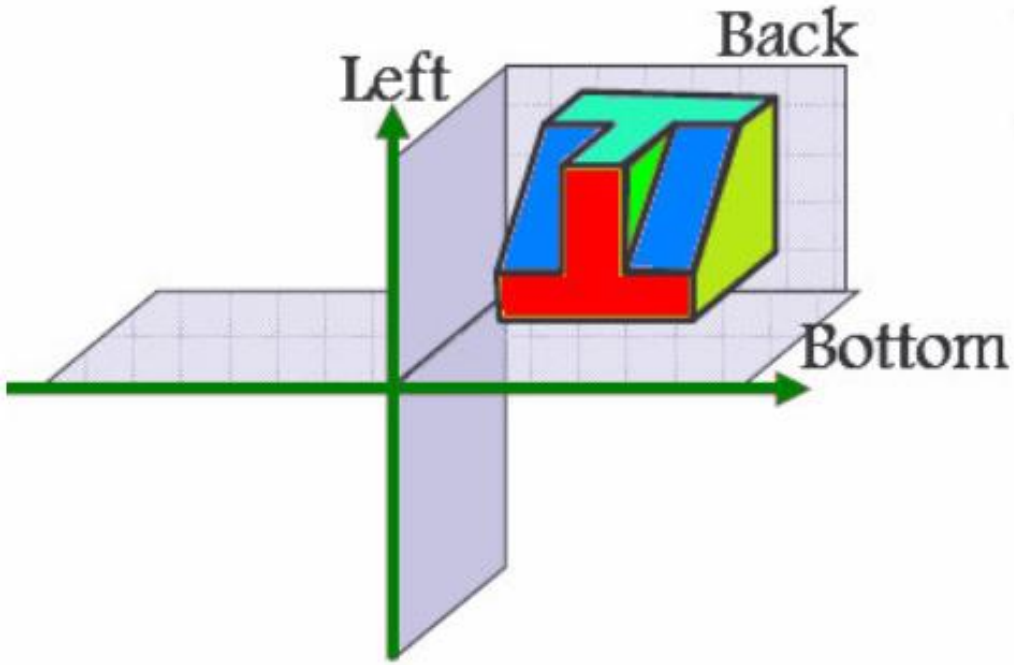
CE111: Engineering Drawing

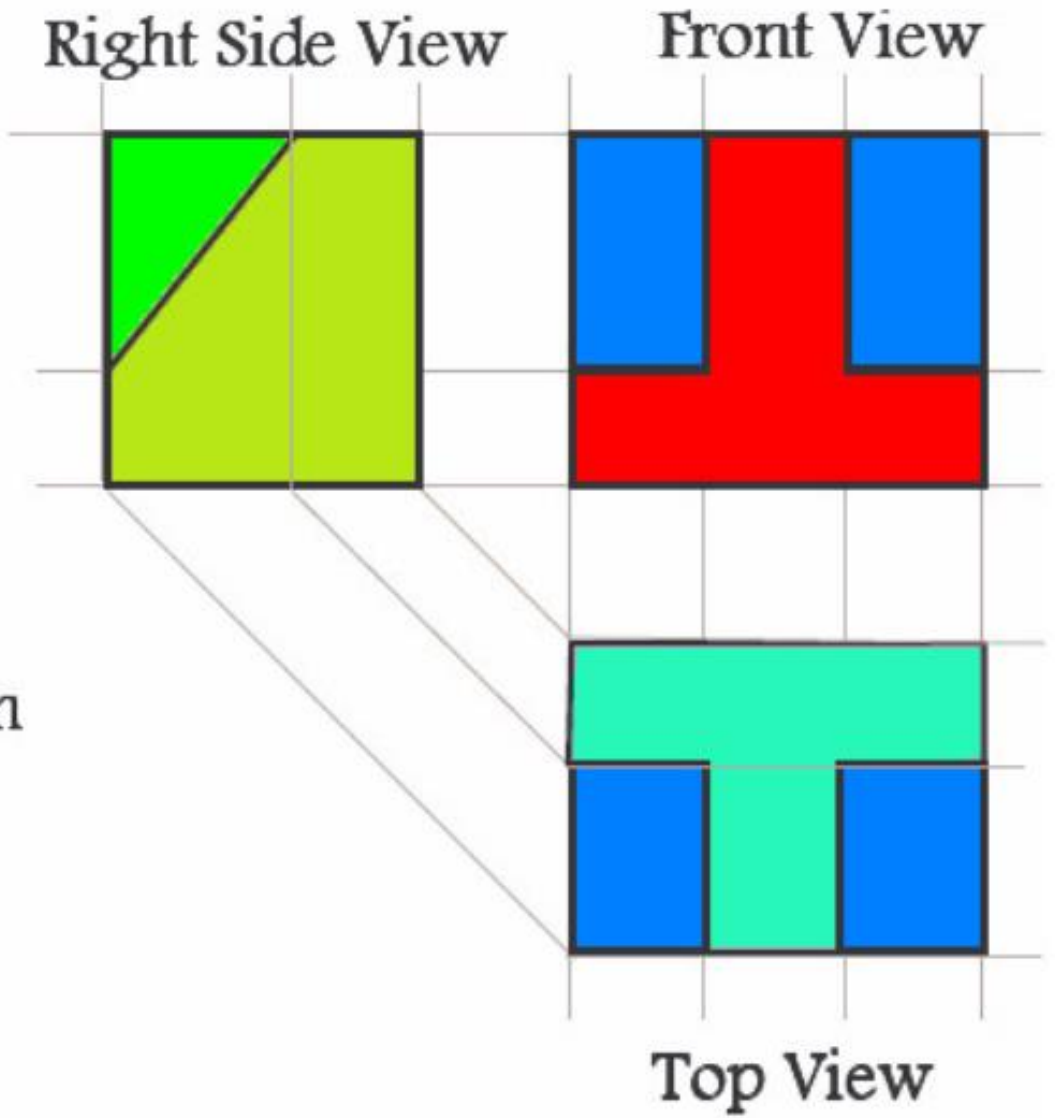
Lecture 8:

