

A technical drawing of a mechanical assembly, likely a robotic arm or a similar device. The drawing is a cutaway view, showing the internal components. The main body is a large, curved, blue structure. Inside, there is a series of gears and shafts. The gears are rendered in a semi-transparent blue, while the shafts and other internal components are shown in a solid, metallic blue. The drawing is set against a dark blue background.

Technical Arts (TA 101AA) Engineering Graphics

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Department of Design

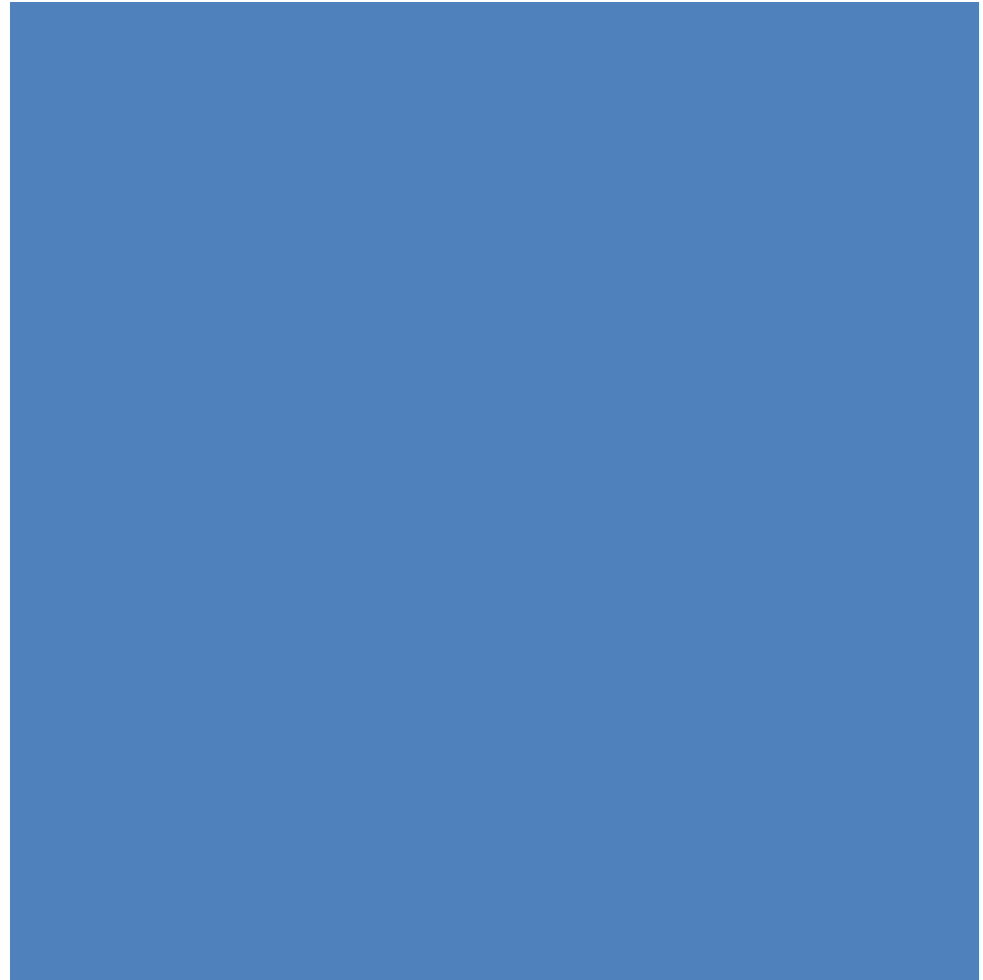
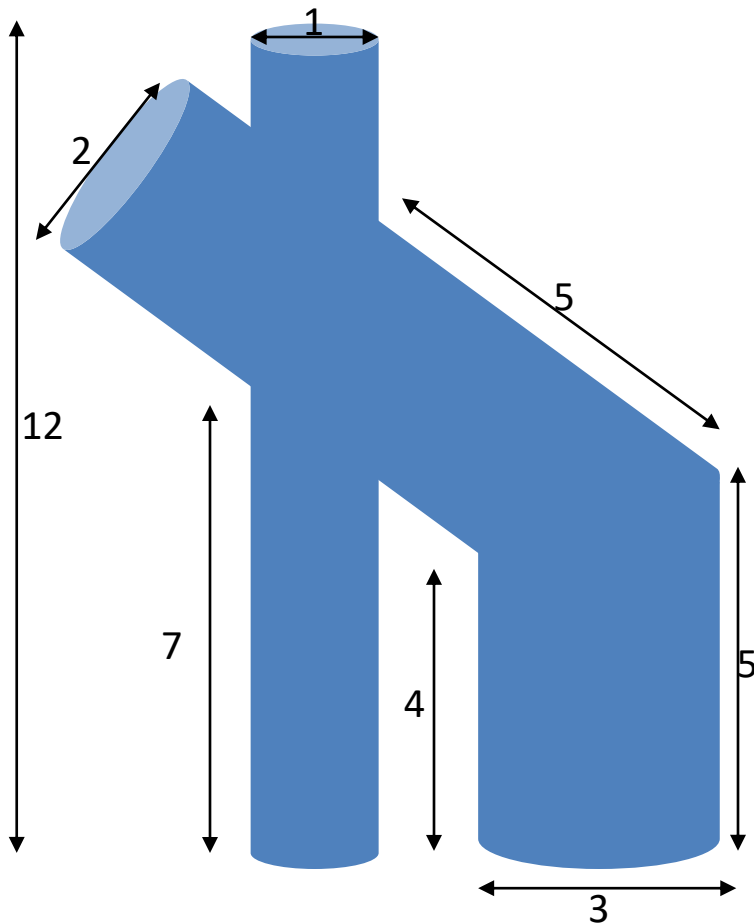
ABOUT MID-SEMESTER EXAM

- May 14th, 2022.
- Totally offline.
- Will have examination in two batches.
 - Batch 1: 10 AM to 12 noon
 - Batch 2: 1 PM to 3 PM
- Batch 1 has to report at 9.30 AM.
- Batch 2 has to report at 12.30 PM.
- Do not come late.
- Bring your instruments.
- No mobile phones inside examination halls.

Auxiliary Views

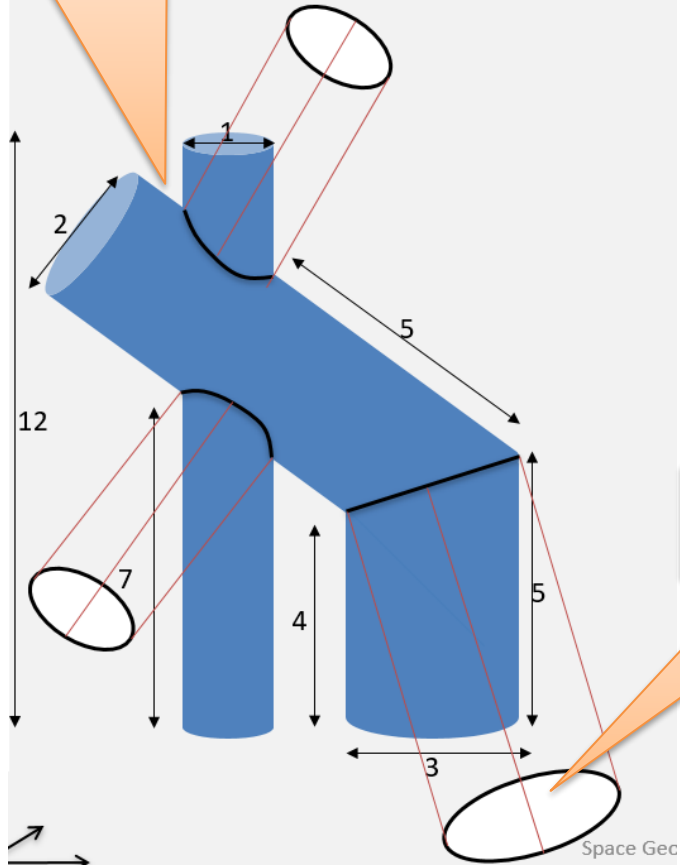
Question?

- How should we trim a flat sheet for making the part on the left?



