of elevation. | In this method, when the views are drawn in their relative positions, the plan, comes above the elevation, left hand side view is drawn to the left hand side of the elevation. |
| This method of projection is now recommended by the "Bureau of Indian Standards" from 1991.   | This method of projection is used in U.S.A. and also in other countries.  |

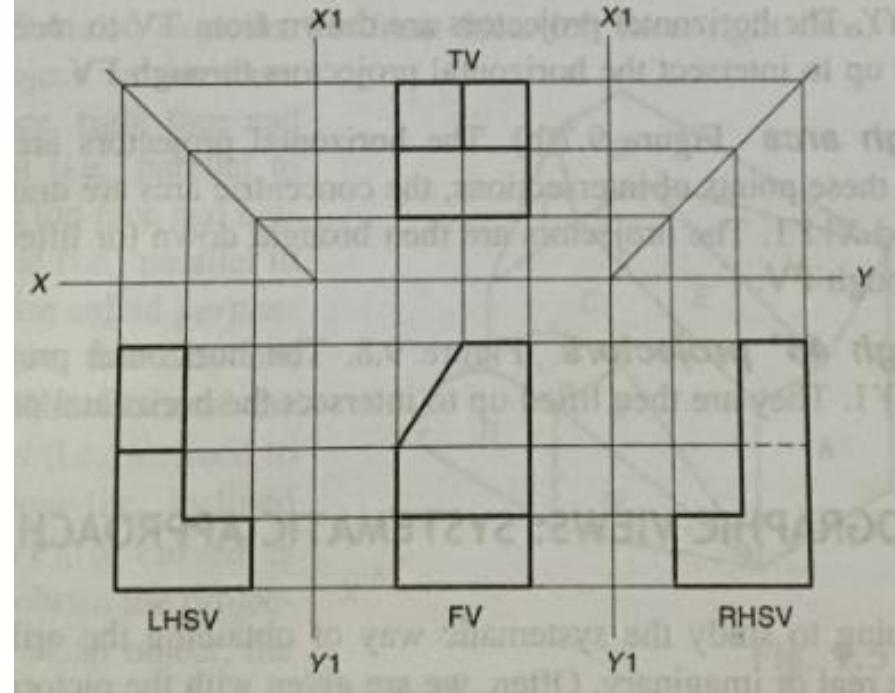
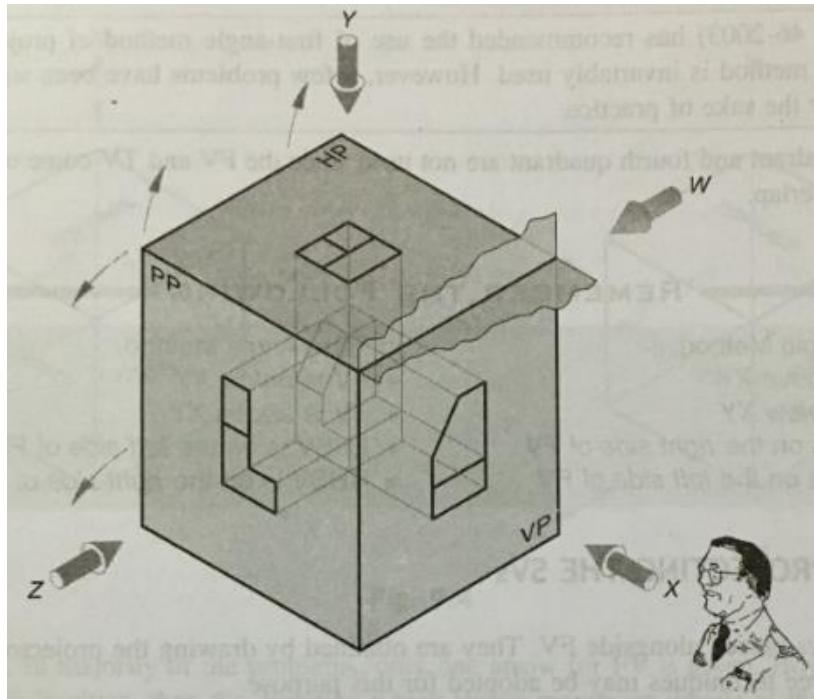
# Sequence of Views