Orthographic projection and projection of points

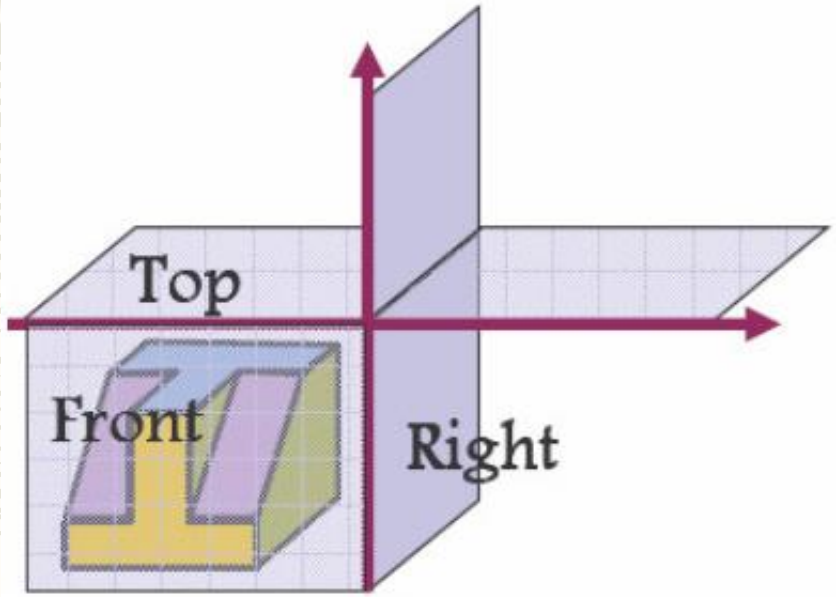
First Angle Projection

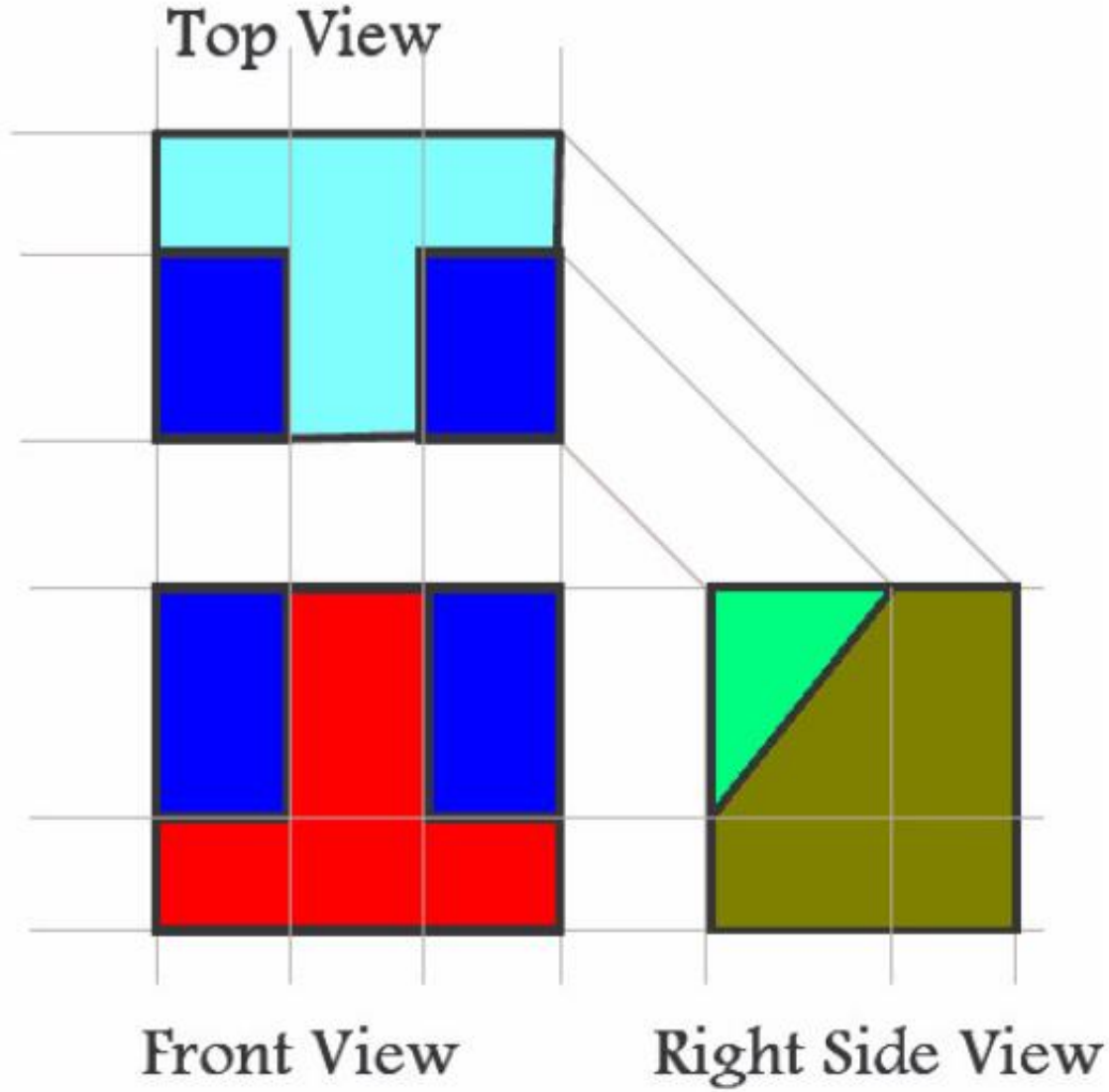
Object in the first quadrant



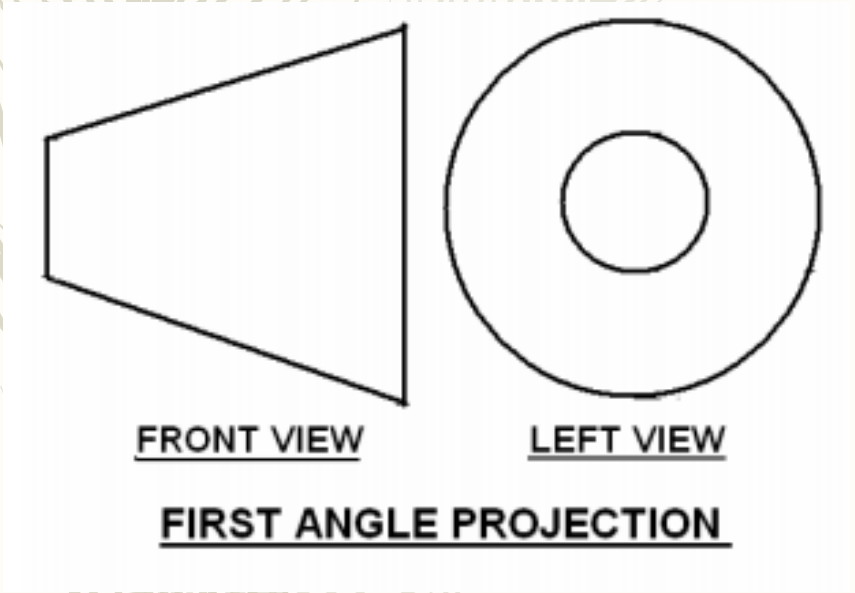


- THIRD Angle Projection
  - Object behind plane

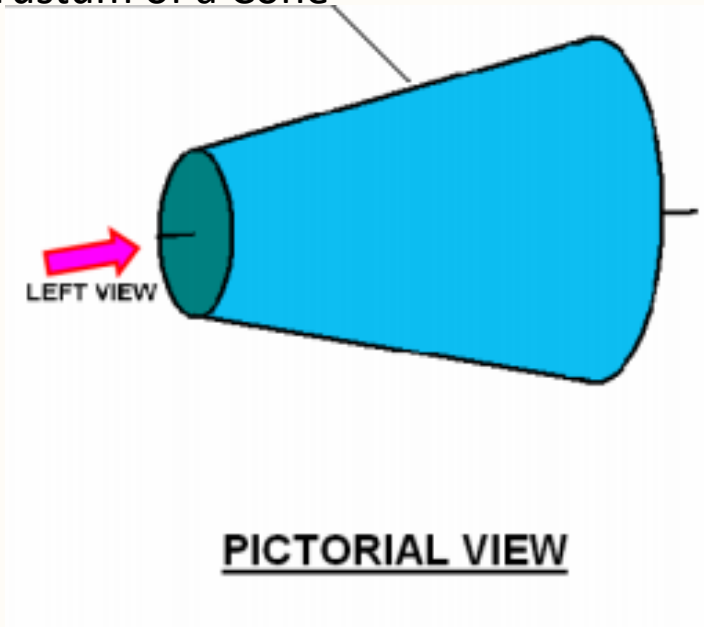


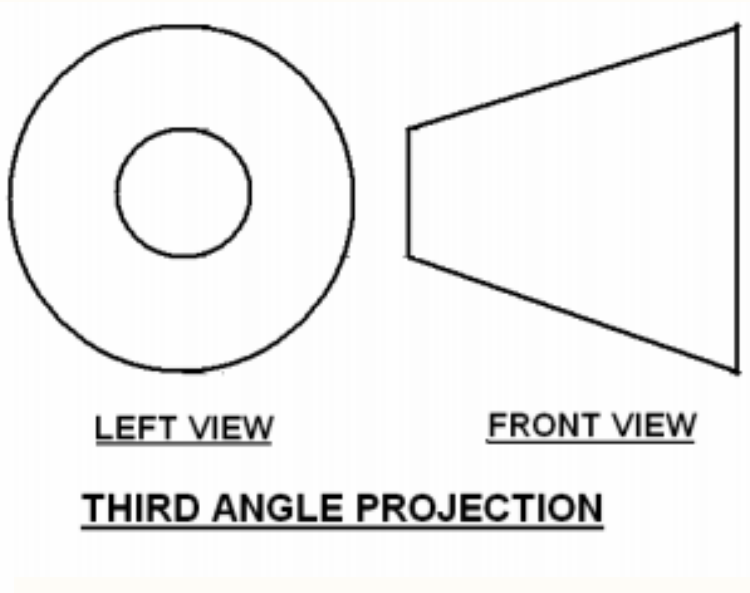