Approach

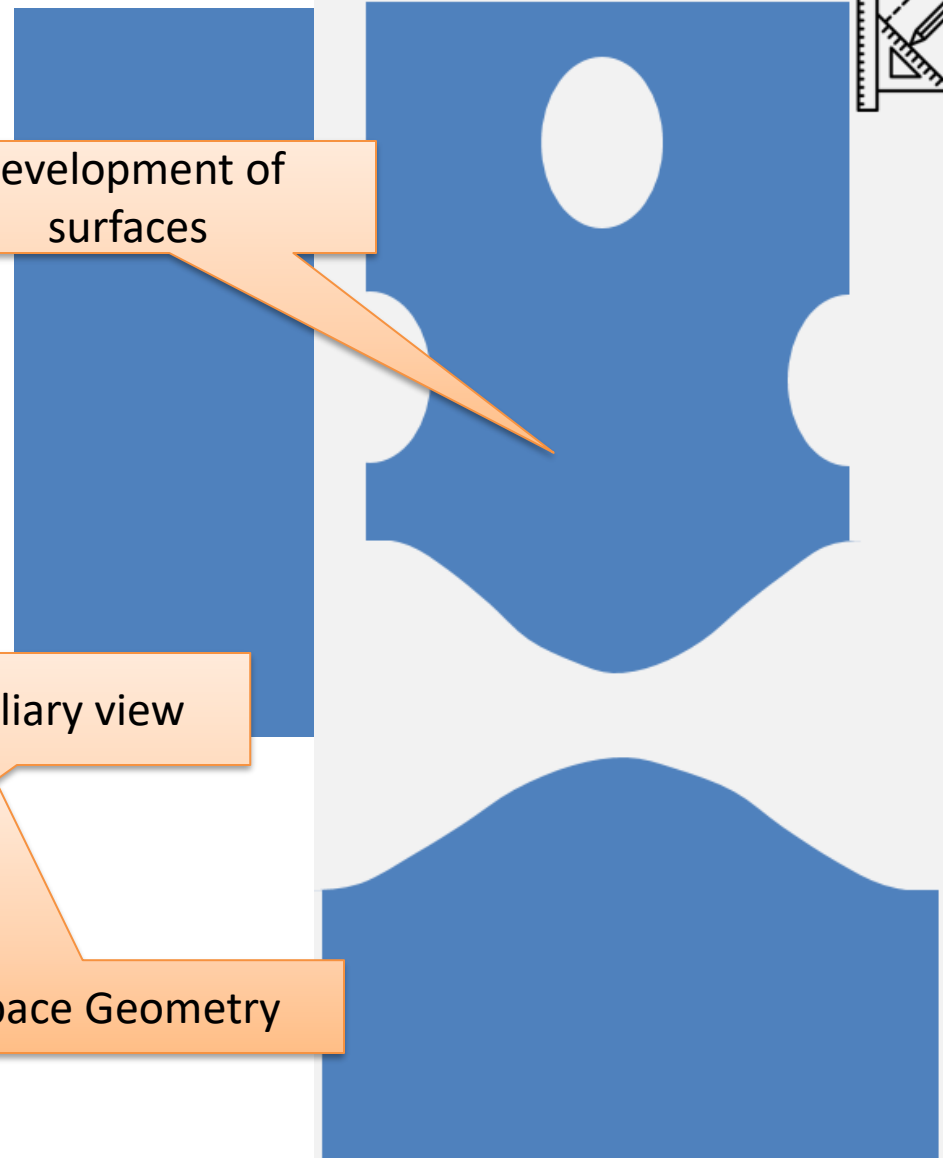
Intersection of surfaces



Development of surfaces

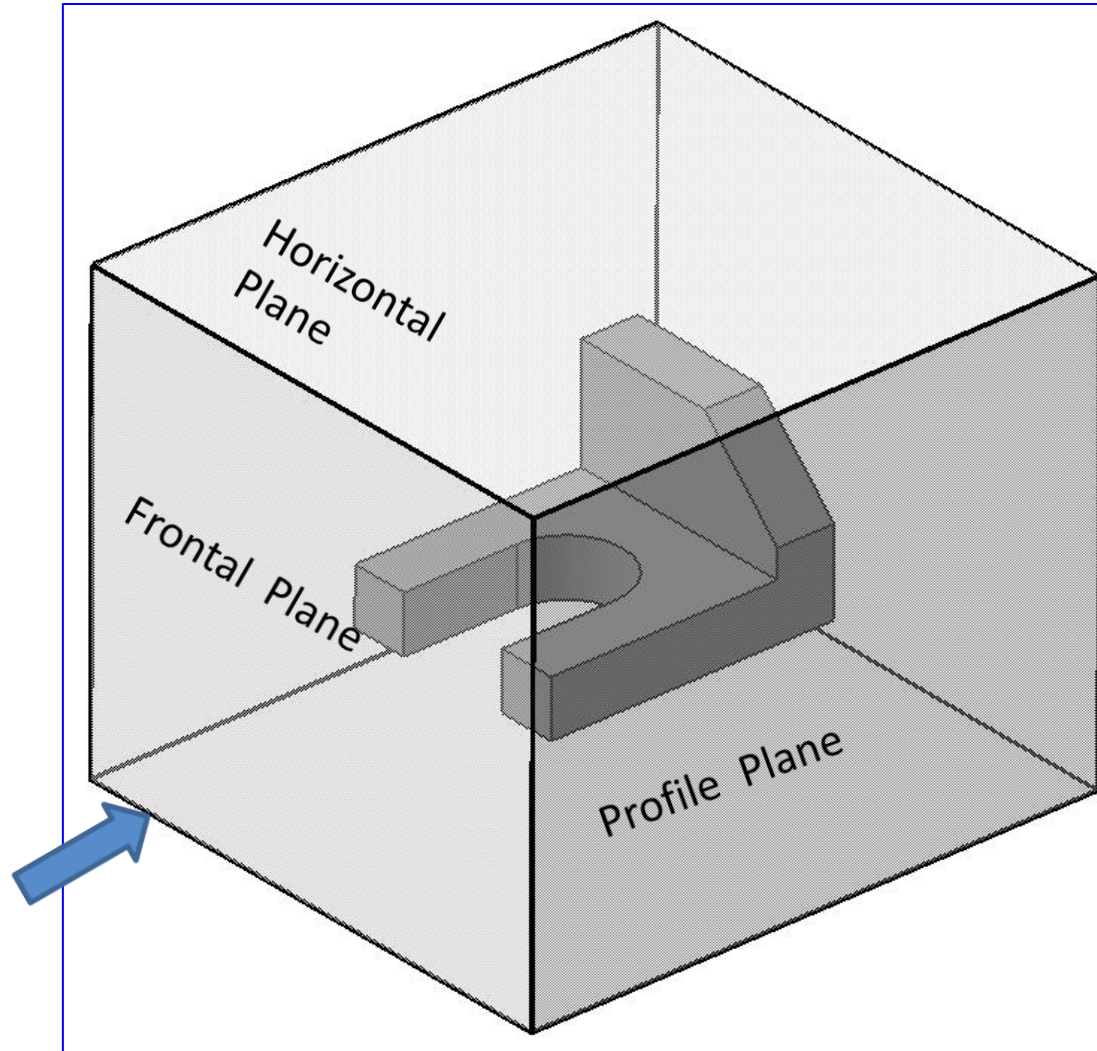
Auxiliary view

Space Geometry



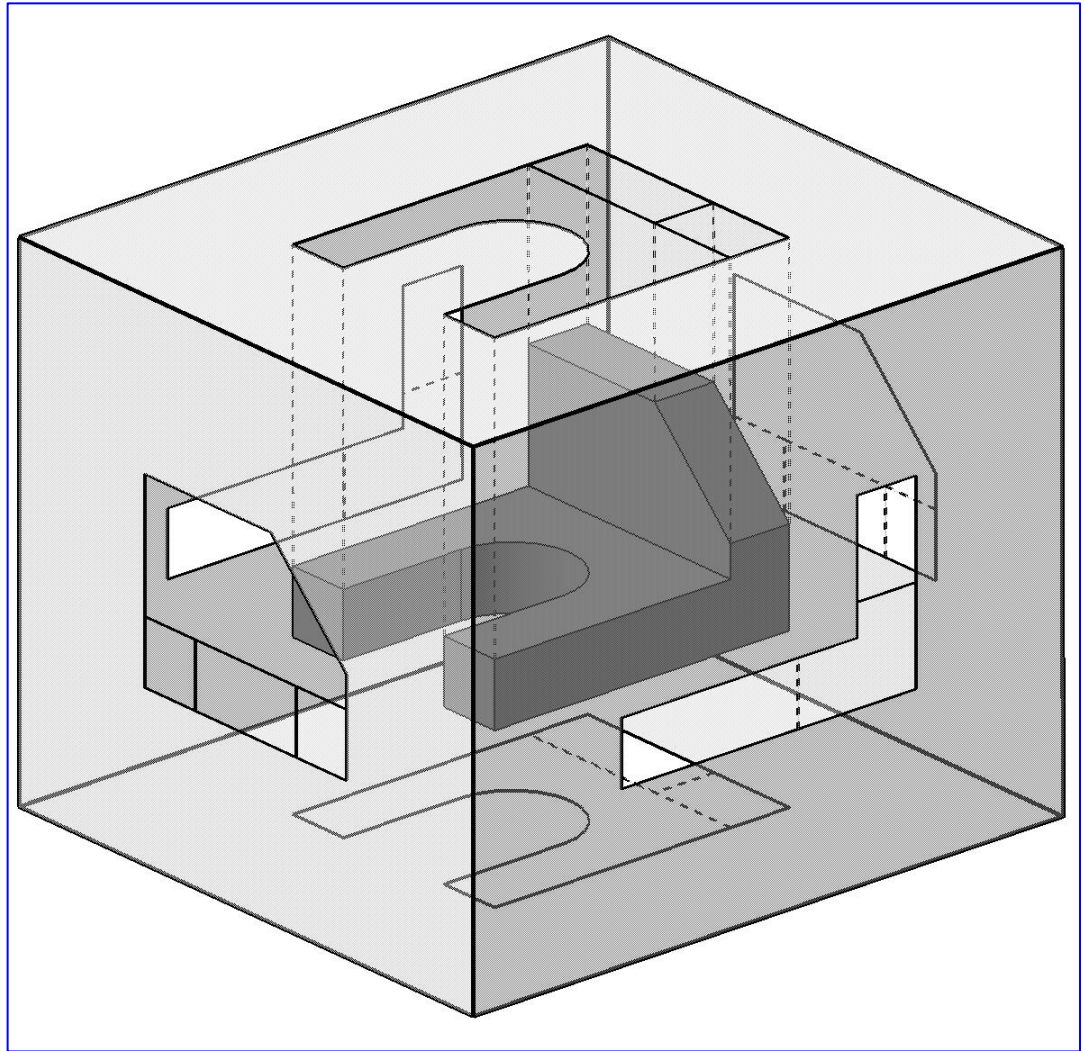
Principal Orthographic Views: Review

- The object is placed inside a glass box.
- The sides of the box represent the 6 principal planes.
- Planes connected by hinge joints.



Glass Box Method

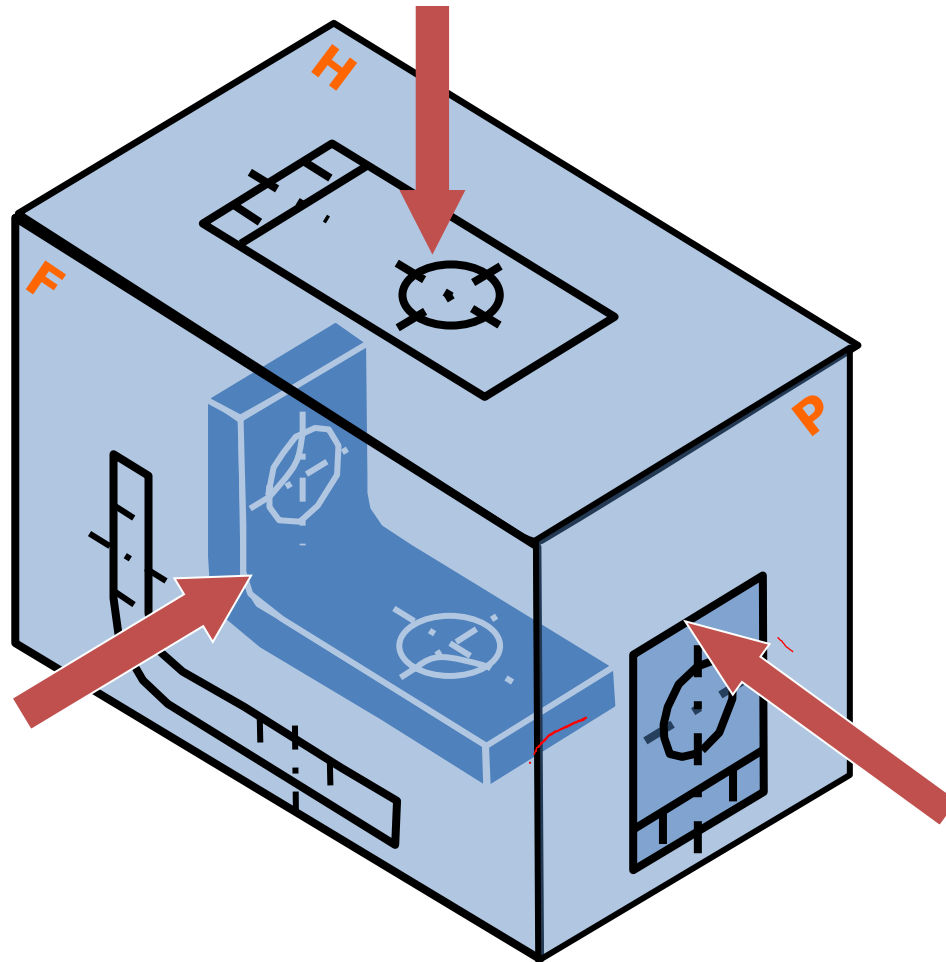
- The image of the object is projected on the sides of the box.
- But there could be surfaces which will appear distorted.
 - Some planes may not be seen in respective true shapes.