## First-Angle Projection



# Sequence of Views

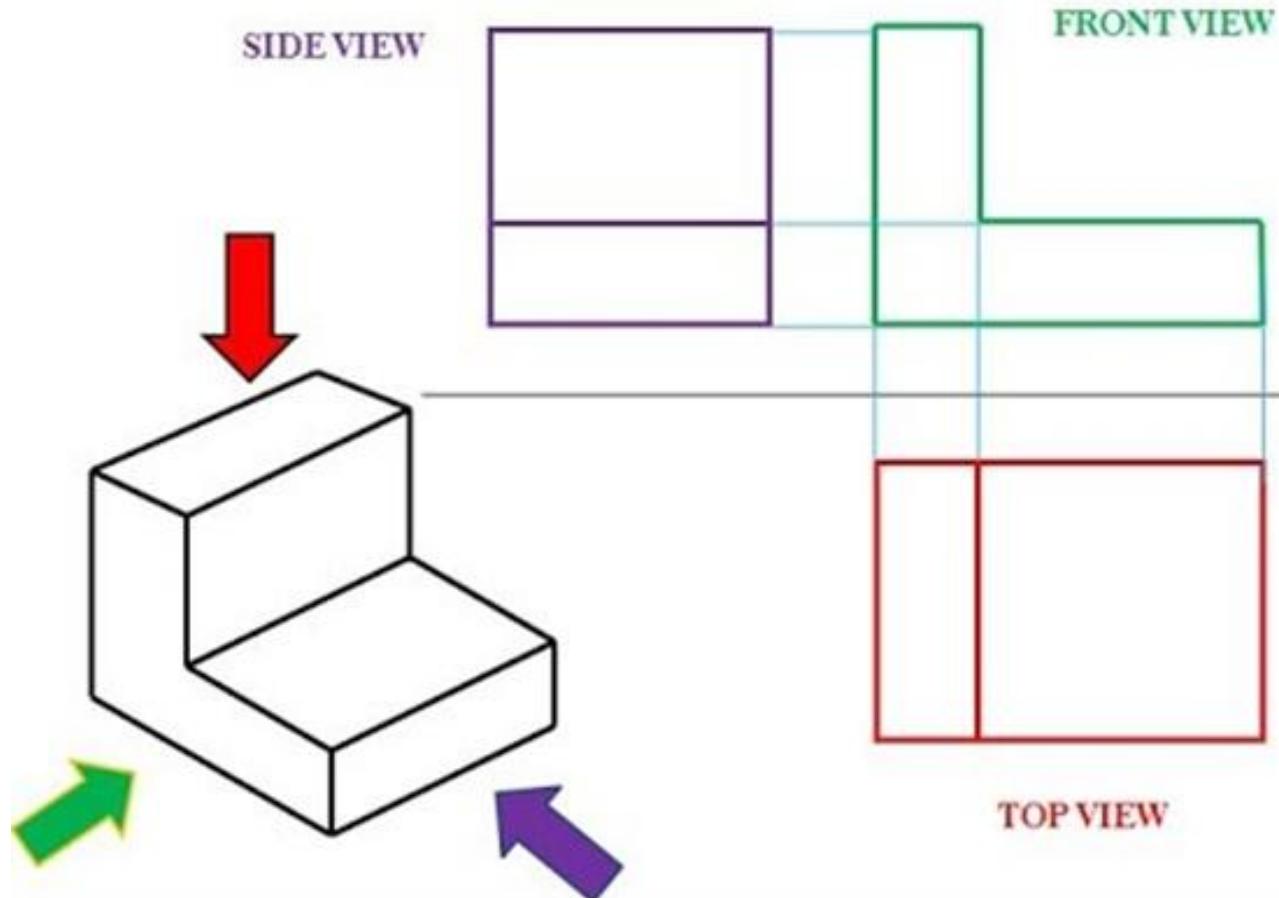
## Third-Angle Projection



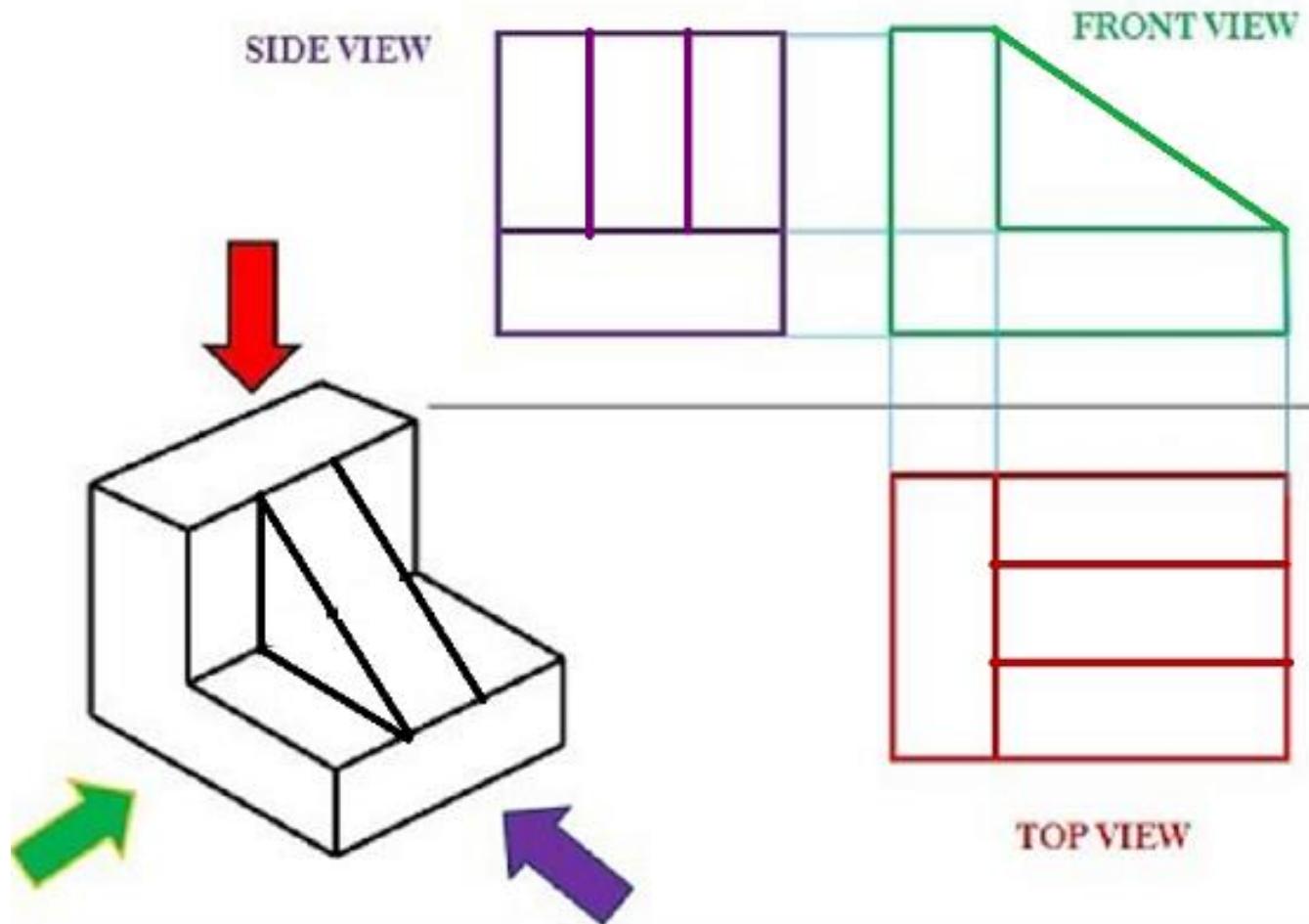
## Few Points To Remember

- ✓ If the angle of projection is not given then follow first angle of projection.
- ✓ If the drawing is prepared by using a scale i.e. reducing or enlarging then mention the scale value.
- ✓ If any dimension is missing then assume the missing dimension in proportion to other available dimensions.
- ✓ Missing depth of hole can be assumed as through hole.
- ✓ If direction of view for front view is not available then the view of maximum length should be assumed as front.
- ✓ Over dimensioning should be avoided.