Symbol of projection



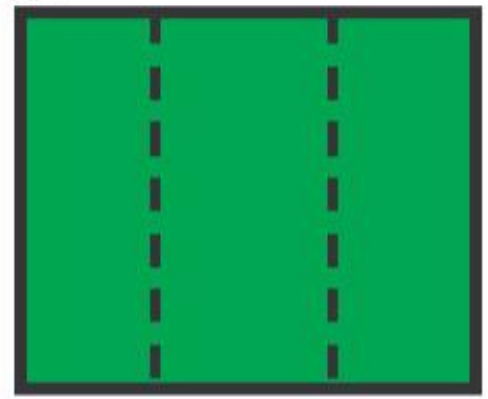
Frustum of a Cone

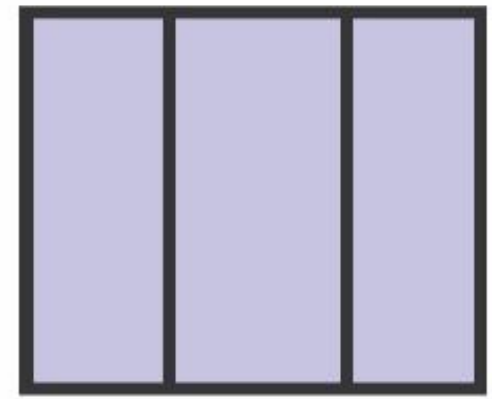


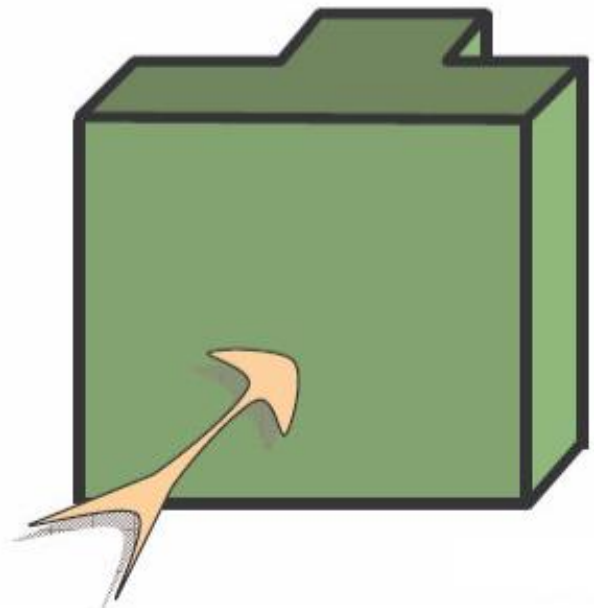


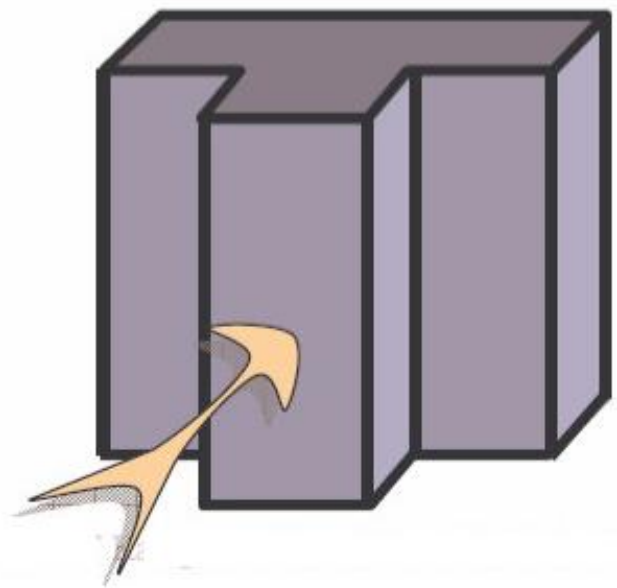
- Five types of line styles used
  - Visible lines
  - Hidden lines
  - Centerlines
  - Dimension lines
  - Construction lines