Important Points

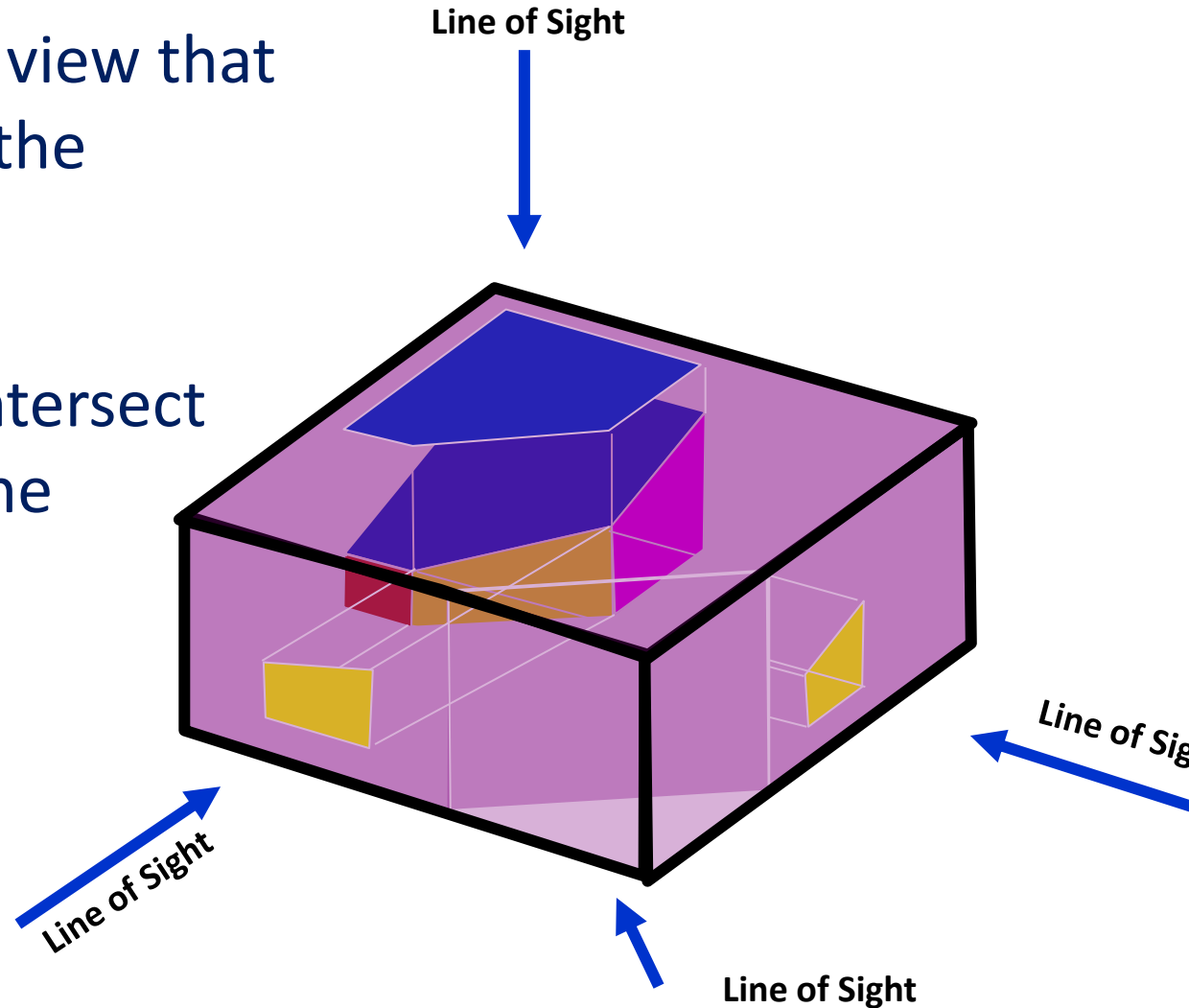
- Foreshortening of lines that are inclined to the H/F/P planes.
- Normal or “true shapes” cannot be drawn if its planes are inclined to H/F/P planes.

Principal Orthographic Views

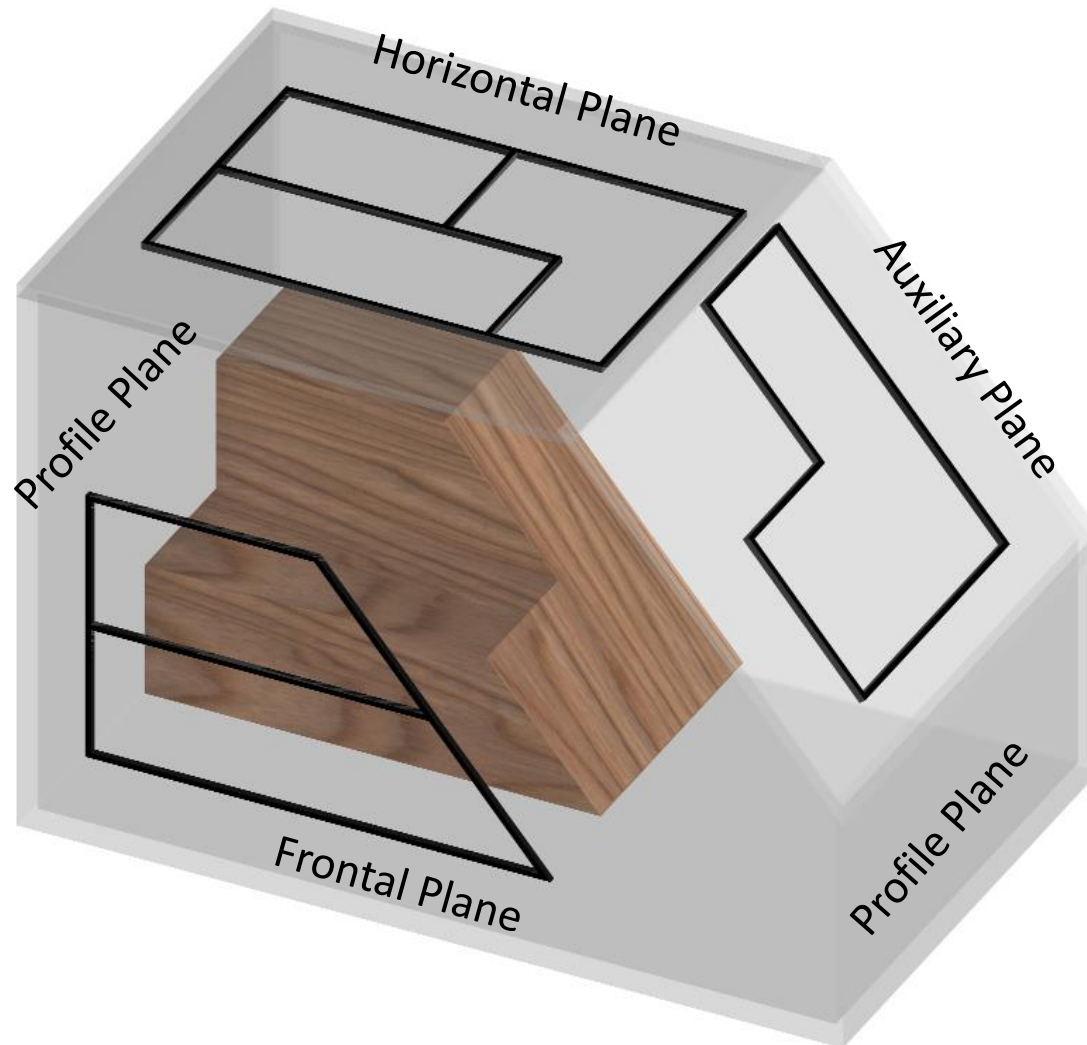


Auxiliary View

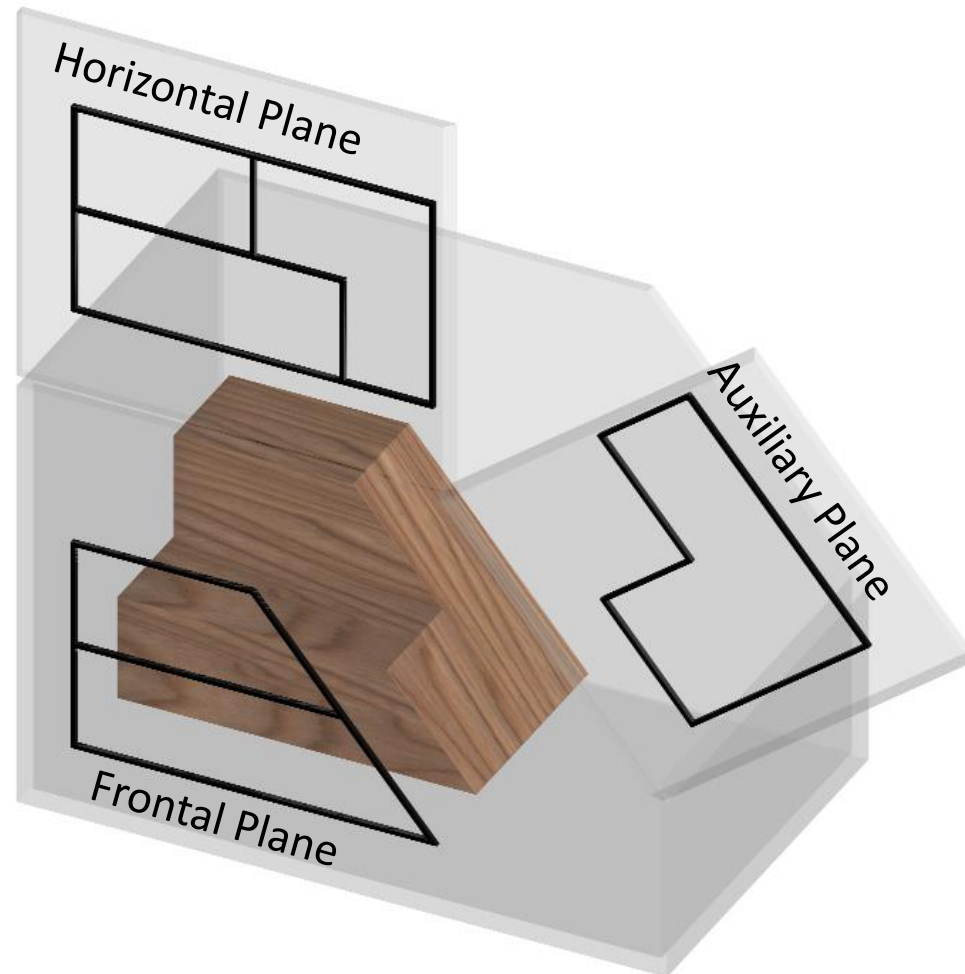
- An orthographic view that is not on one of the principal planes.
- Projector lines intersect the auxiliary plane normally.