## Few Examples



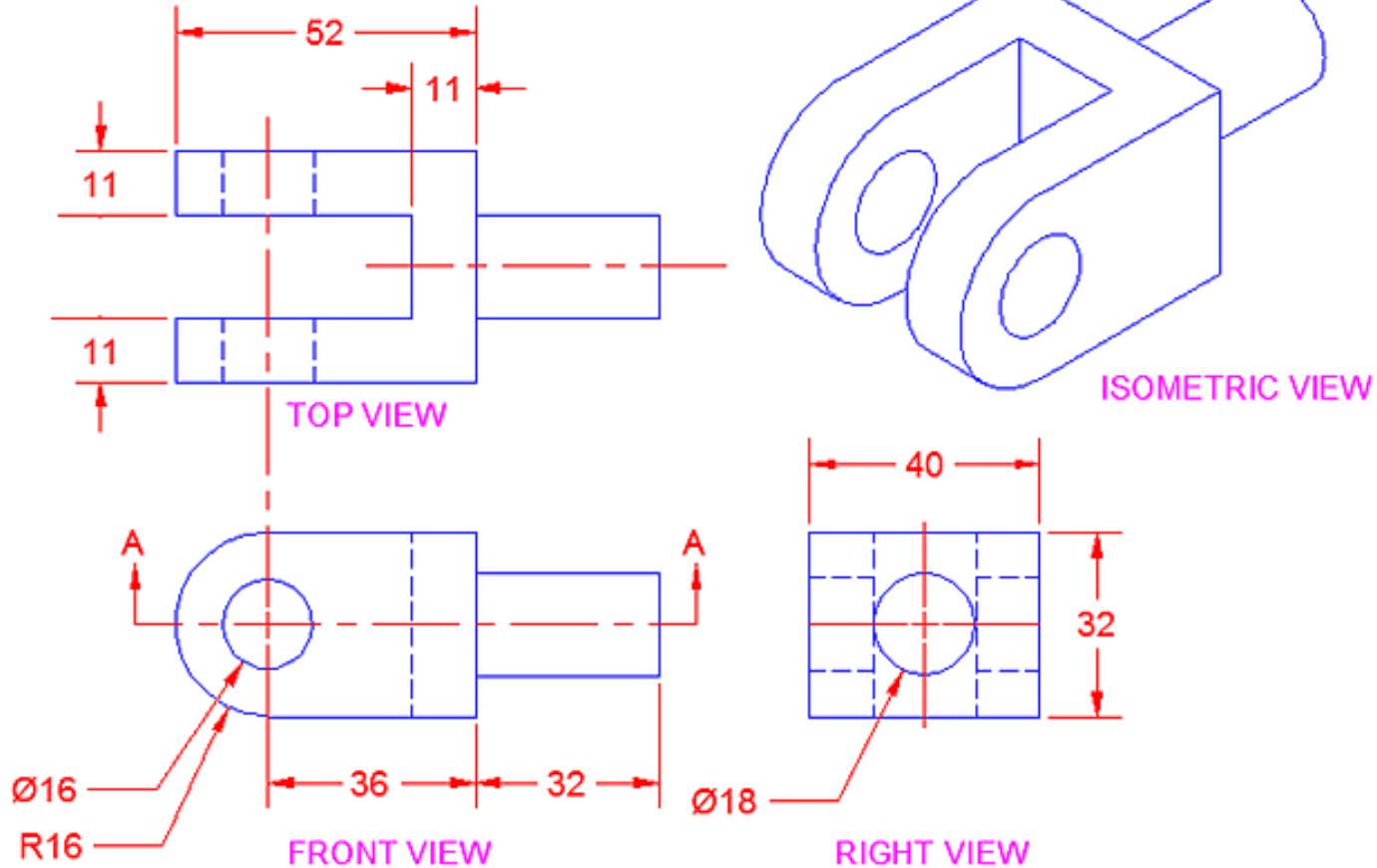
## Few Examples



## Few Examples



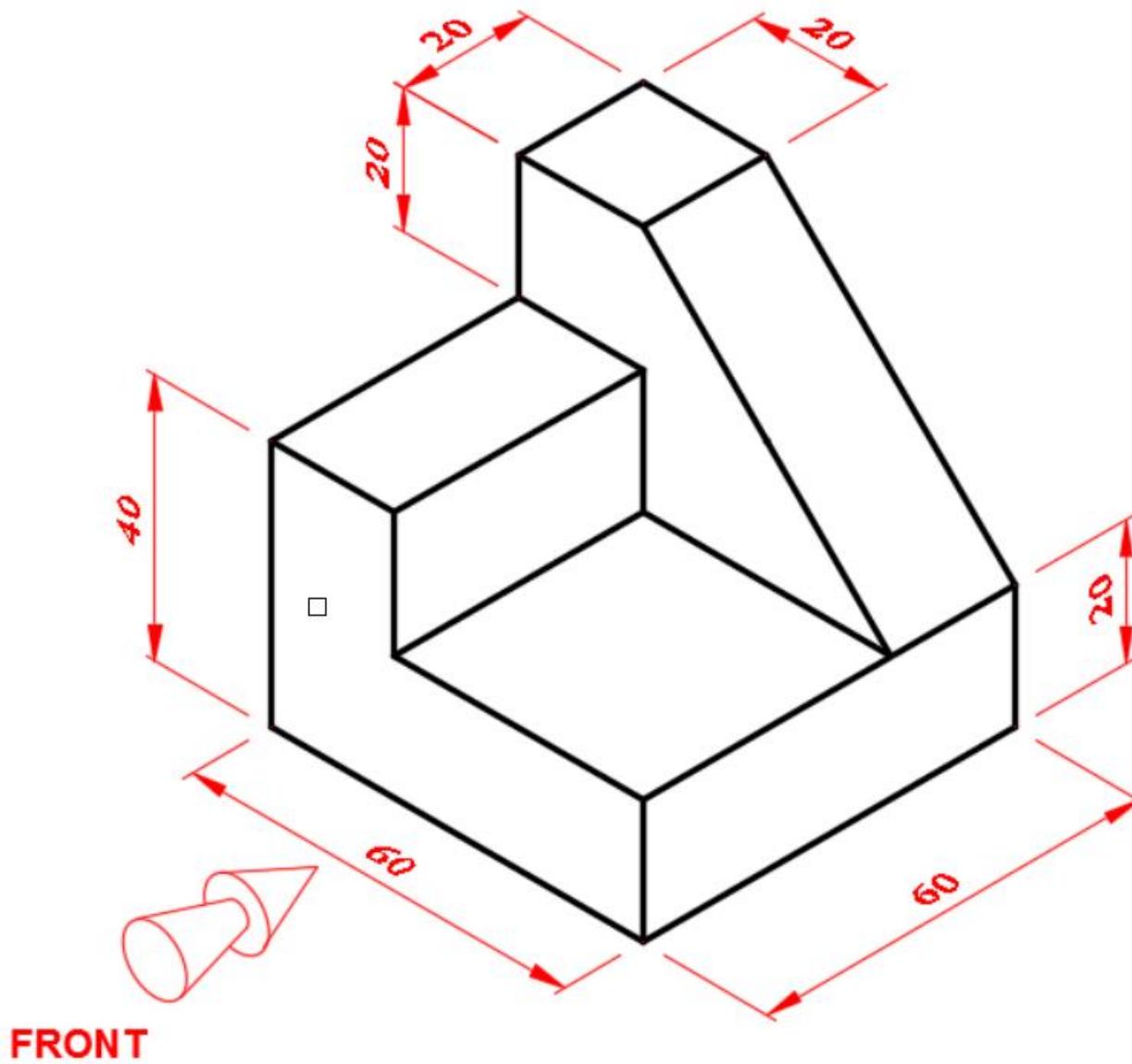