- Visible & Hidden lines
  - Boundaries

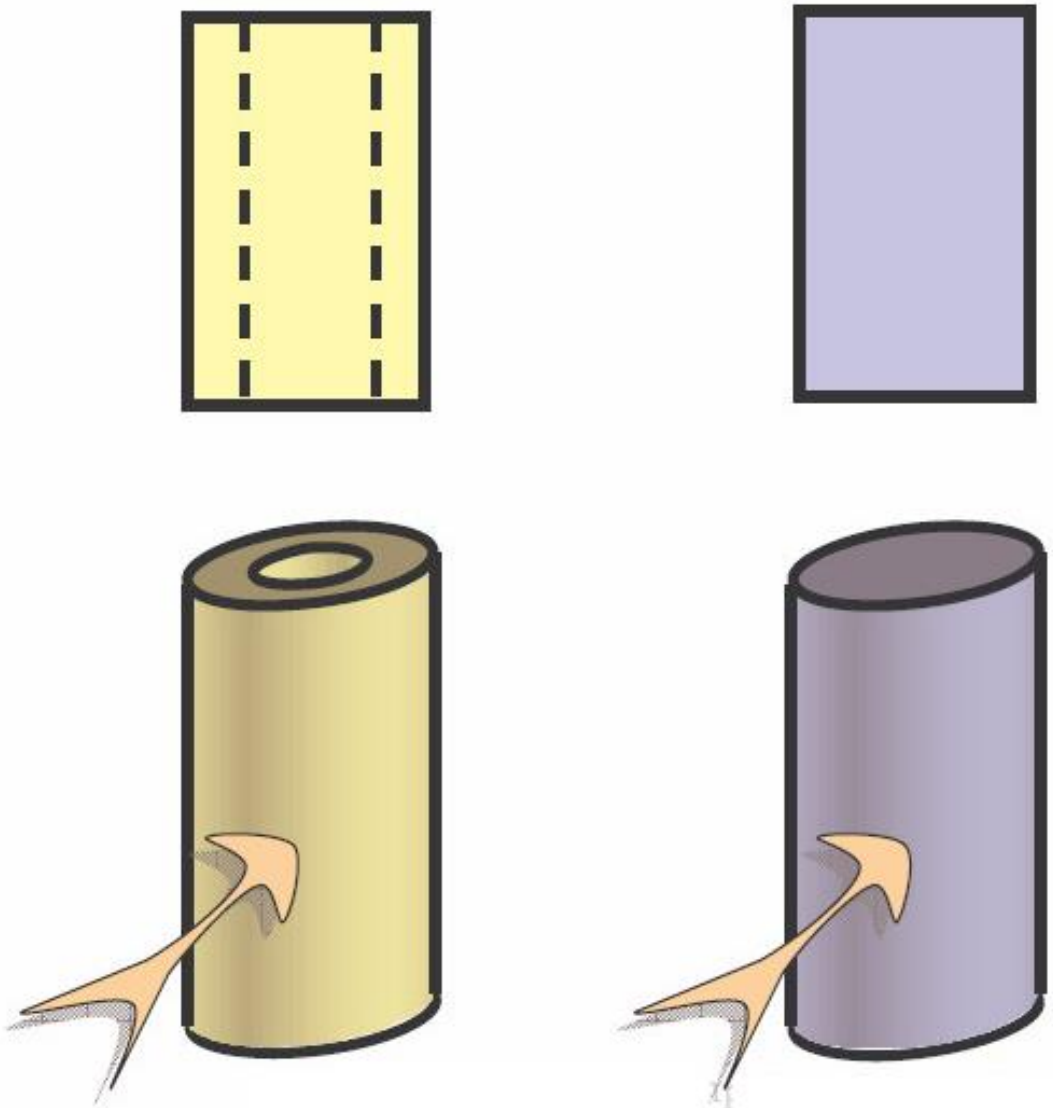




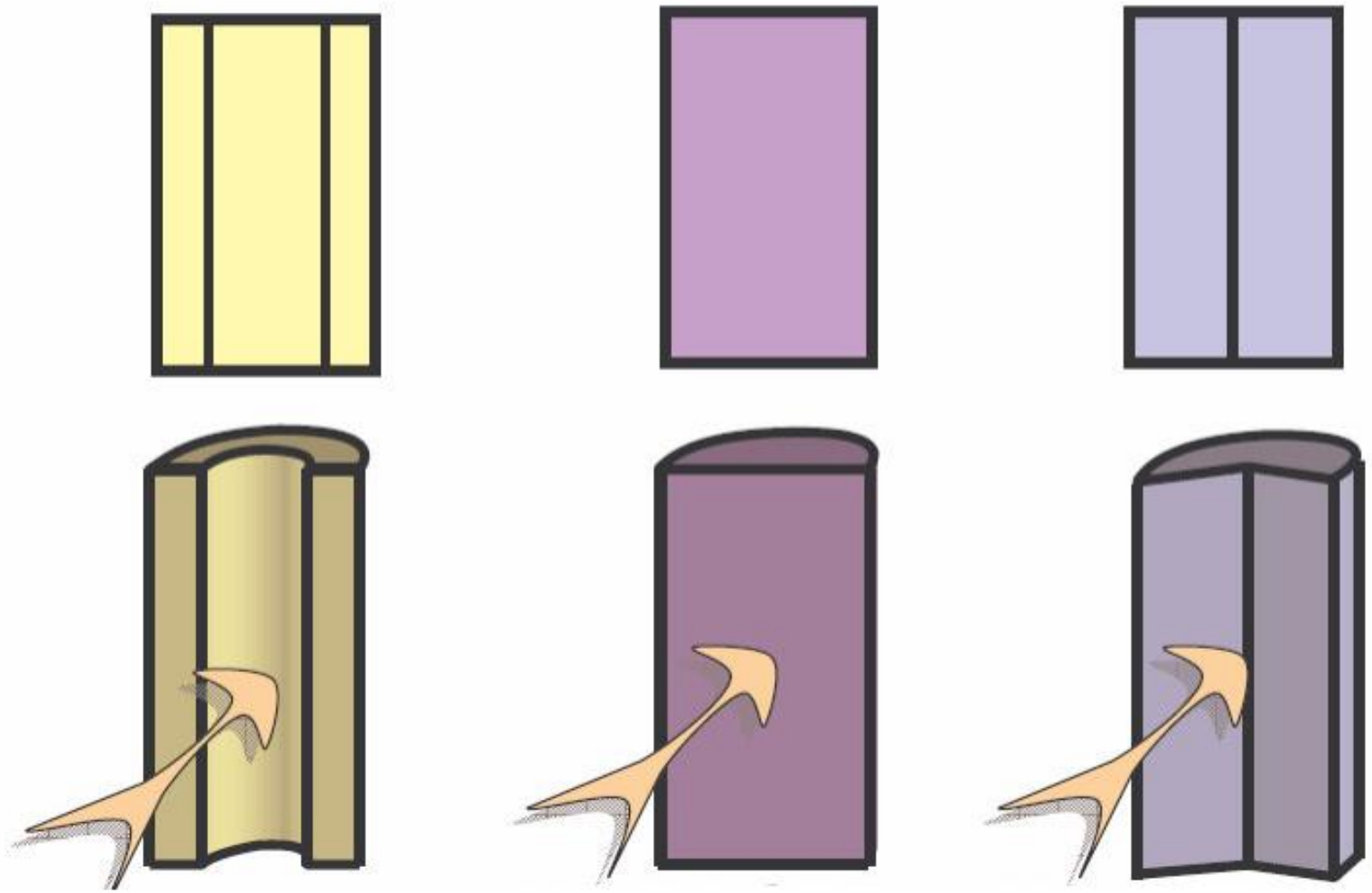




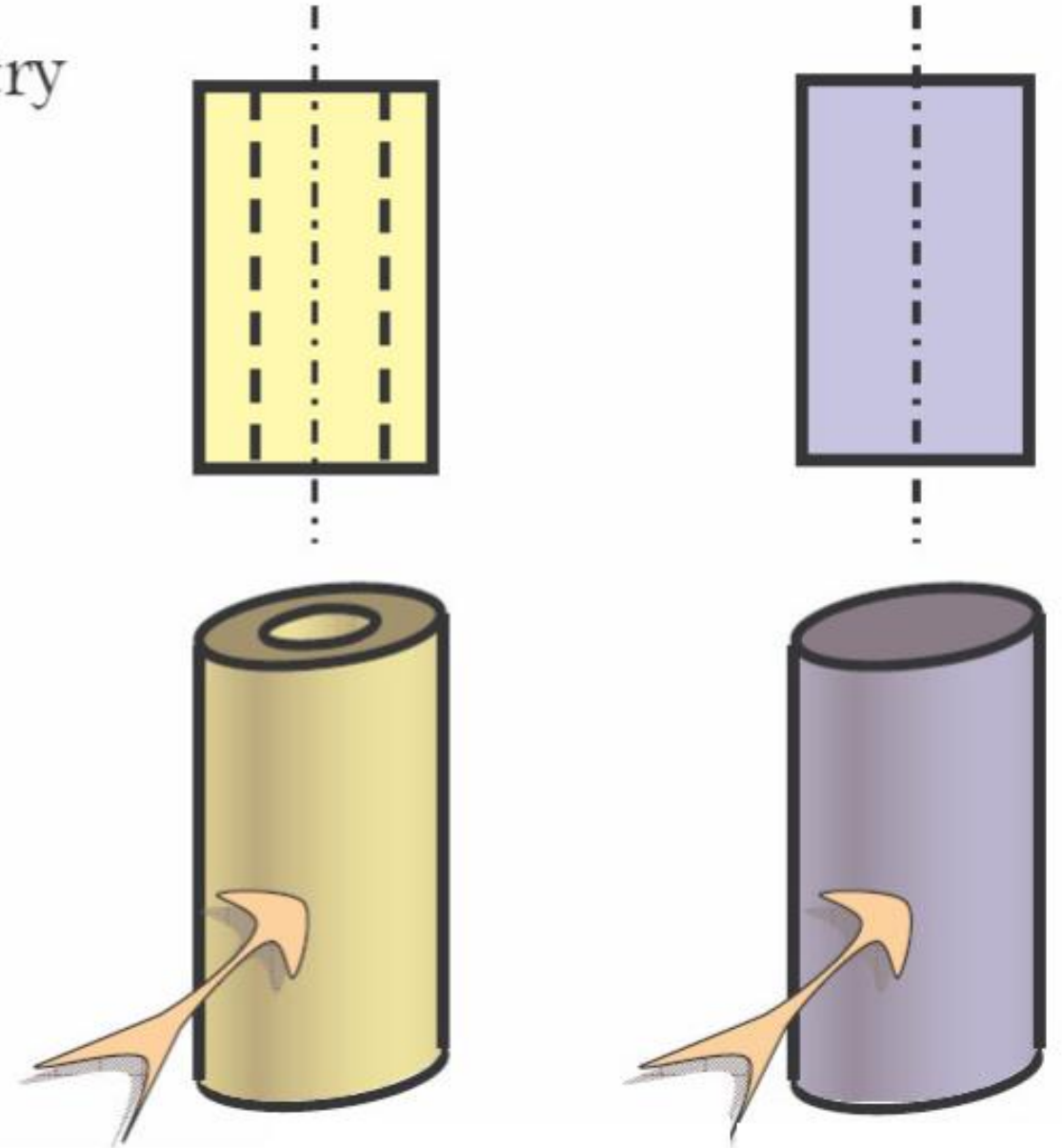
- Visible & Hidden lines
  - Boundaries



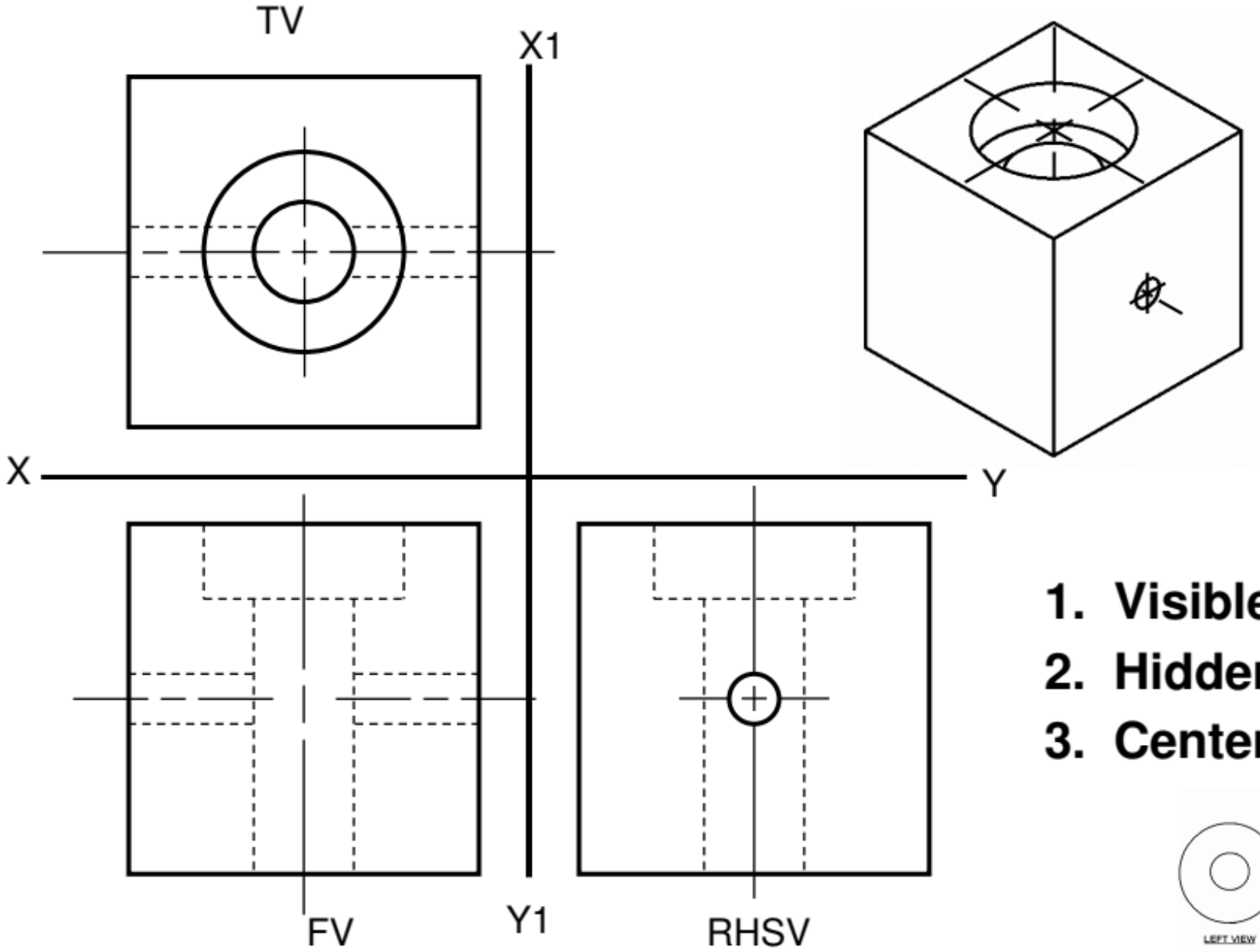
- Visible & Hidden lines
  - Surfaces meet