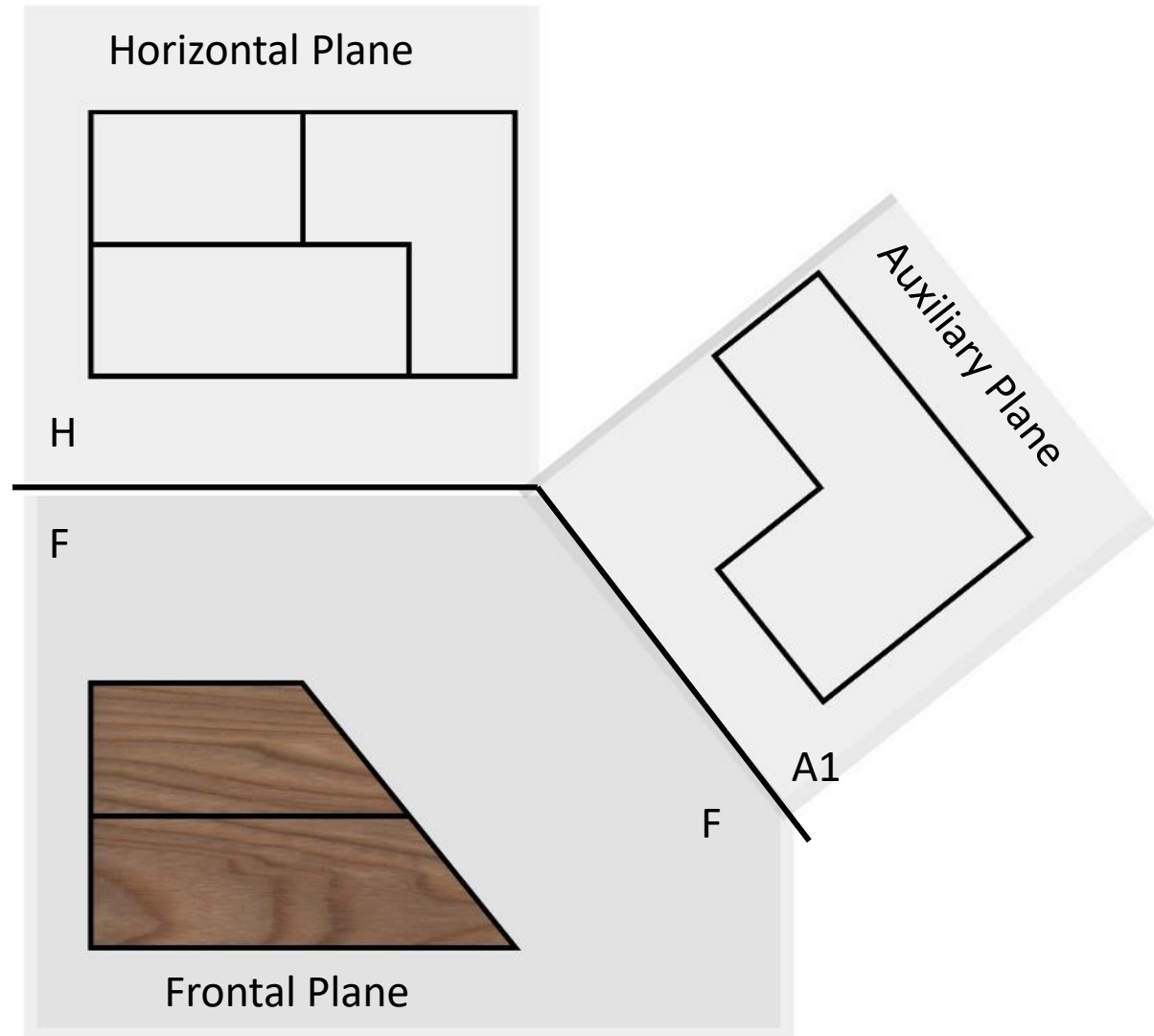
The Auxiliary Box



Unfolding the Box



Completed Auxiliary View



Viewing Direction for Auxiliary Views

- If the viewing direction is perpendicular to the target surface, one gets the “Normal View”.
- Some views
 - Normal view of a line: True length
 - Point view of a line
 - Edge view of a plane
 - Normal view of a plane: True surface

Illustration: Developing Auxiliary Views

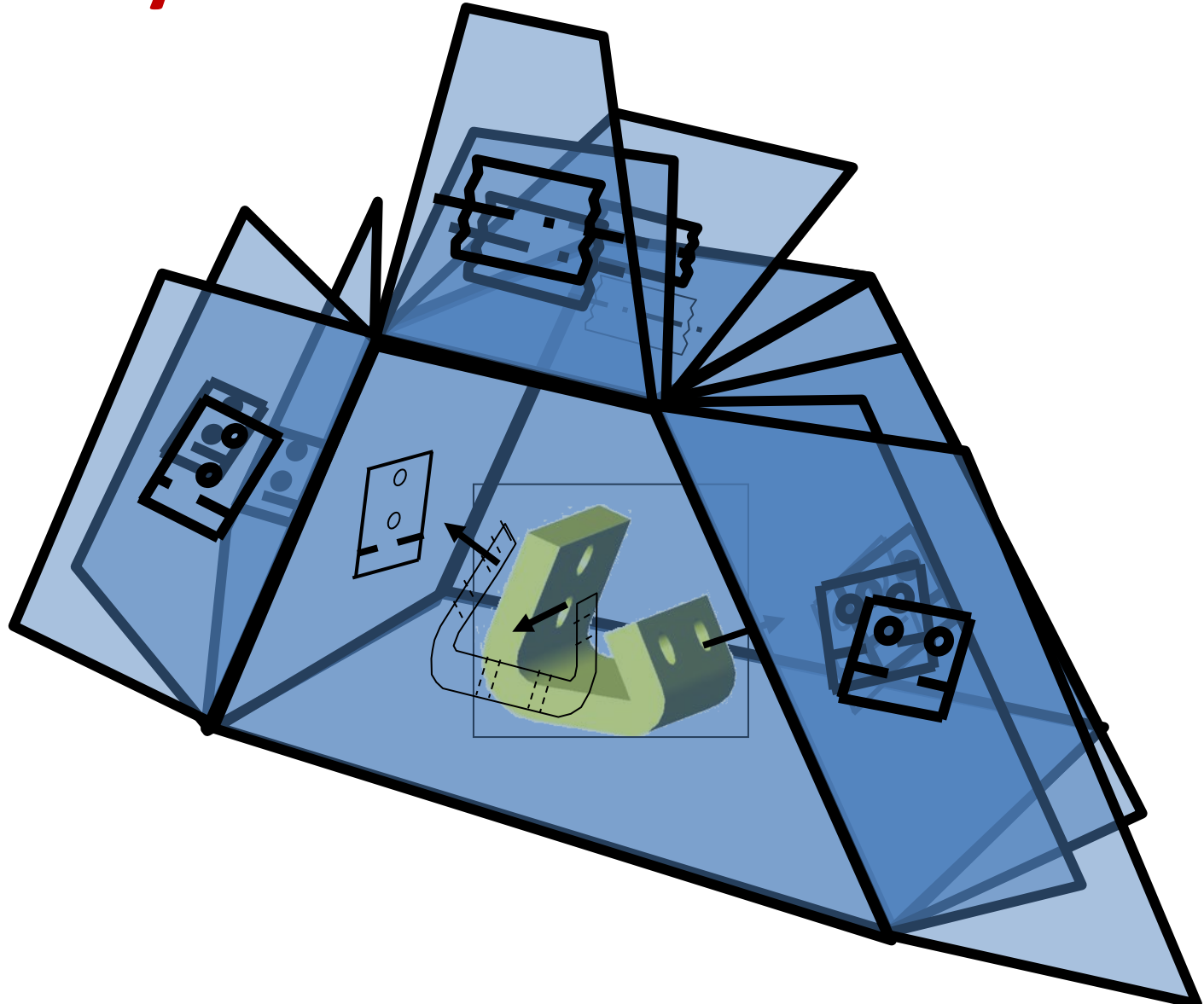
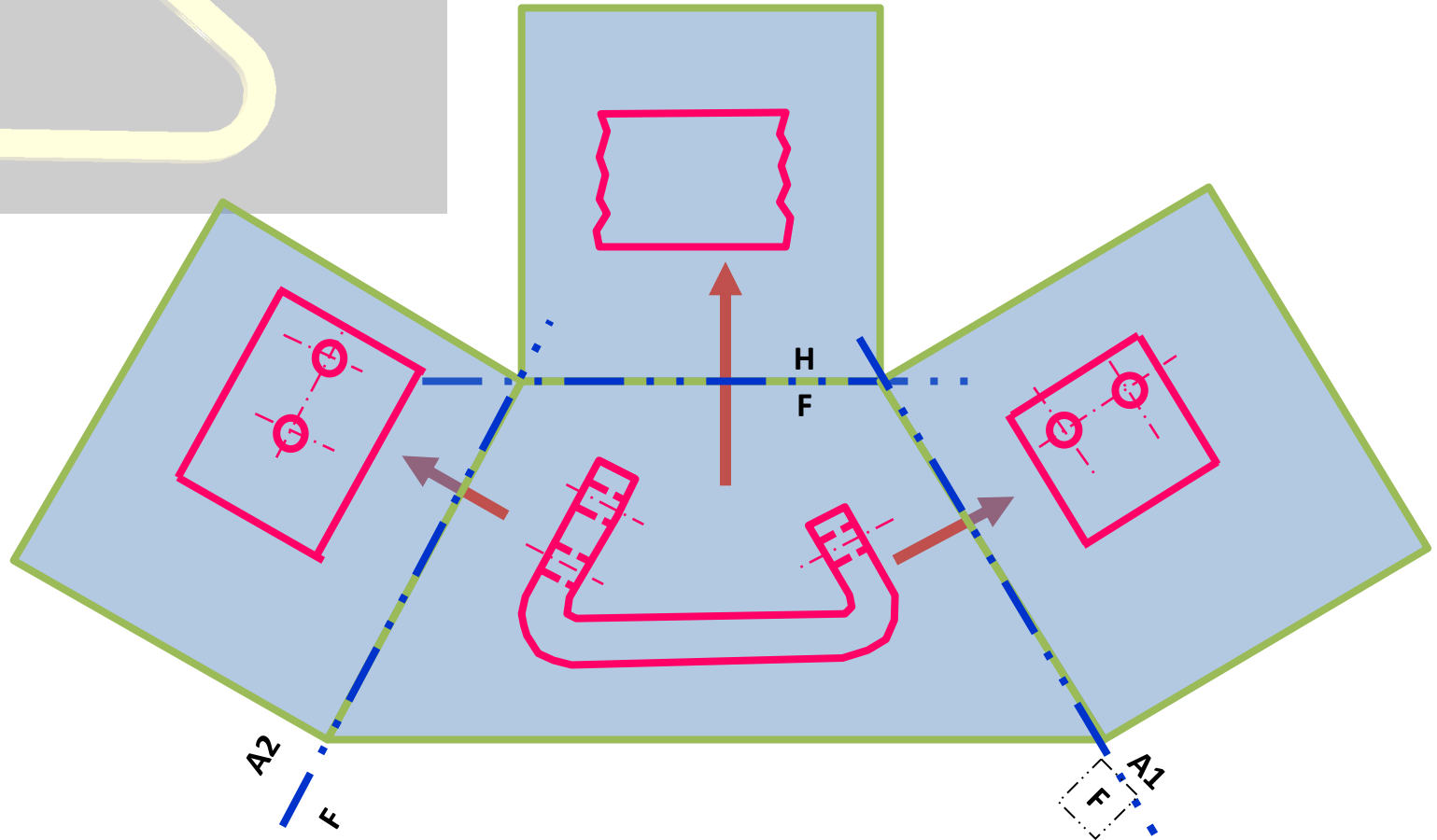
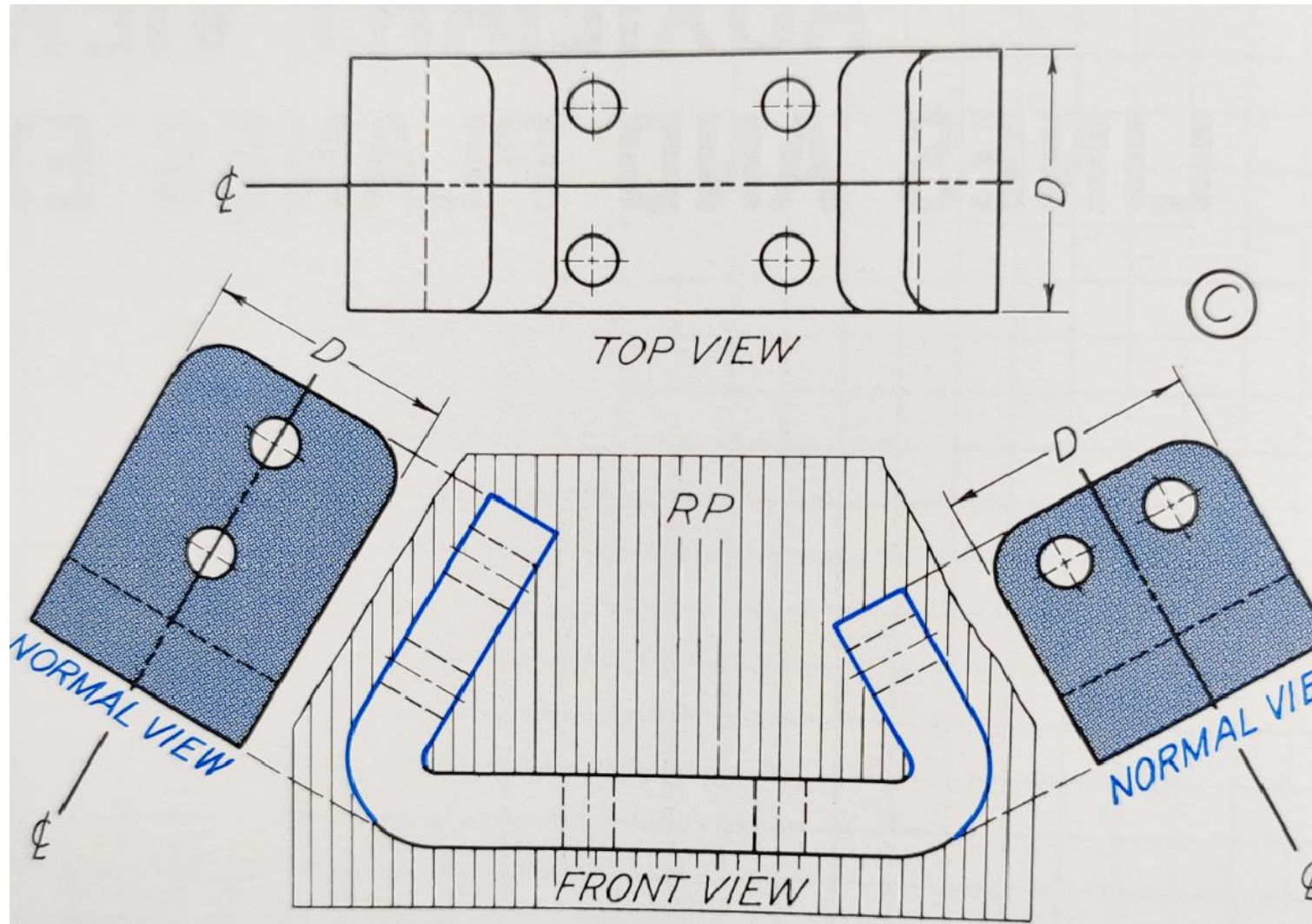