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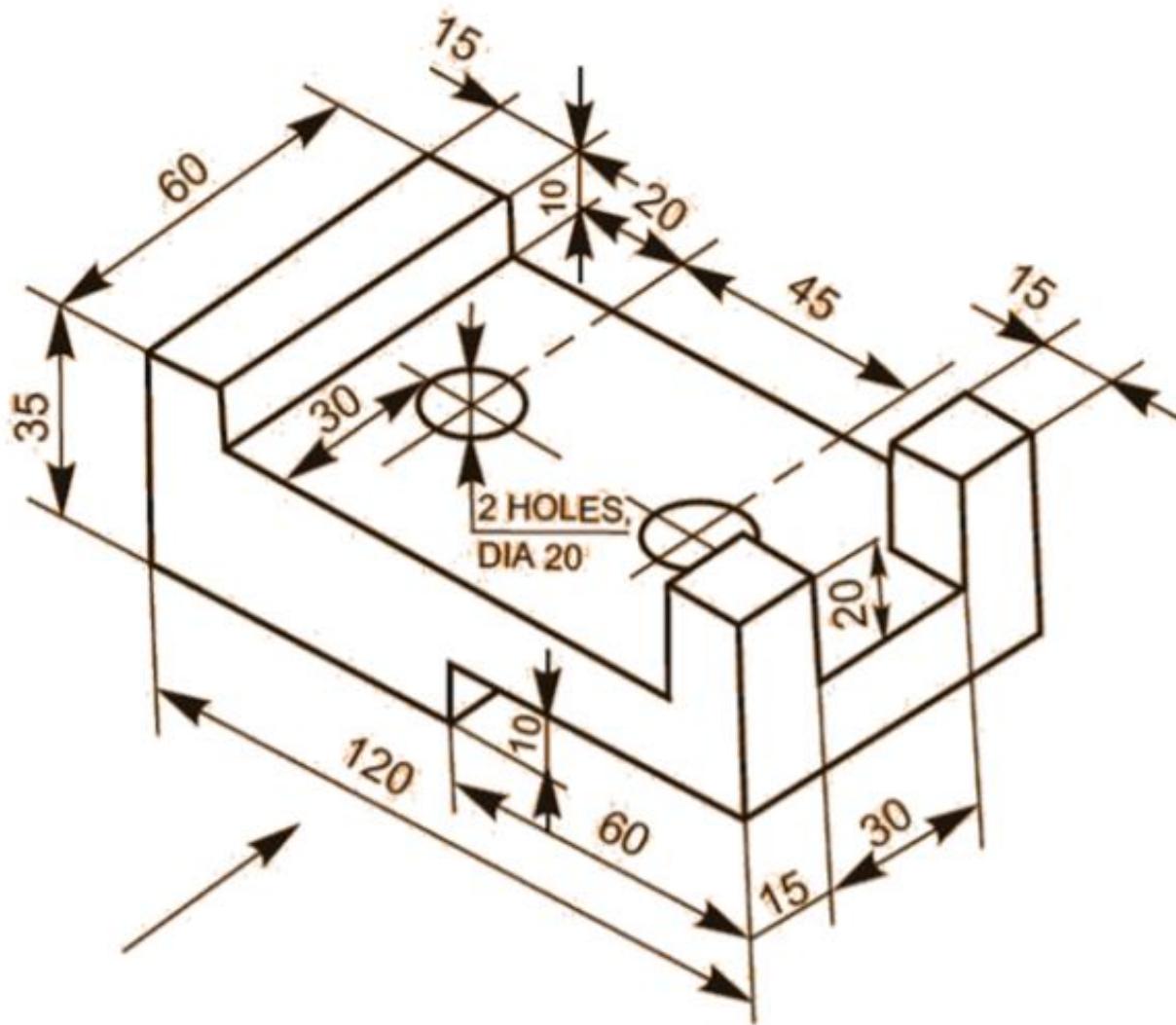
# For Practice