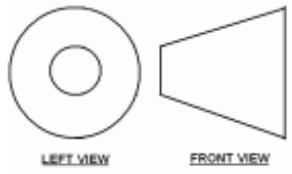
- Centerlines
  - Axial Symmetry



Example-1



1. Visible
2. Hidden
3. Center



Conventions

Precedence of Lines

- *Visible lines* take precedence over all other lines

0.70 mm

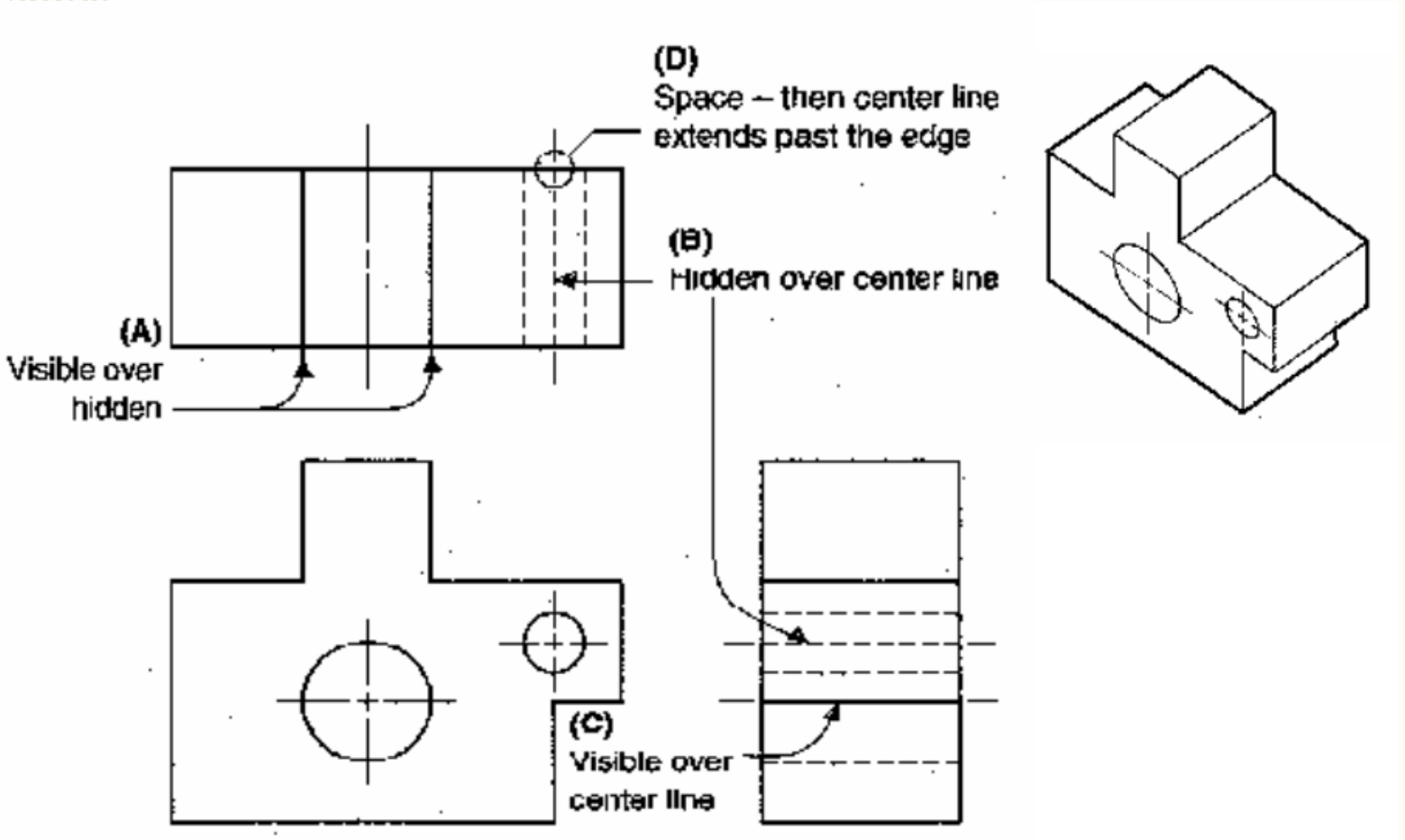
- *Hidden lines* take precedence over center lines