Illustration: Developing Auxiliary Views

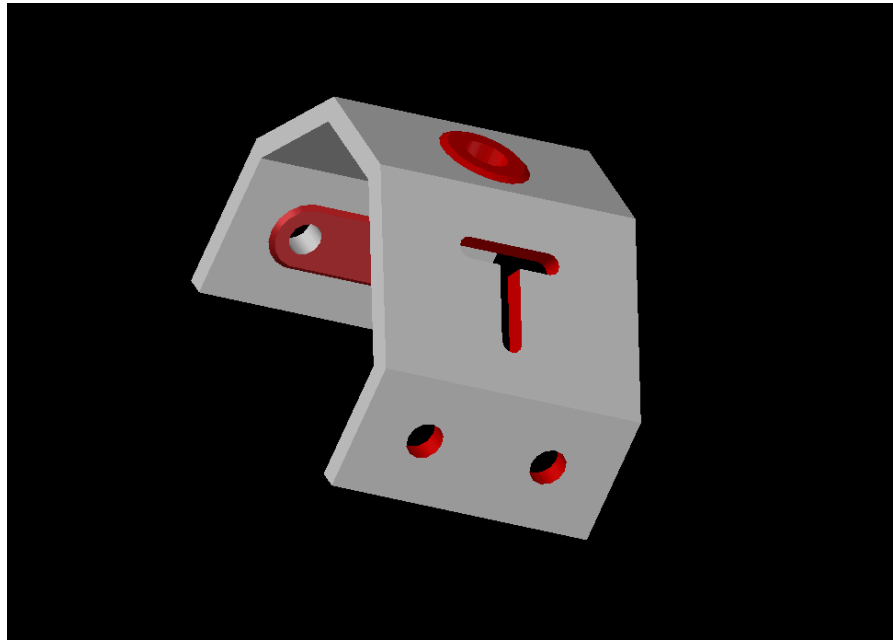


Auxiliary View : Orthographic View that is not on Principal Planes



Auxiliary Views:

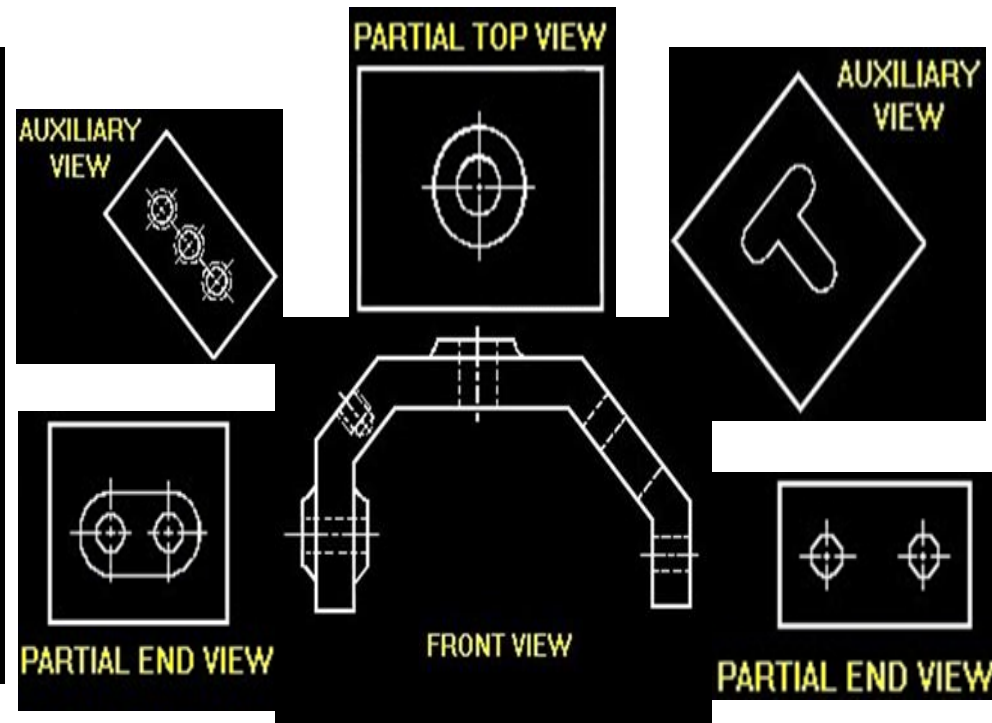
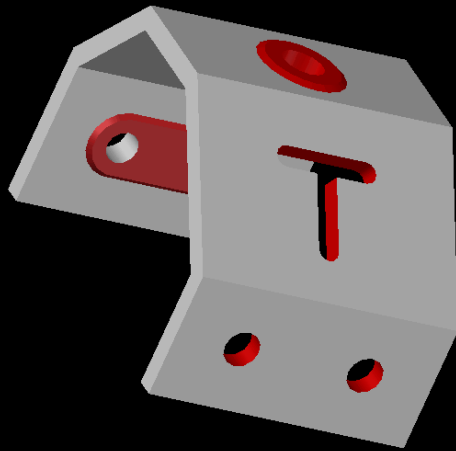
How Many Views for This Object?



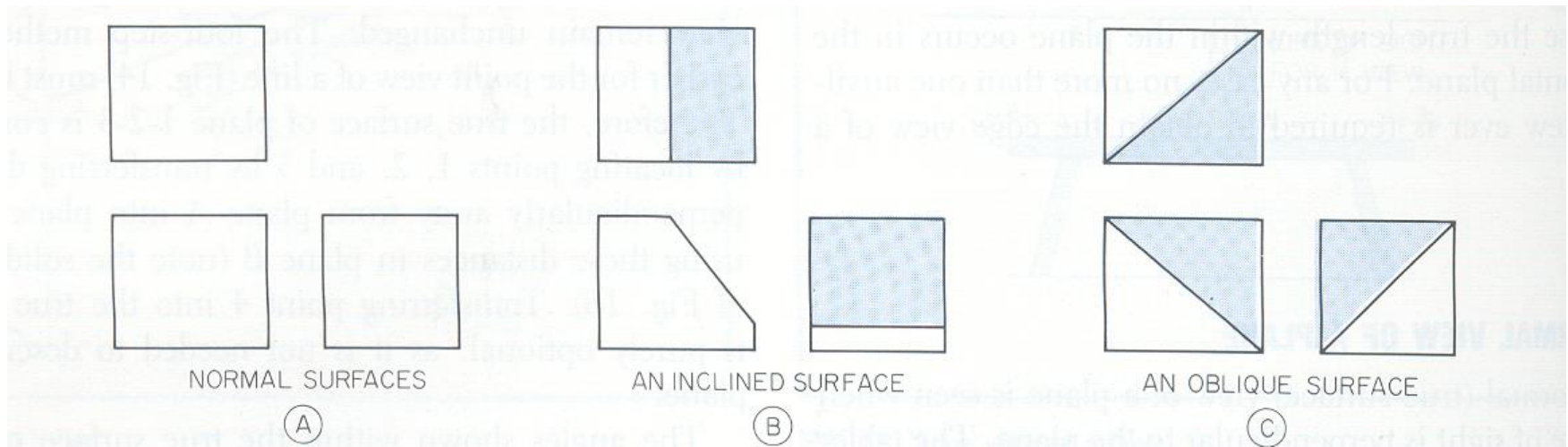
Auxiliary Views:

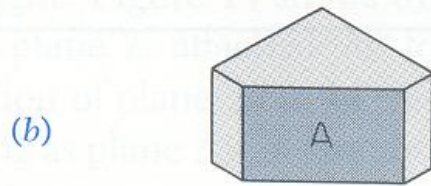
How Many Views for This Object?