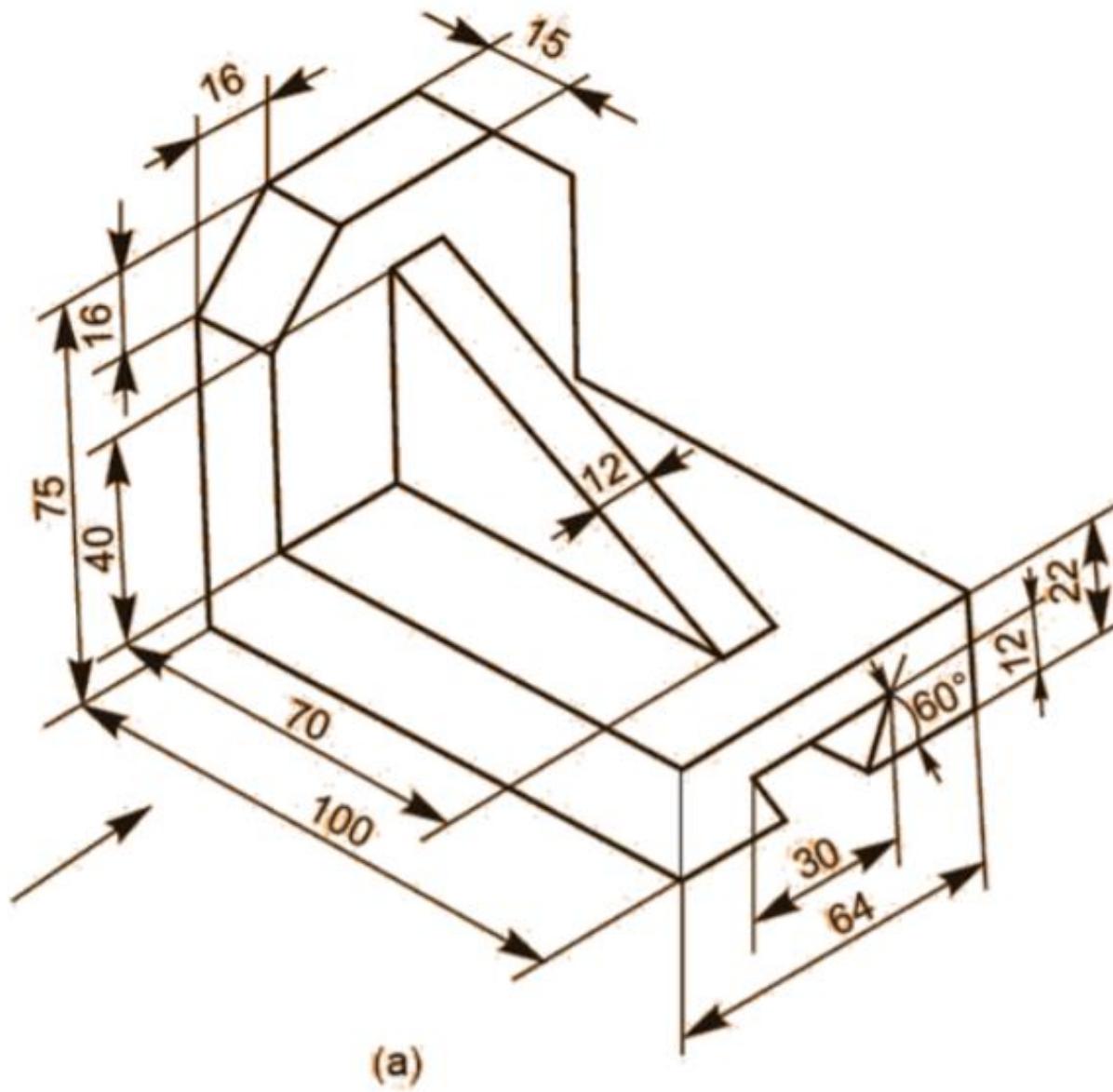
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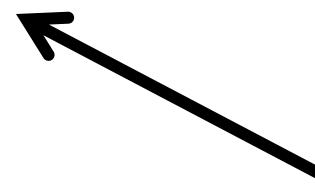
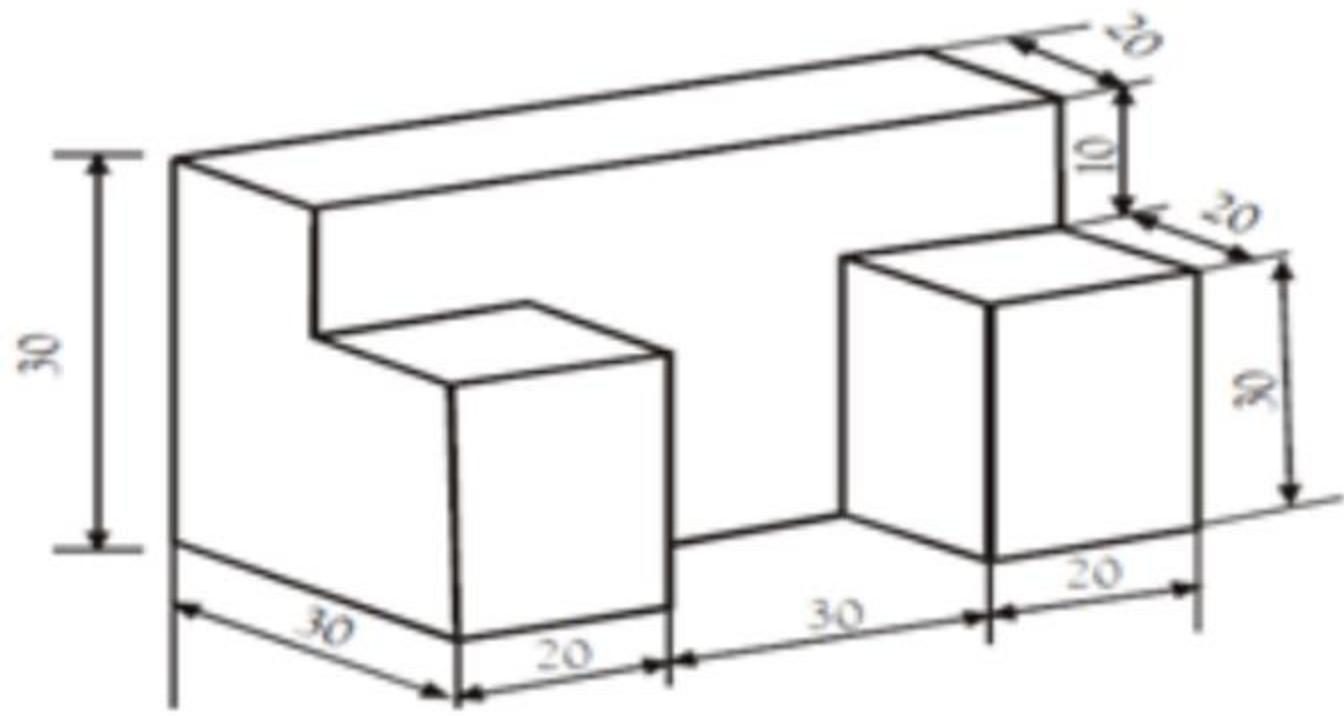