0.35 mm

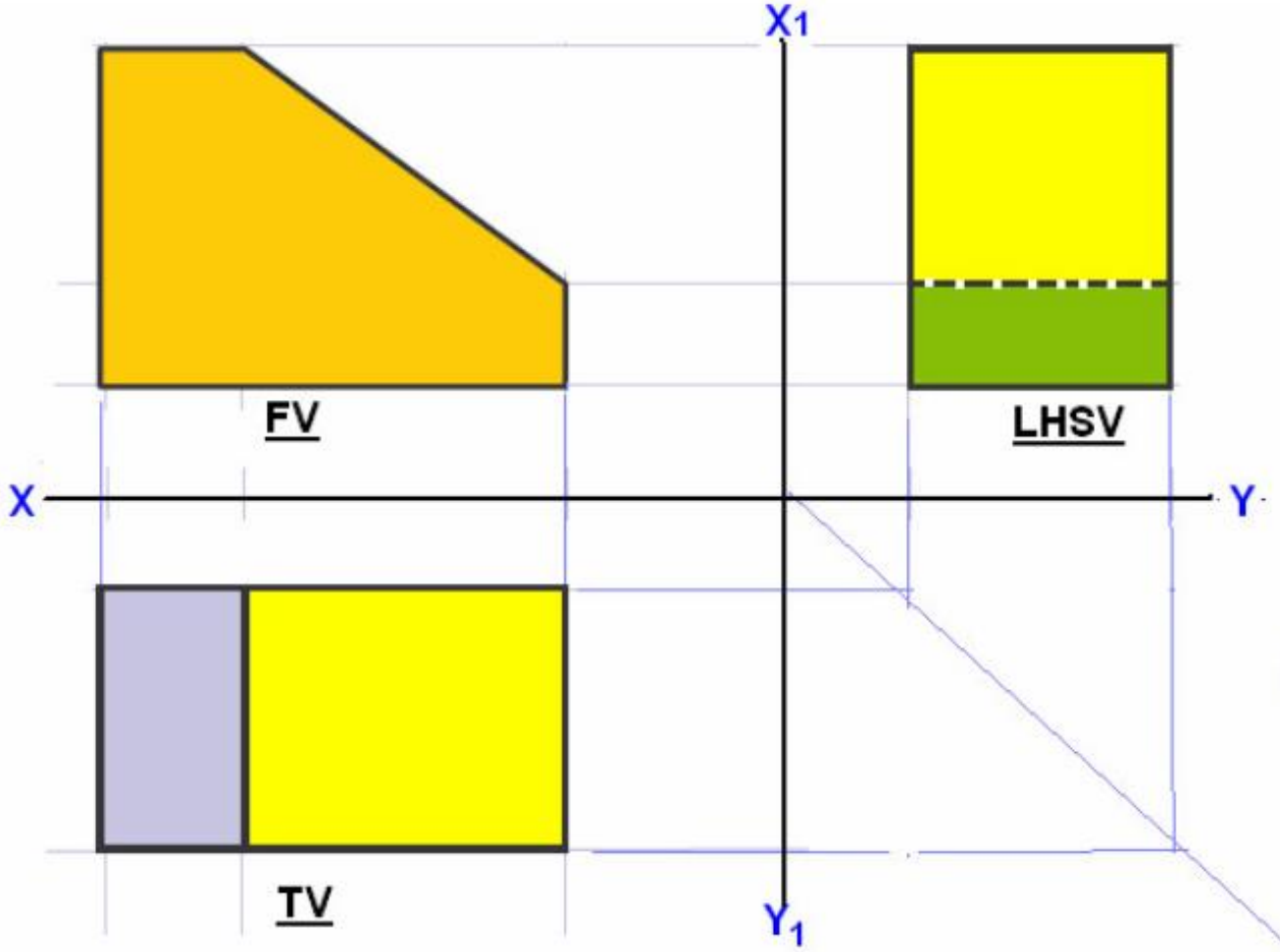
- *Center lines* have lowest precedence

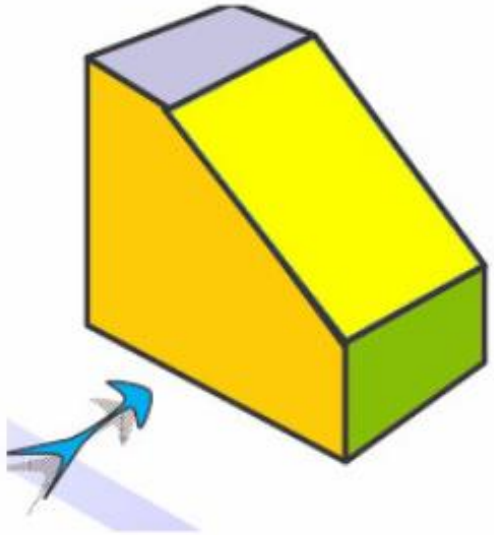
0.35 mm

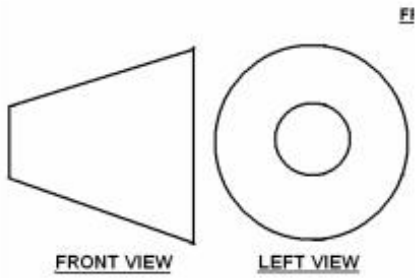
Example: Application of Precedence

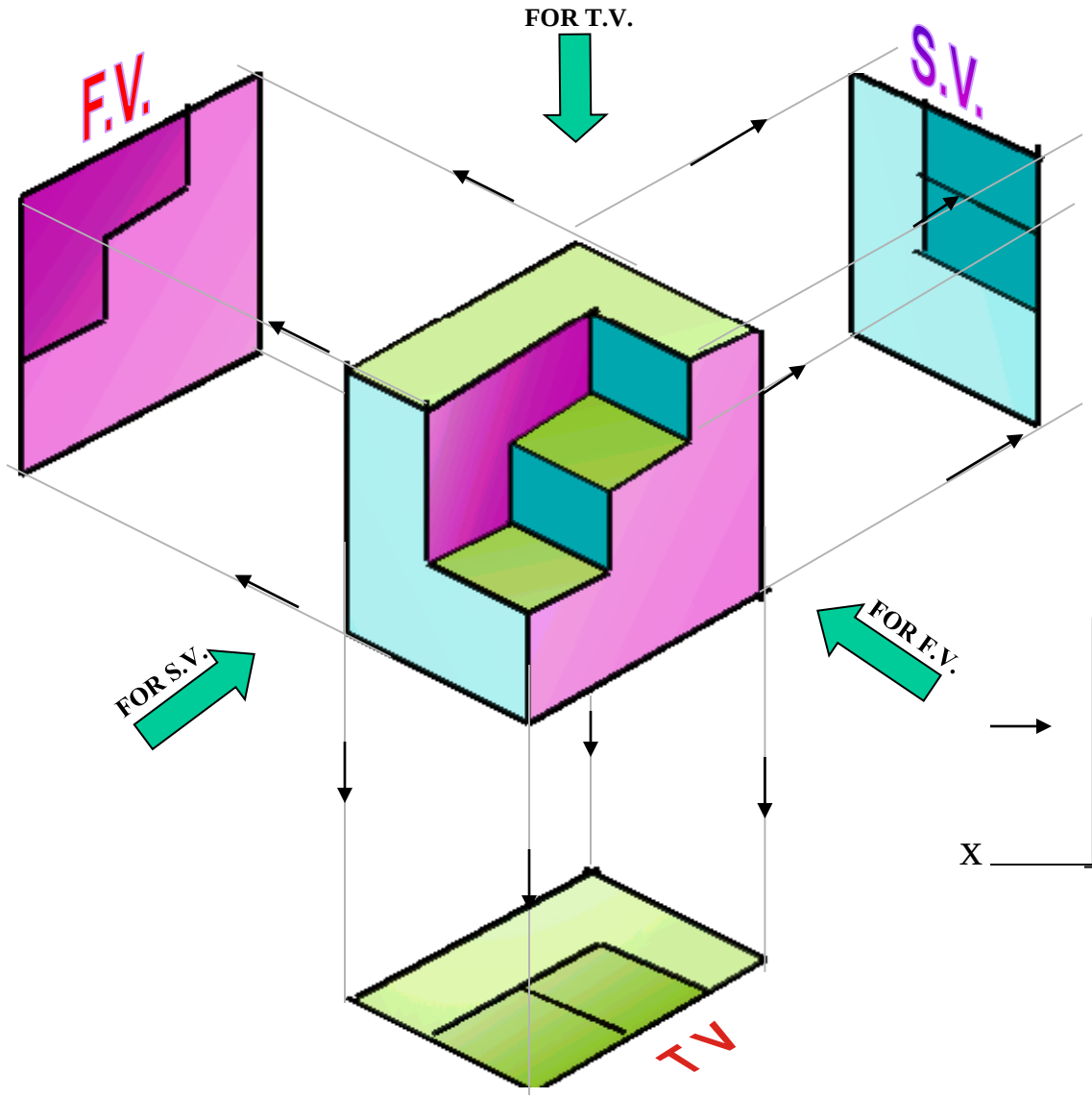


Example 2…