- Four orthogonal views: Include two partials.
- Two auxiliary views.

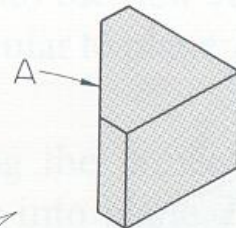


Examples: Objects with Inclined Faces: *Inclined to How Many Planes?*

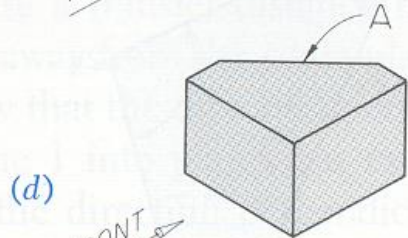




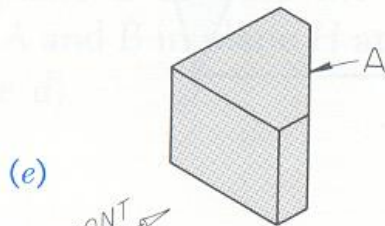
FRONT



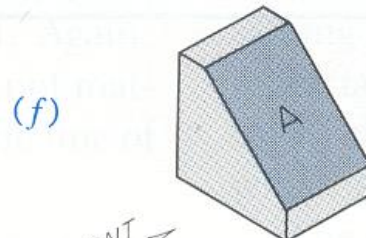
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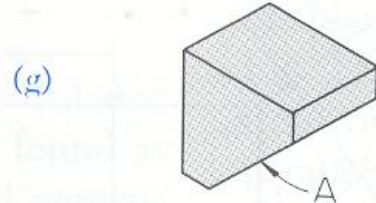
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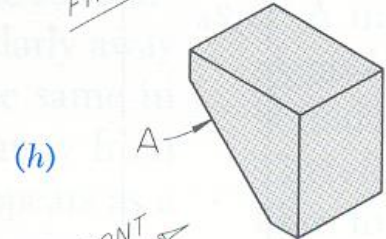
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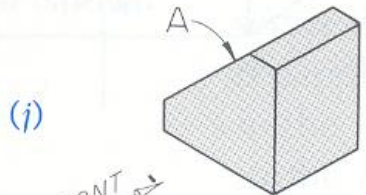
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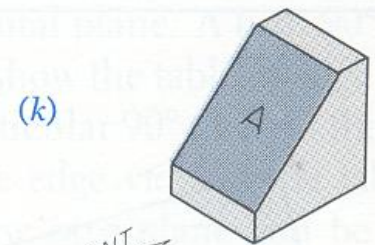
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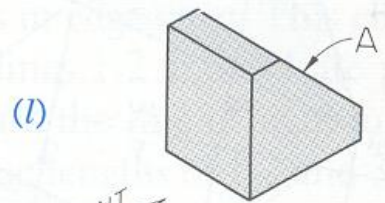
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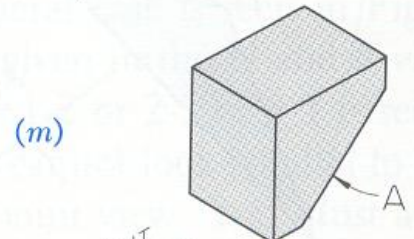
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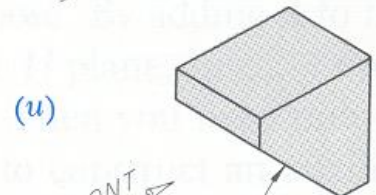
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FRONT

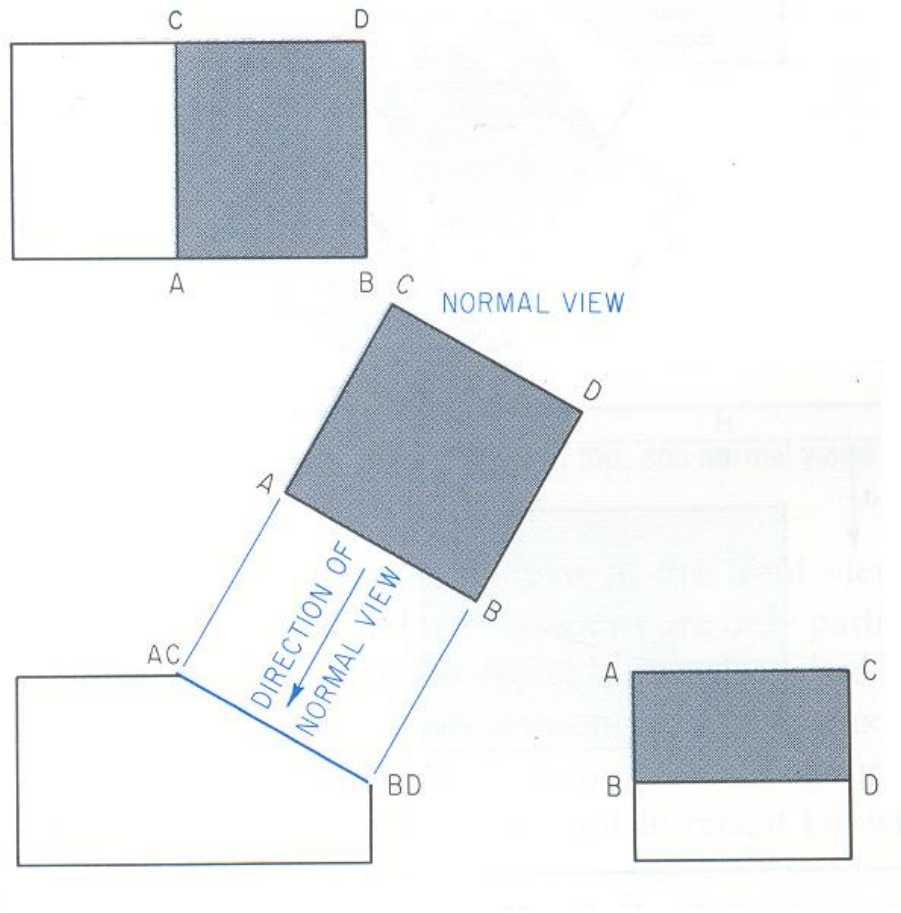


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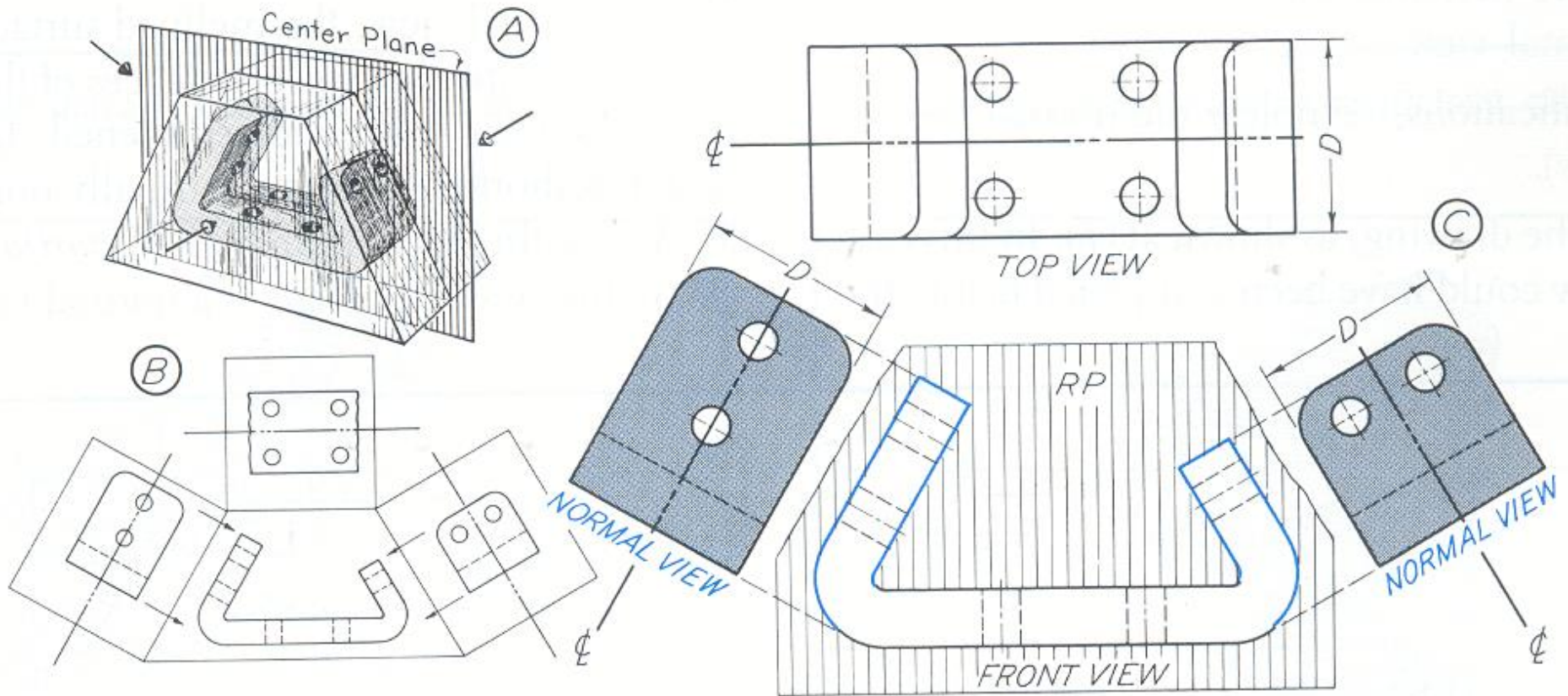