# For Practice



## For Practice

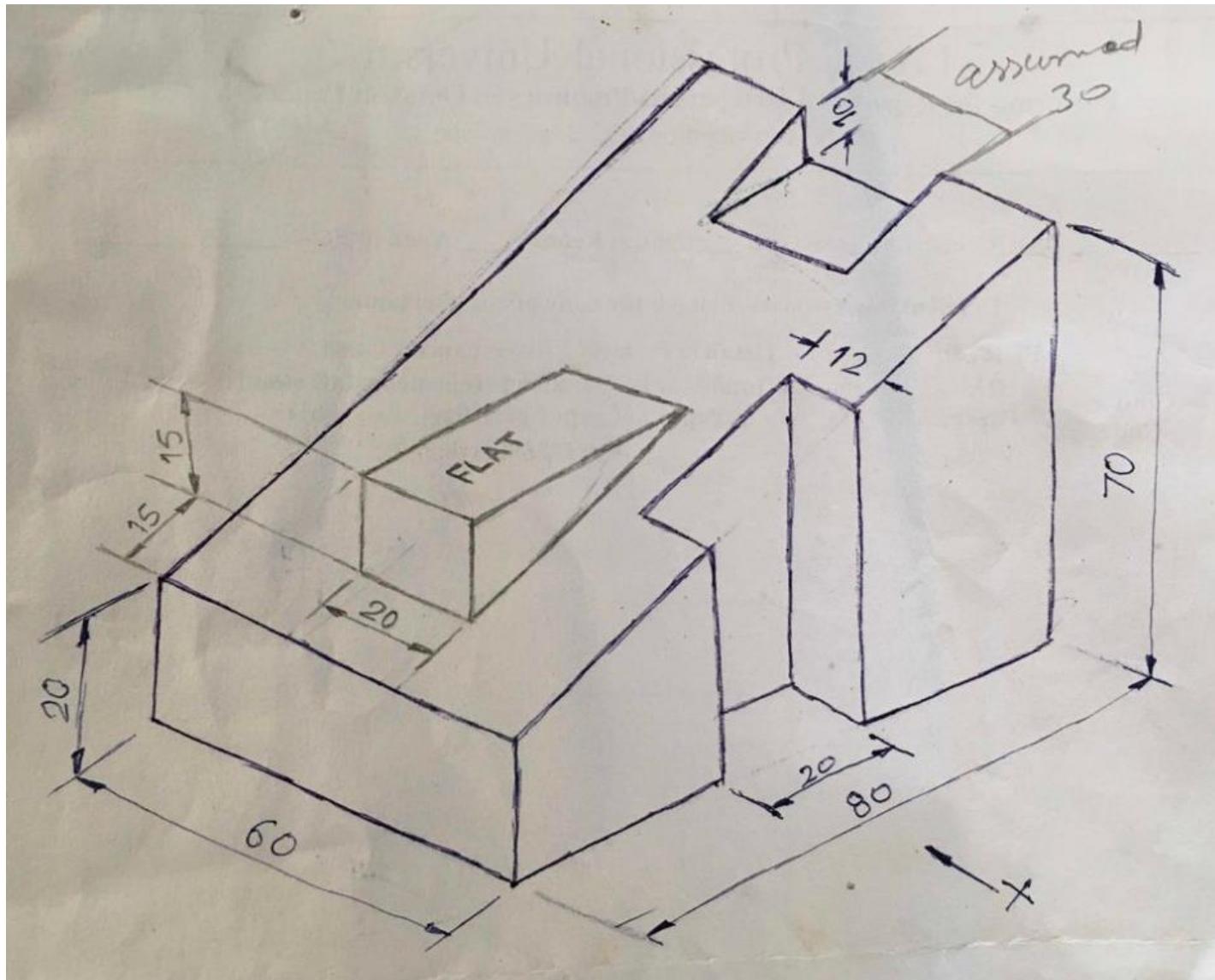




# For Practice



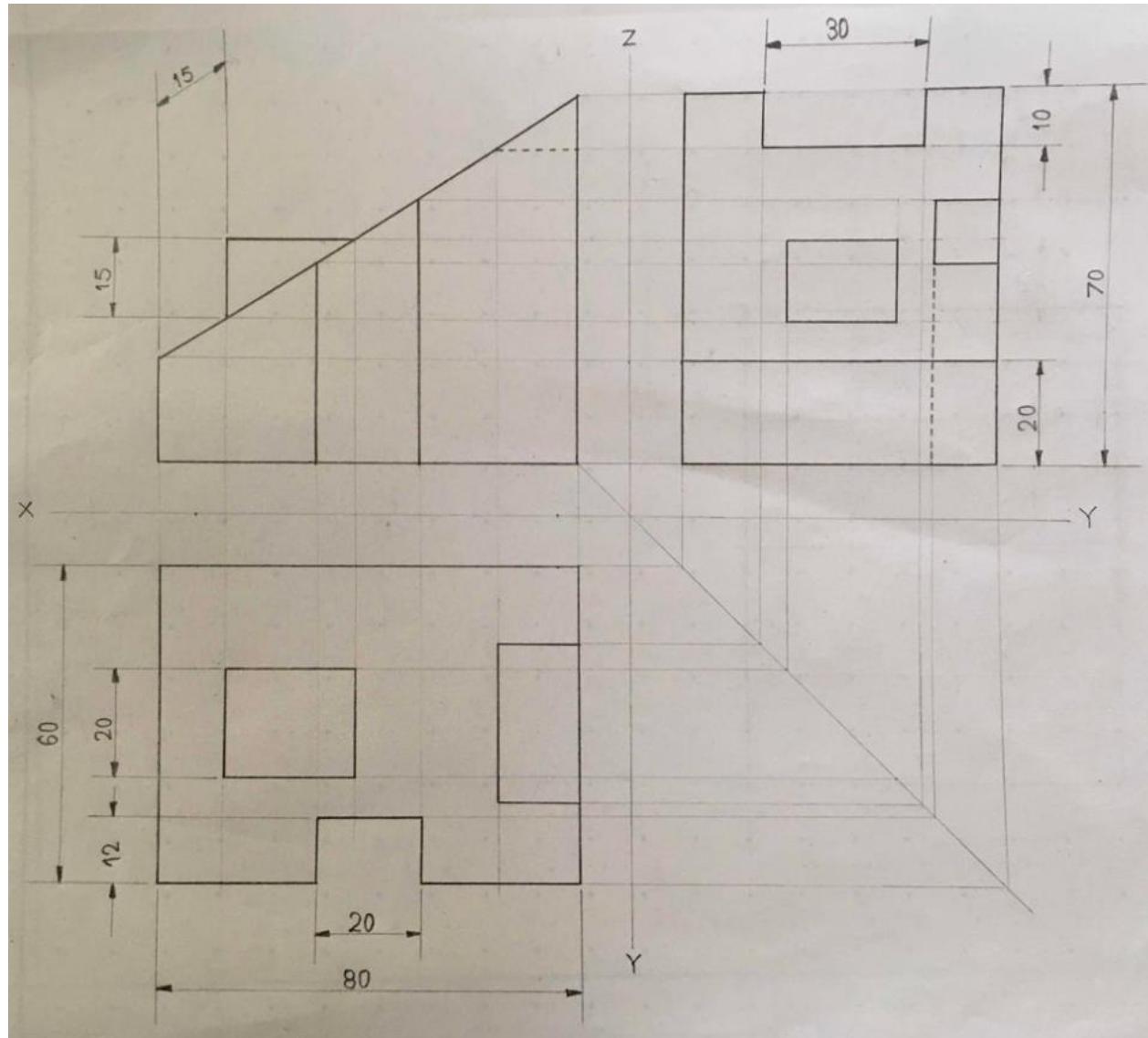
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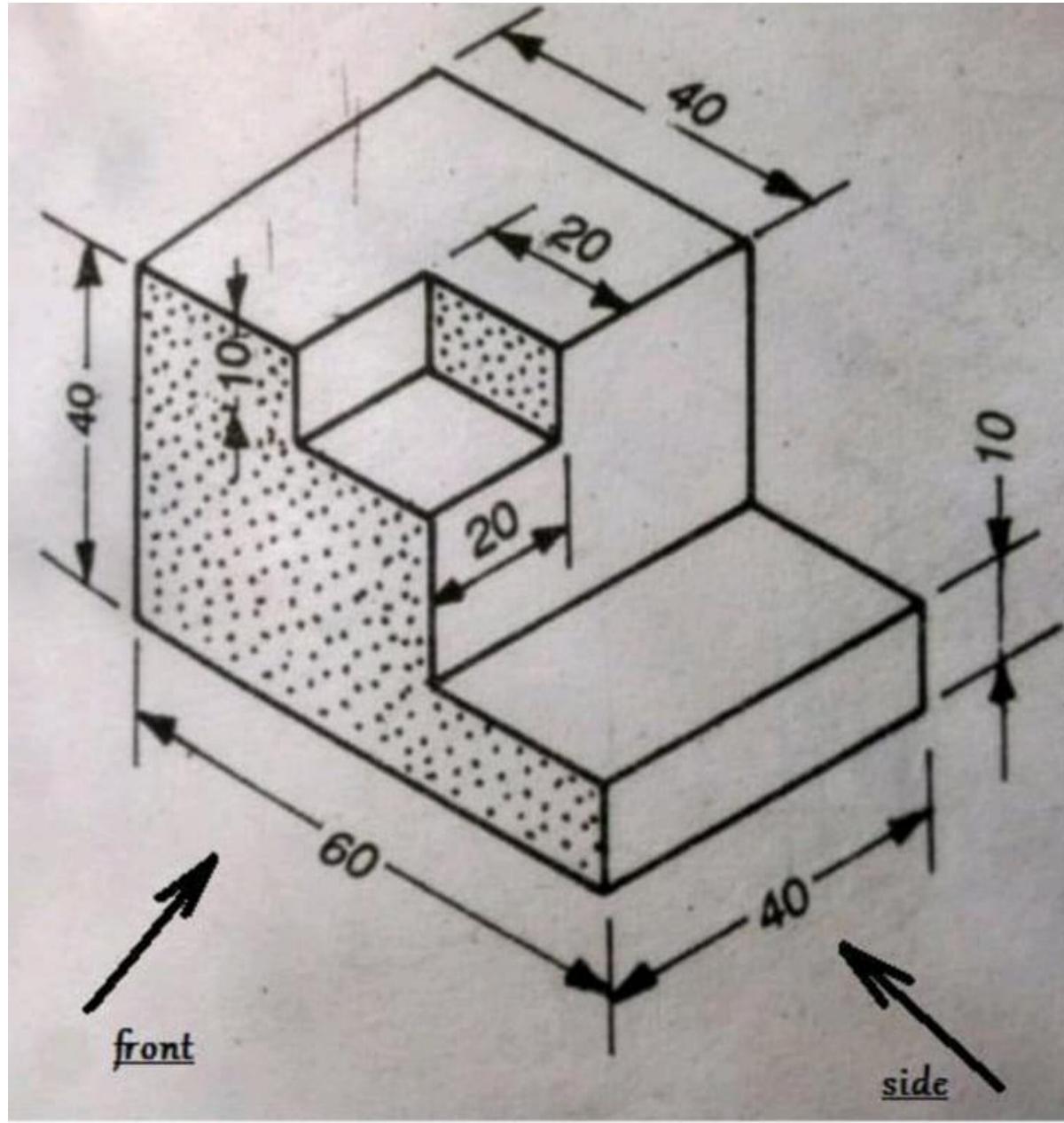