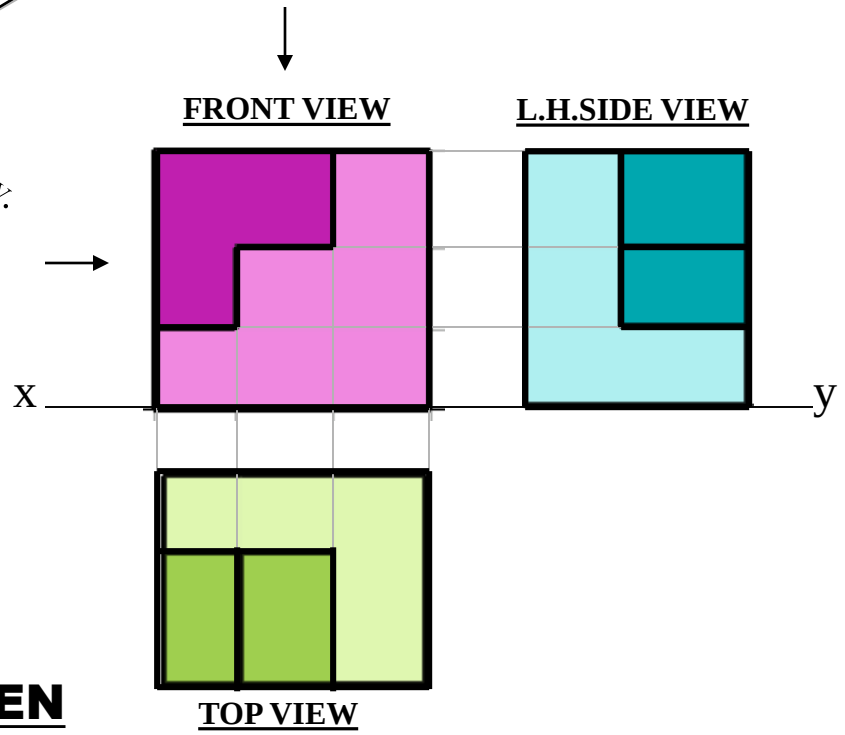








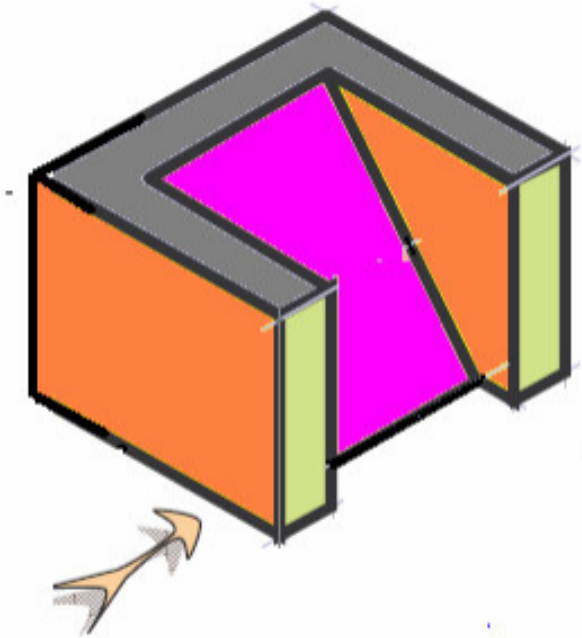
ORTHOGRAPHIC PROJECTIONS

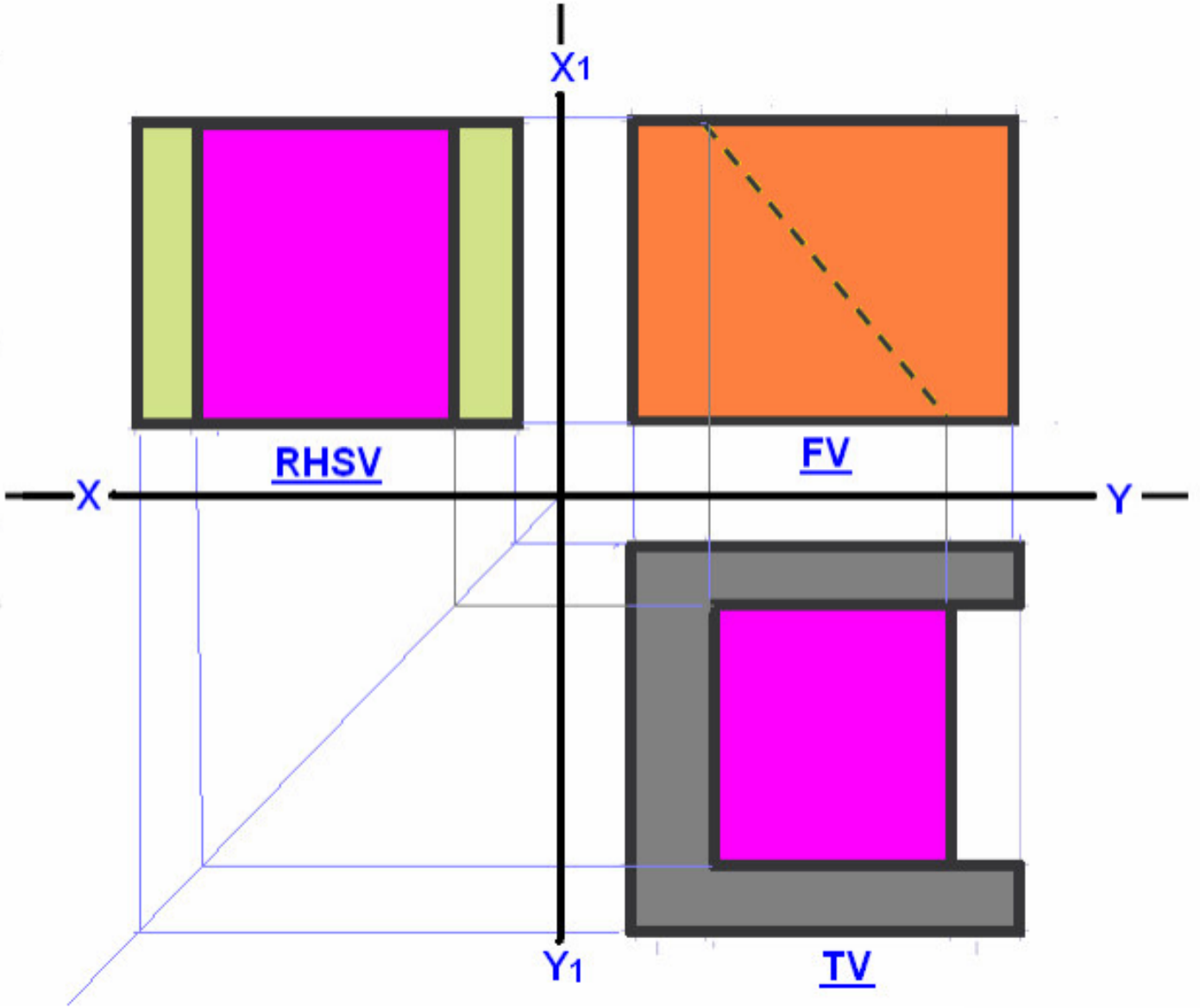


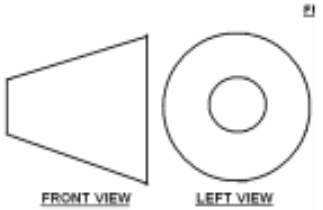
PICTORIAL PRESENTATION IS GIVEN

DRAW THREE VIEWS OF THIS OBJECT