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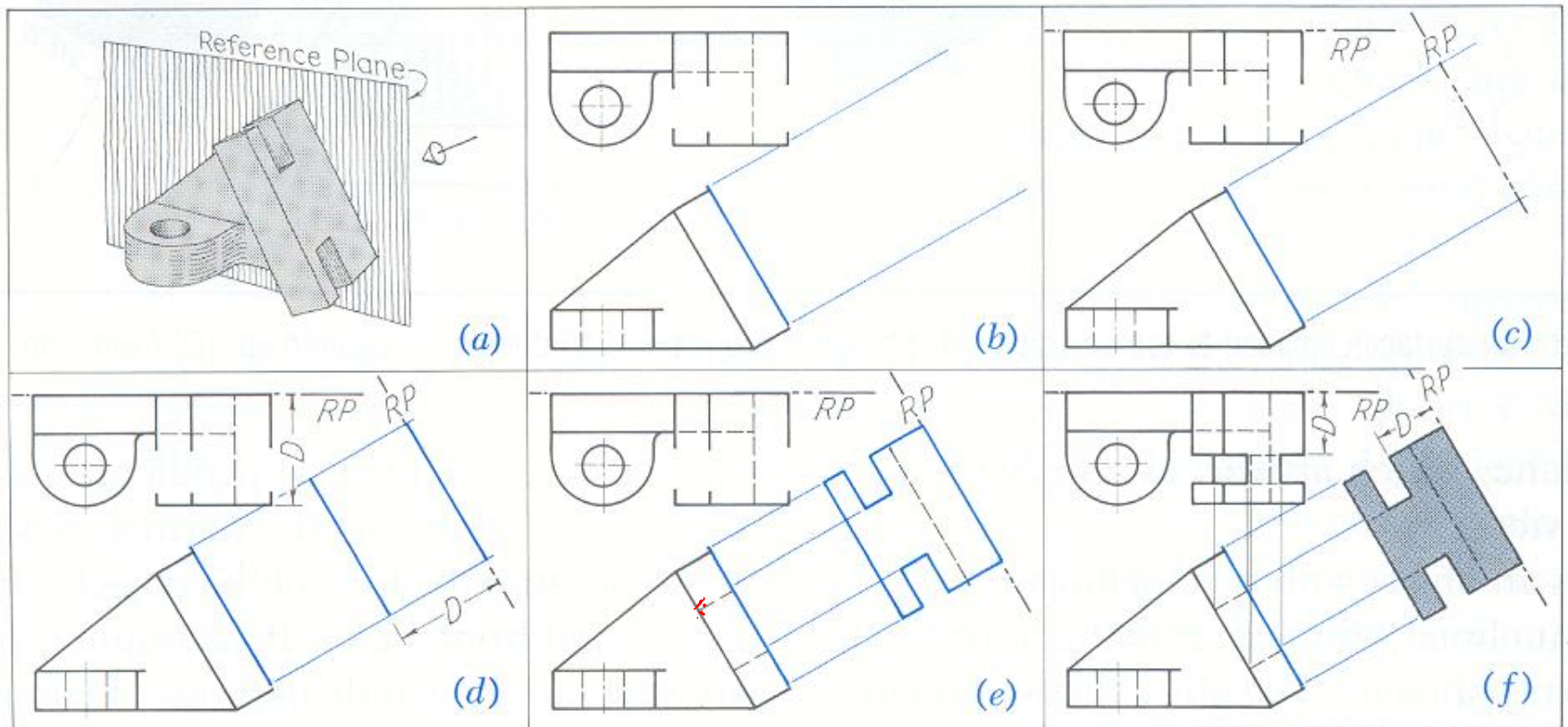
Auxiliary Planes: *Foreshortening of Lines*



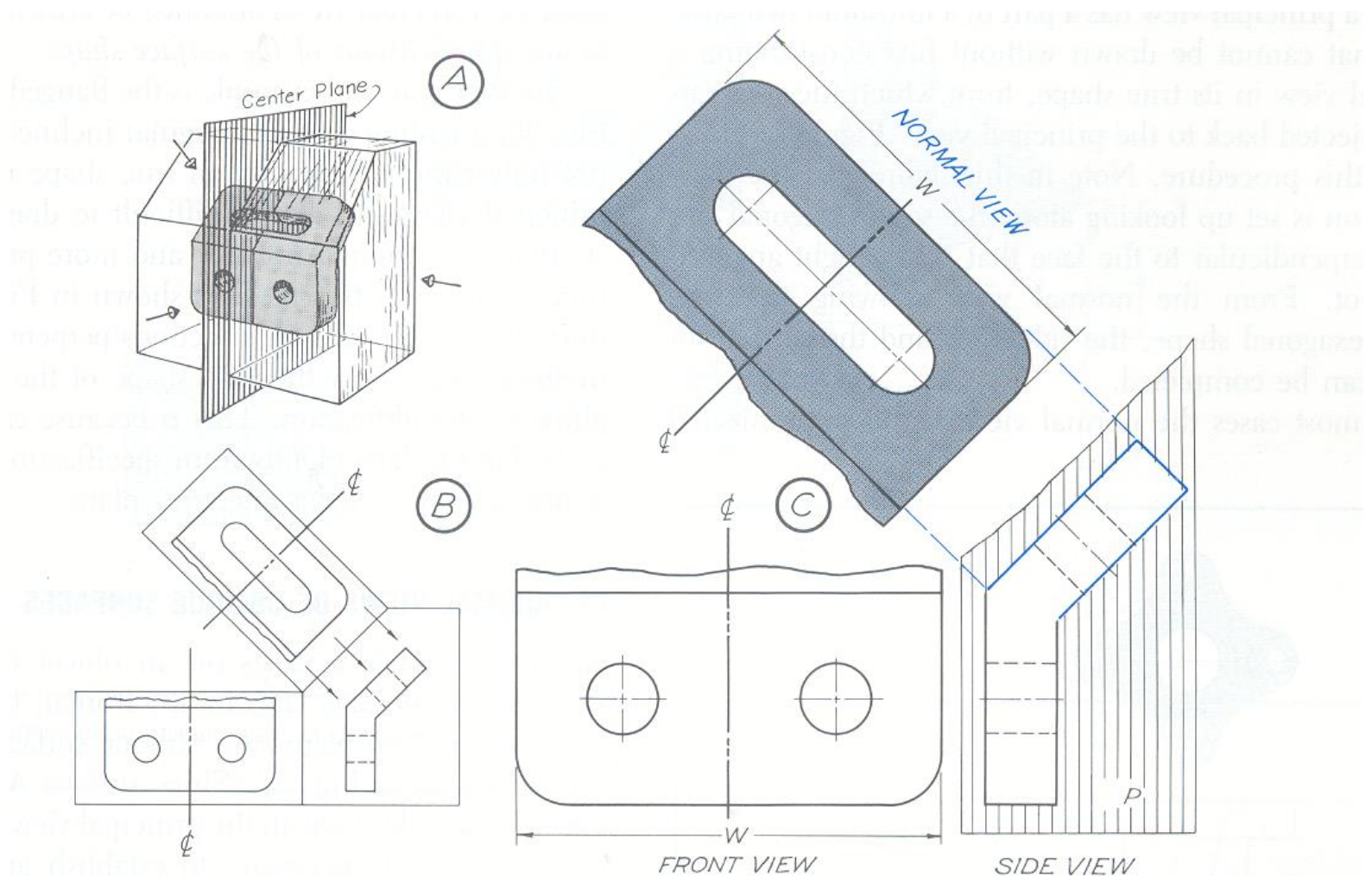
Positioning the Central Plane



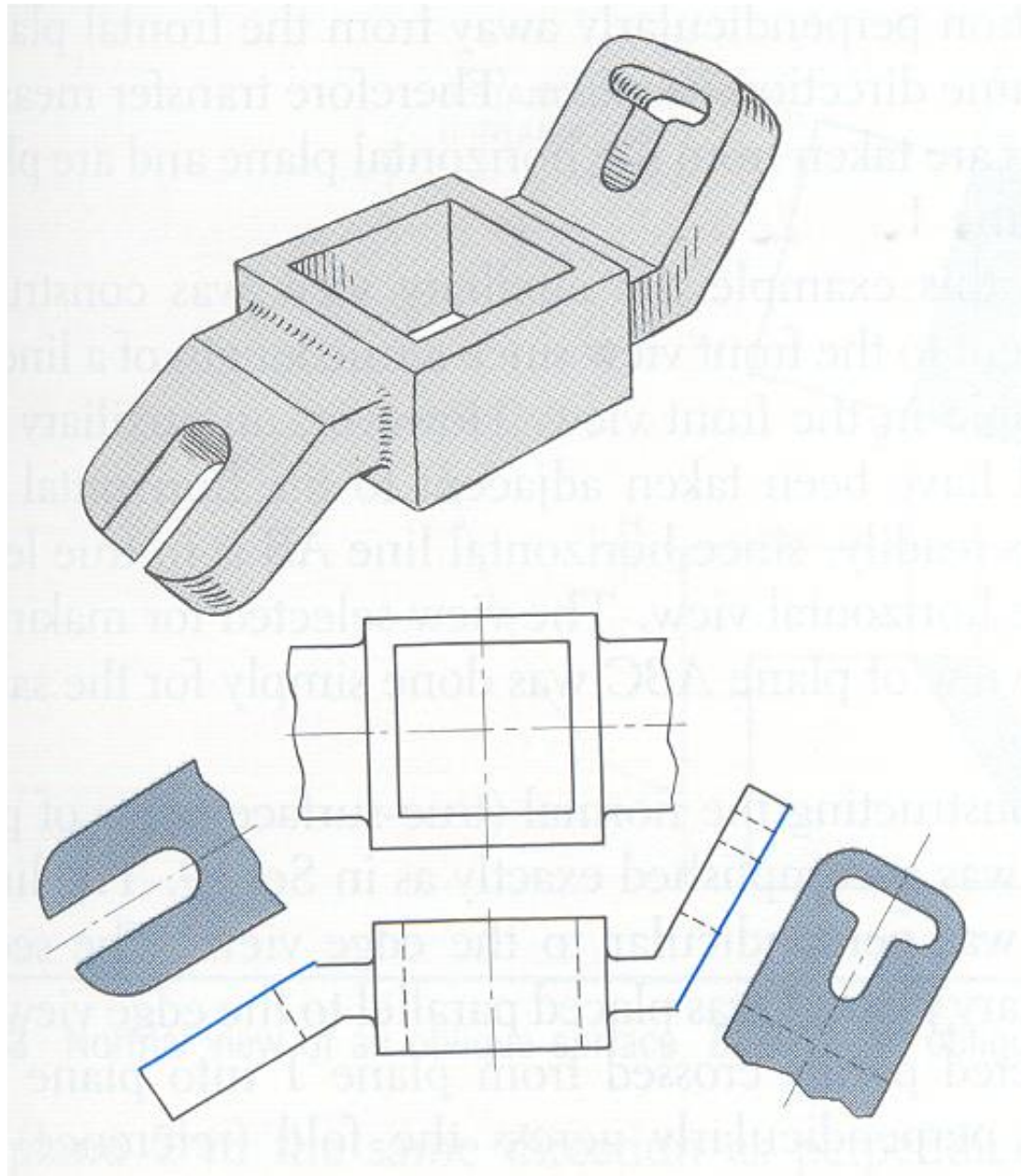
1. Draw the partial front and top views and locate the view direction.
2. Locate the reference plane a in (c)
3. Transfer distance from reference plane to normal view. (d).
4. Complete normal view.
5. Complete the top view.