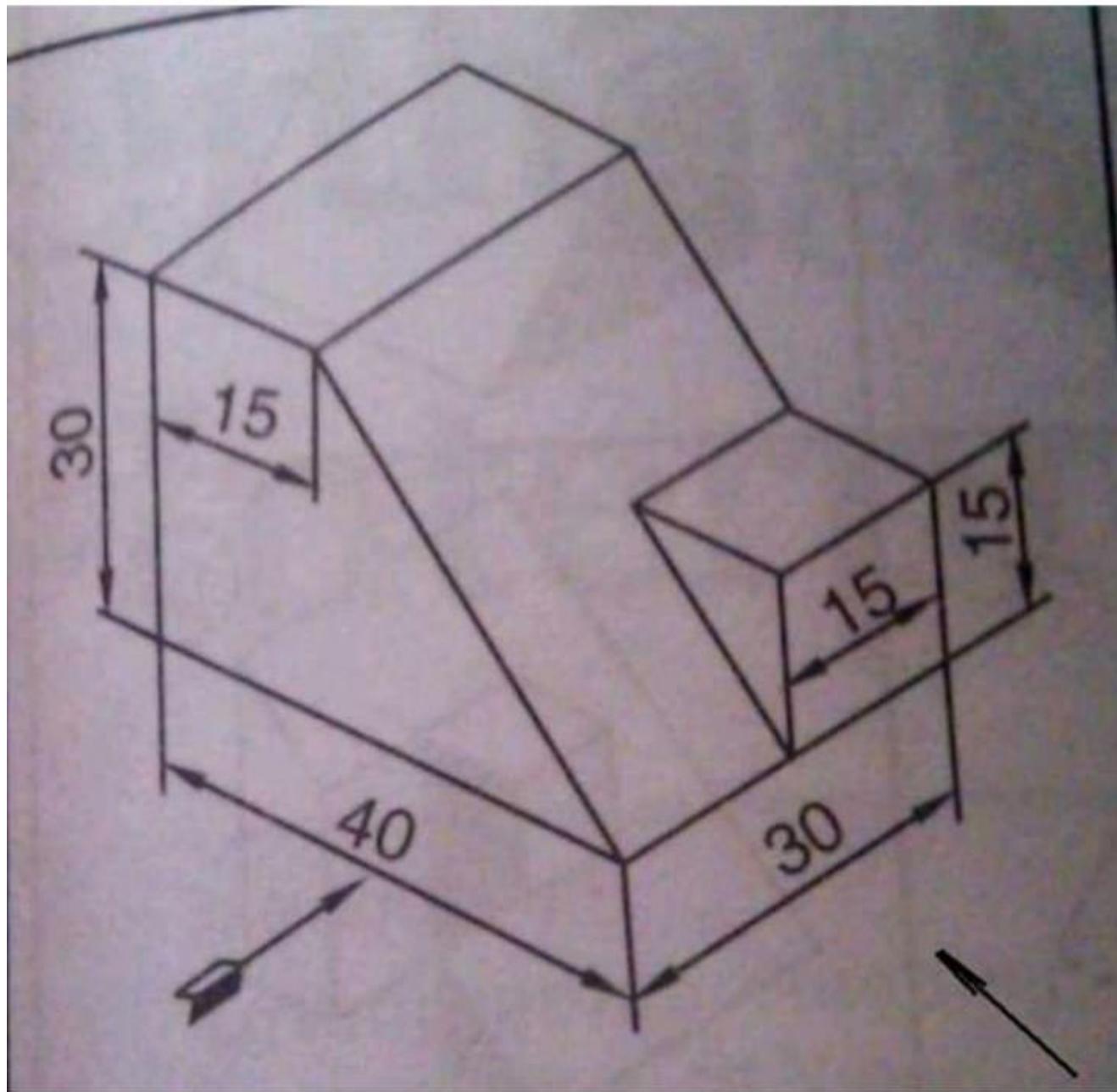
# For Practice



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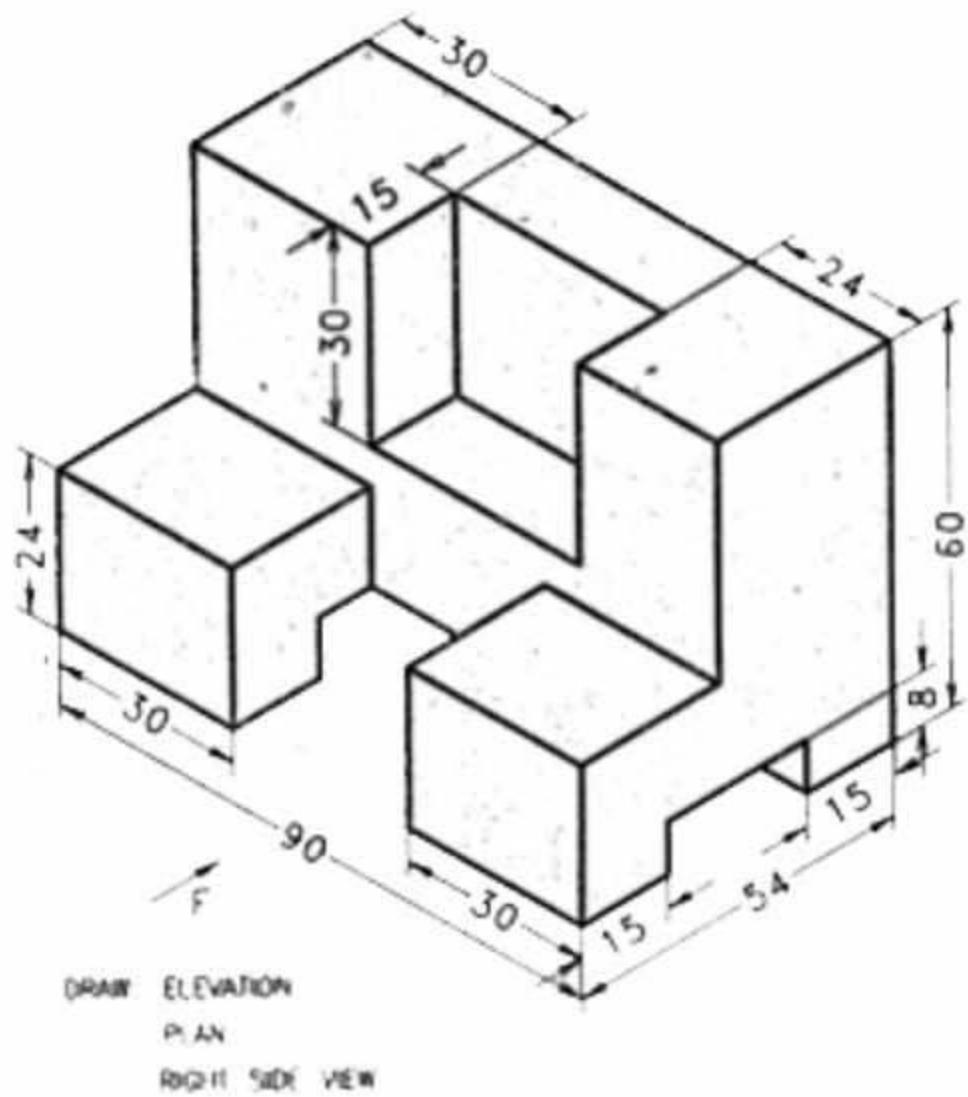