Note: Sometimes Foreshortened Views are Not Shown Completely (Partial Views)



Partial Views



Normal view and
based on it other views

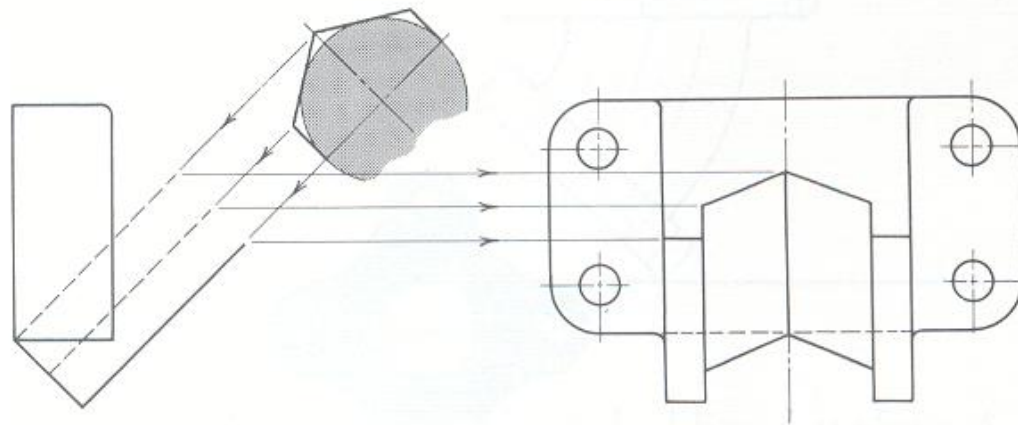
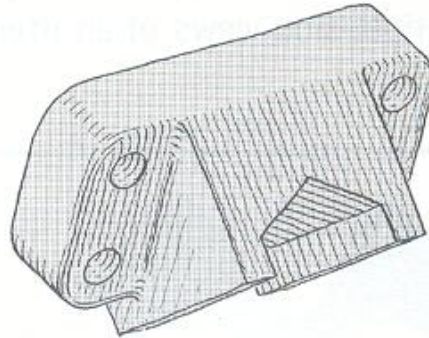
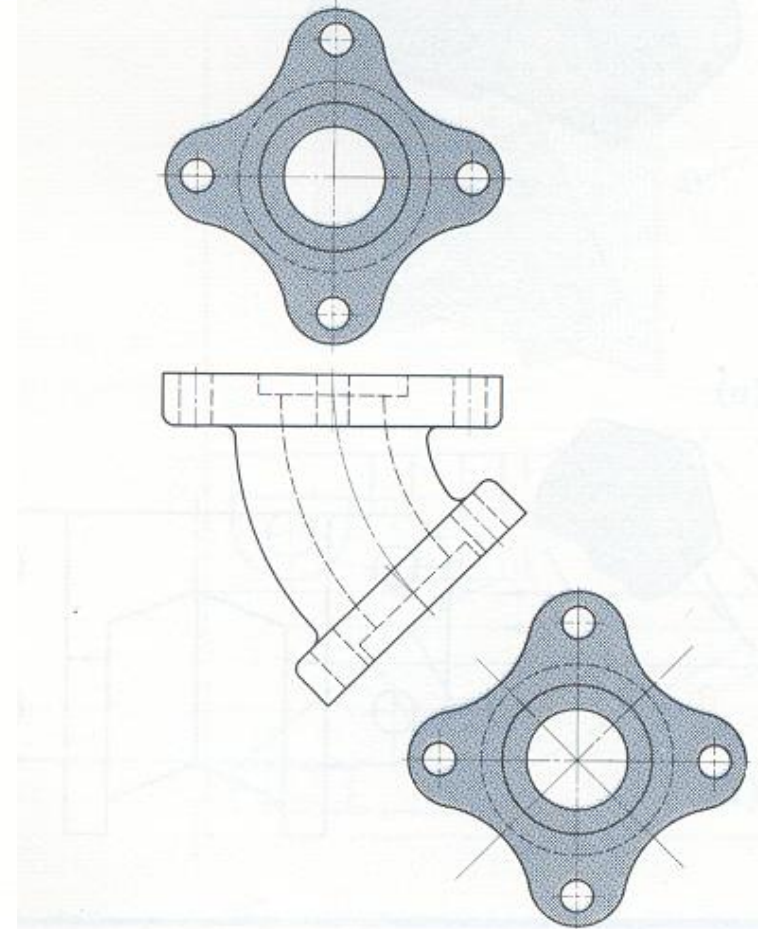
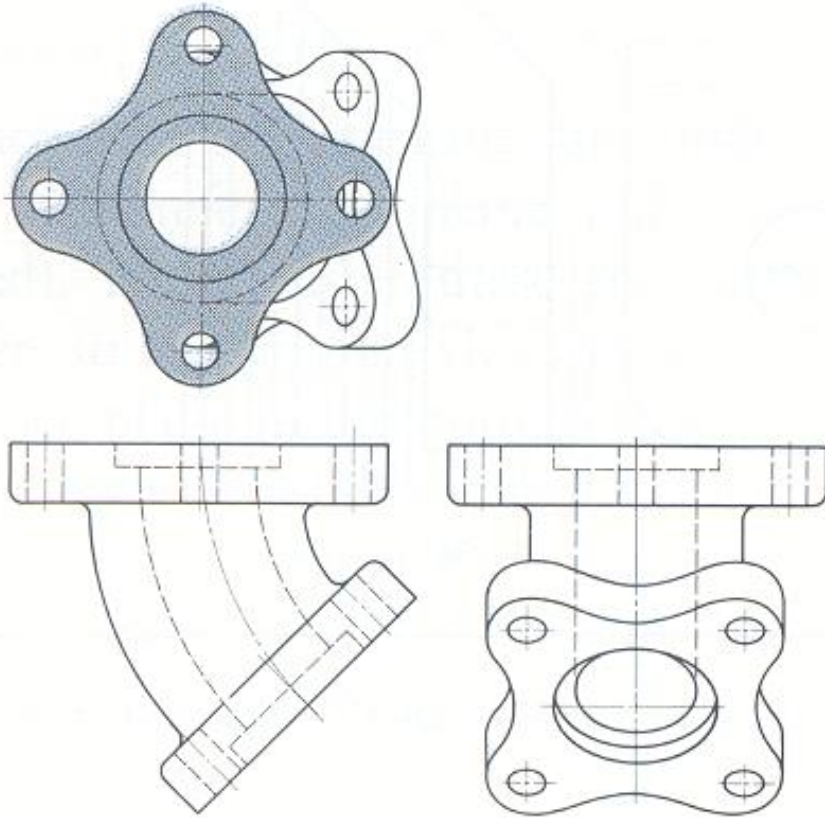
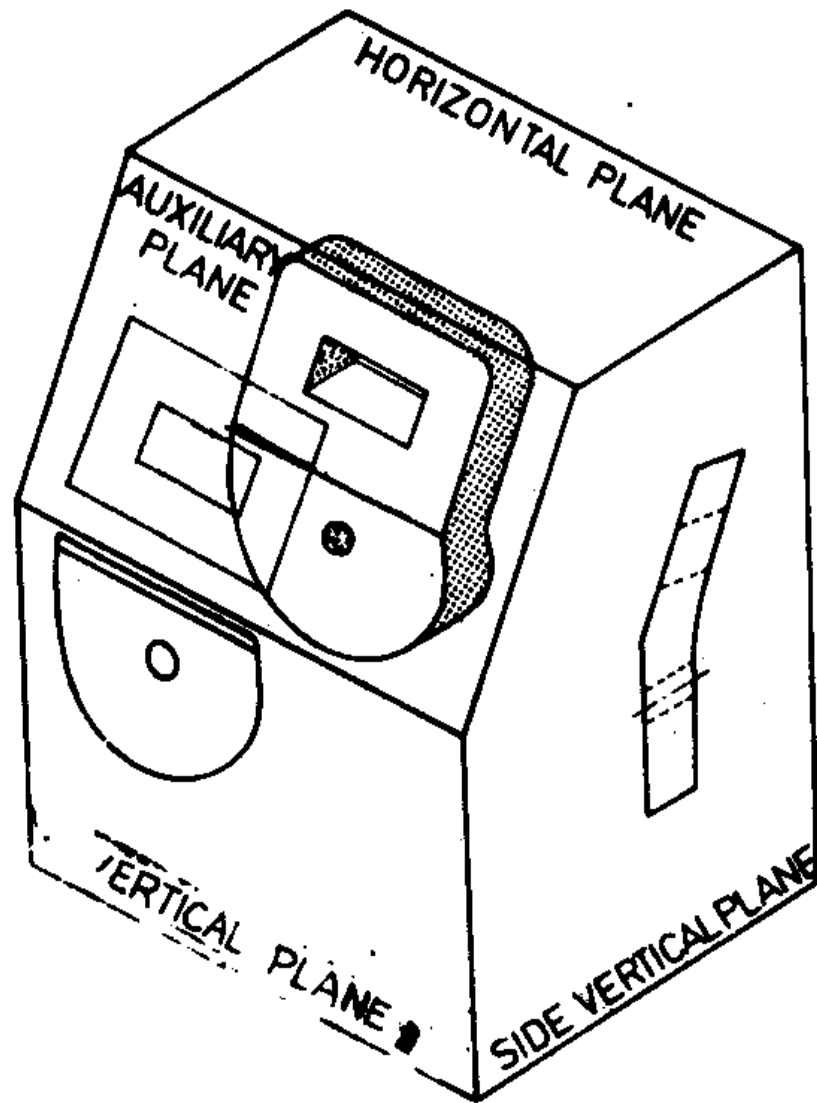


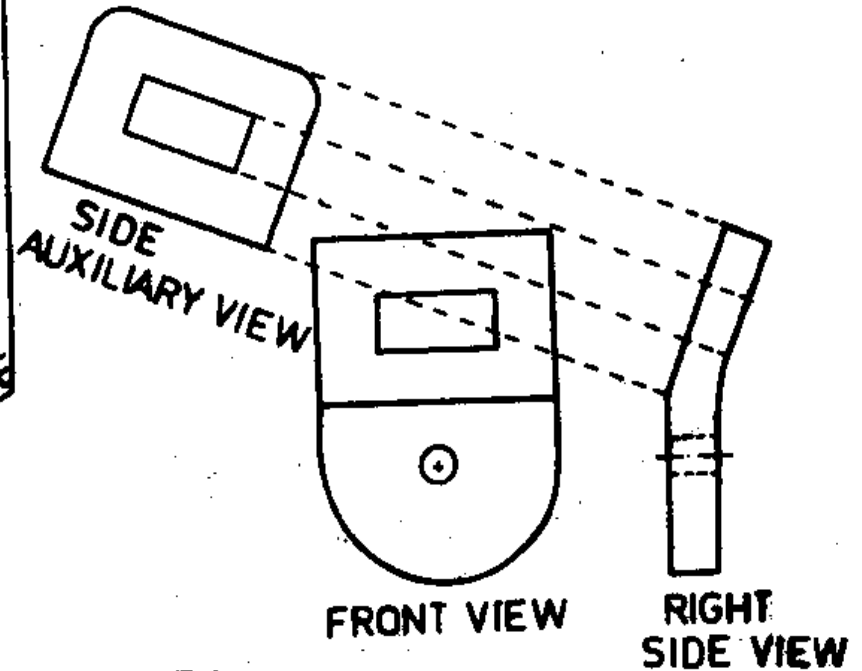
Illustration: Draw the normal surface first then complete the drawing via auxiliary views.



Side Auxiliary View



(A)



(B)

An isometric drawing of a mechanical part. The part has a base of 80 units. The left side is a vertical wall of height 60 units. The top surface is a sloped plane with a width of 50 units at the back and a depth of 10 units. The right side is a vertical wall of height 40 units. The front edge of the right side is a sloped plane with a width of 15 units and a depth of 10 units. The bottom edge of the right side is a sloped plane with a width of 10 units and a depth of 10 units. The part is divided into several rectangular sections by vertical lines. A north arrow is located at the bottom left of the drawing.



AUXILIARY VIEW

(B)



Thank You