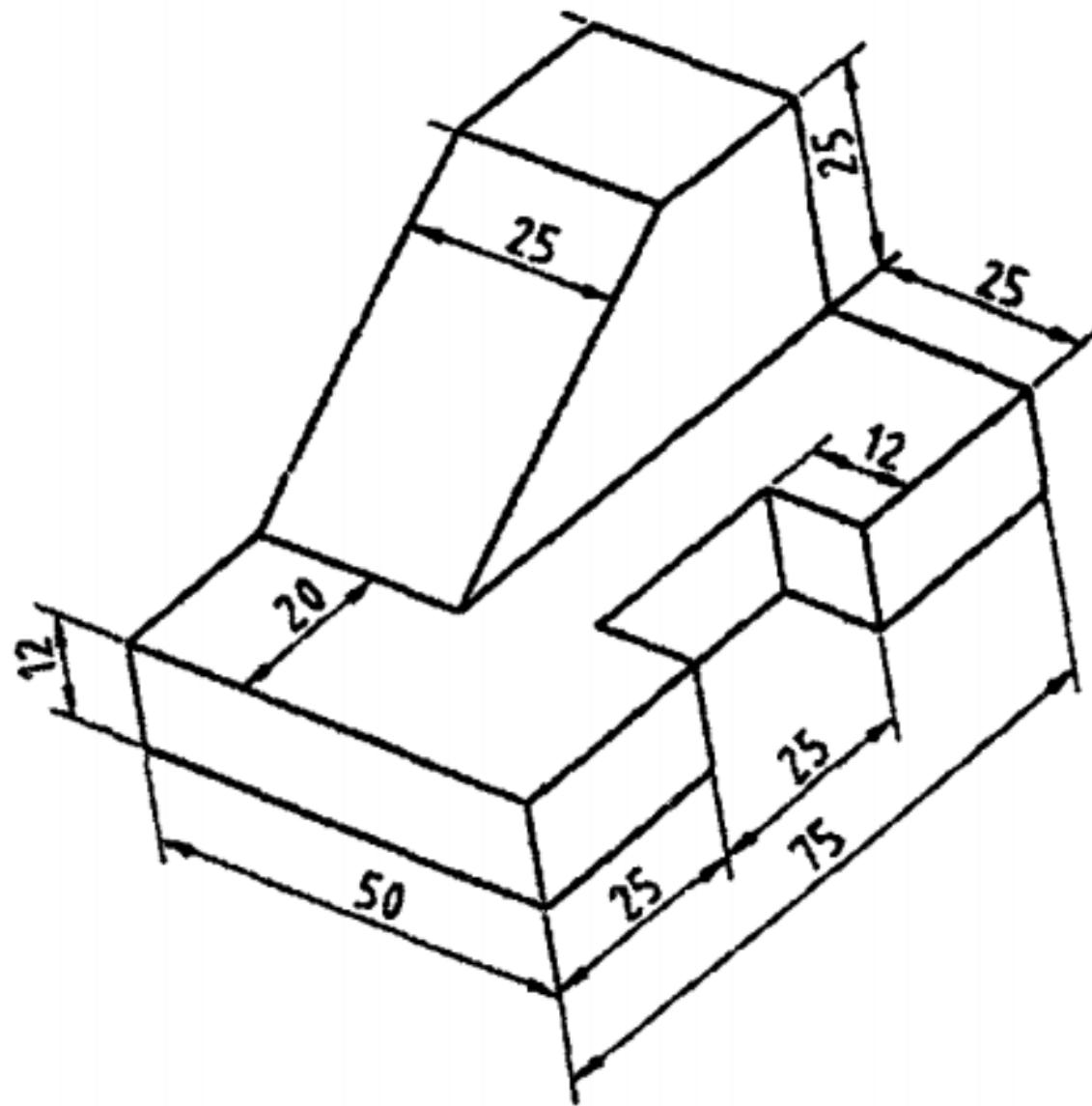
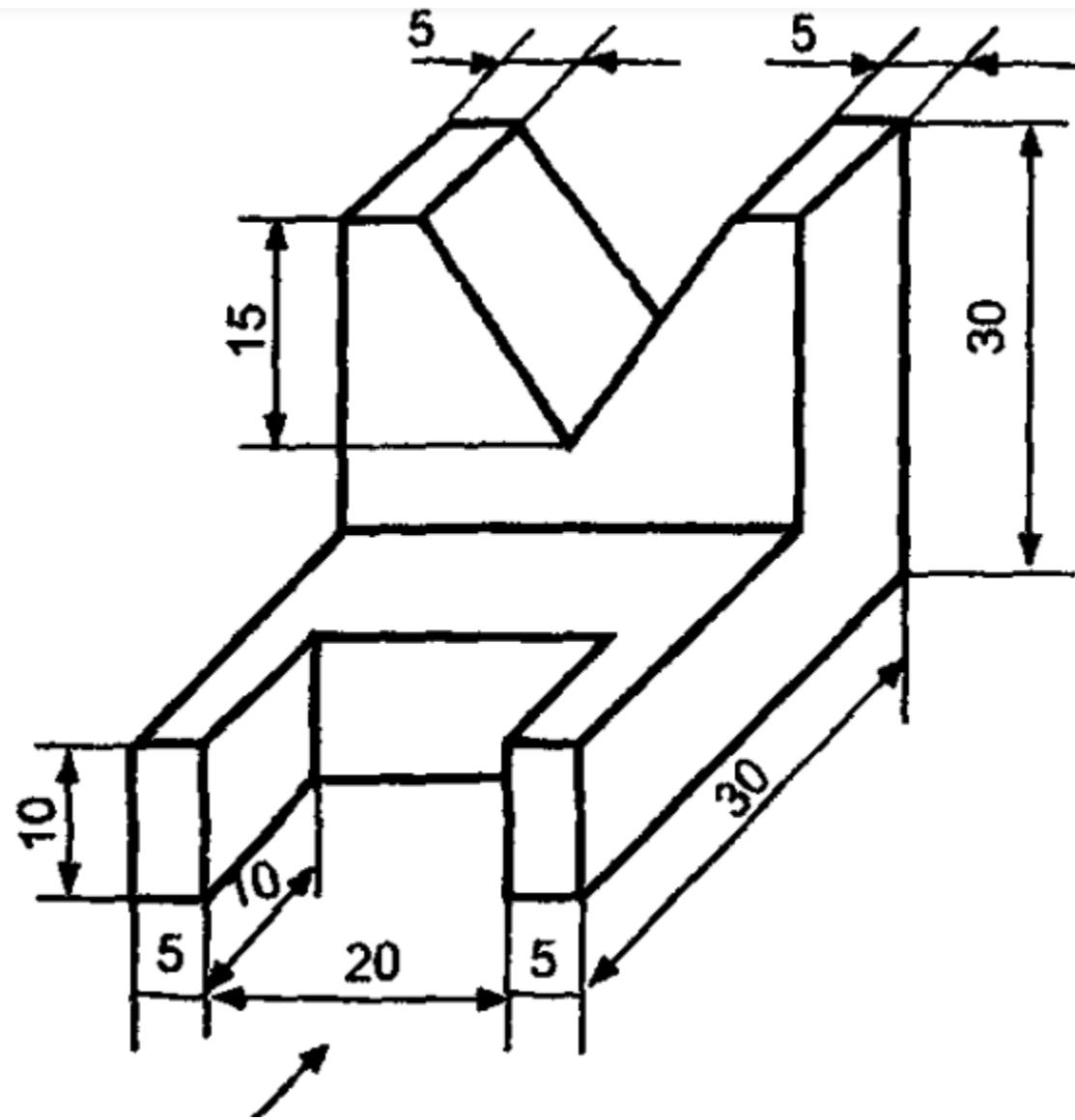
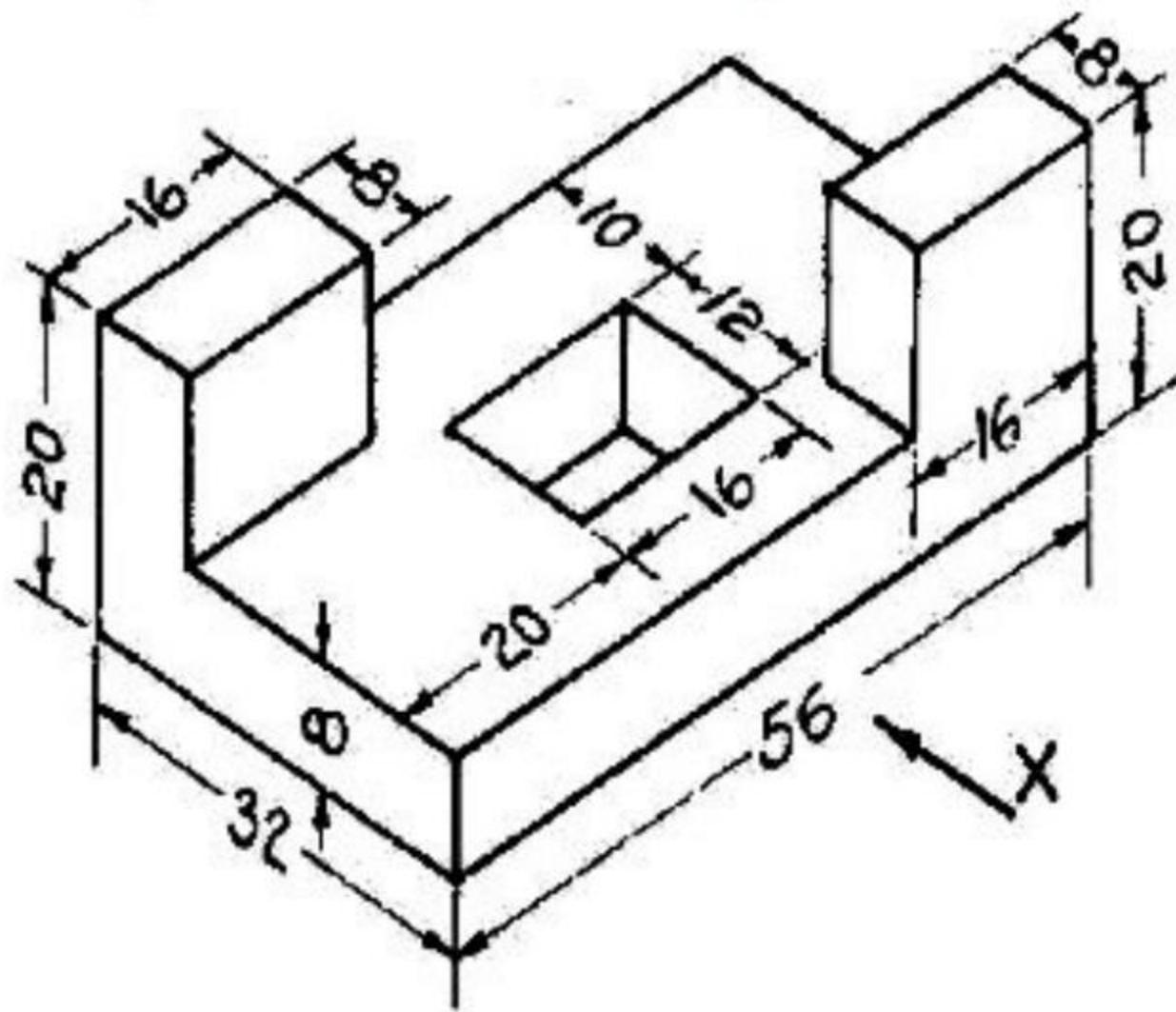


Fig. F1.34 A block









**Thank You**