BY FIRST ANGLE PROJECTION METHOD

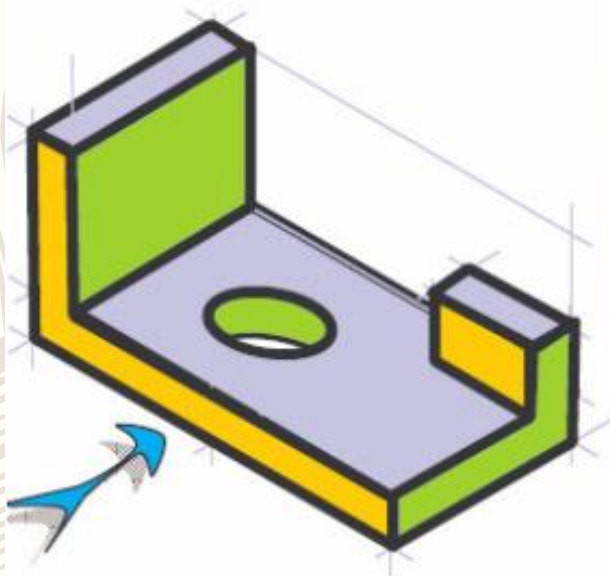
Guided ramp…

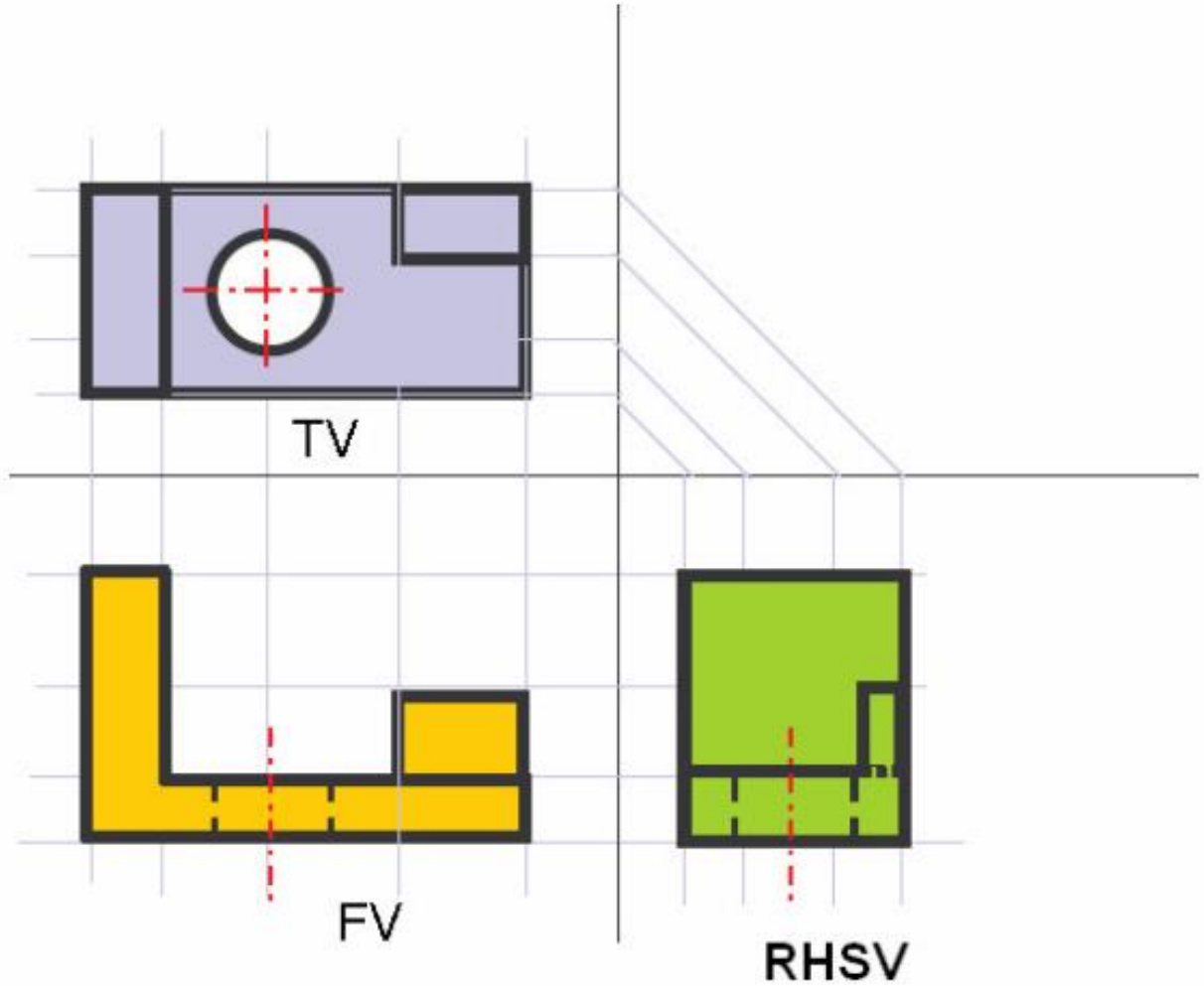


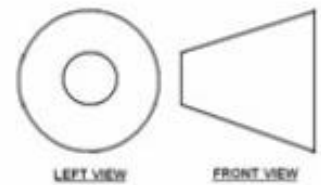


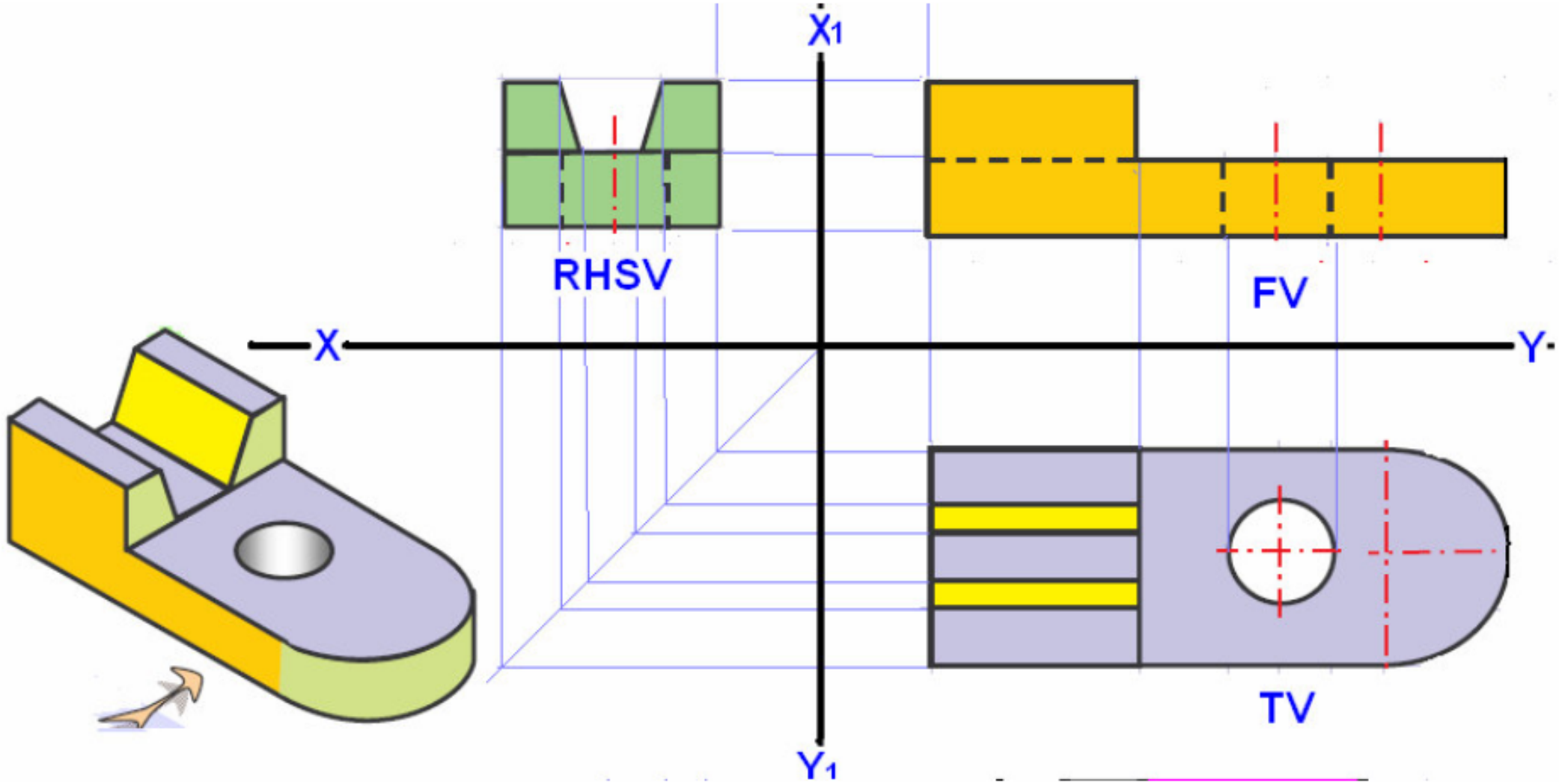


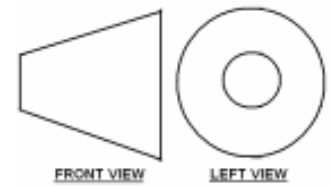
- Bracket with high lip…

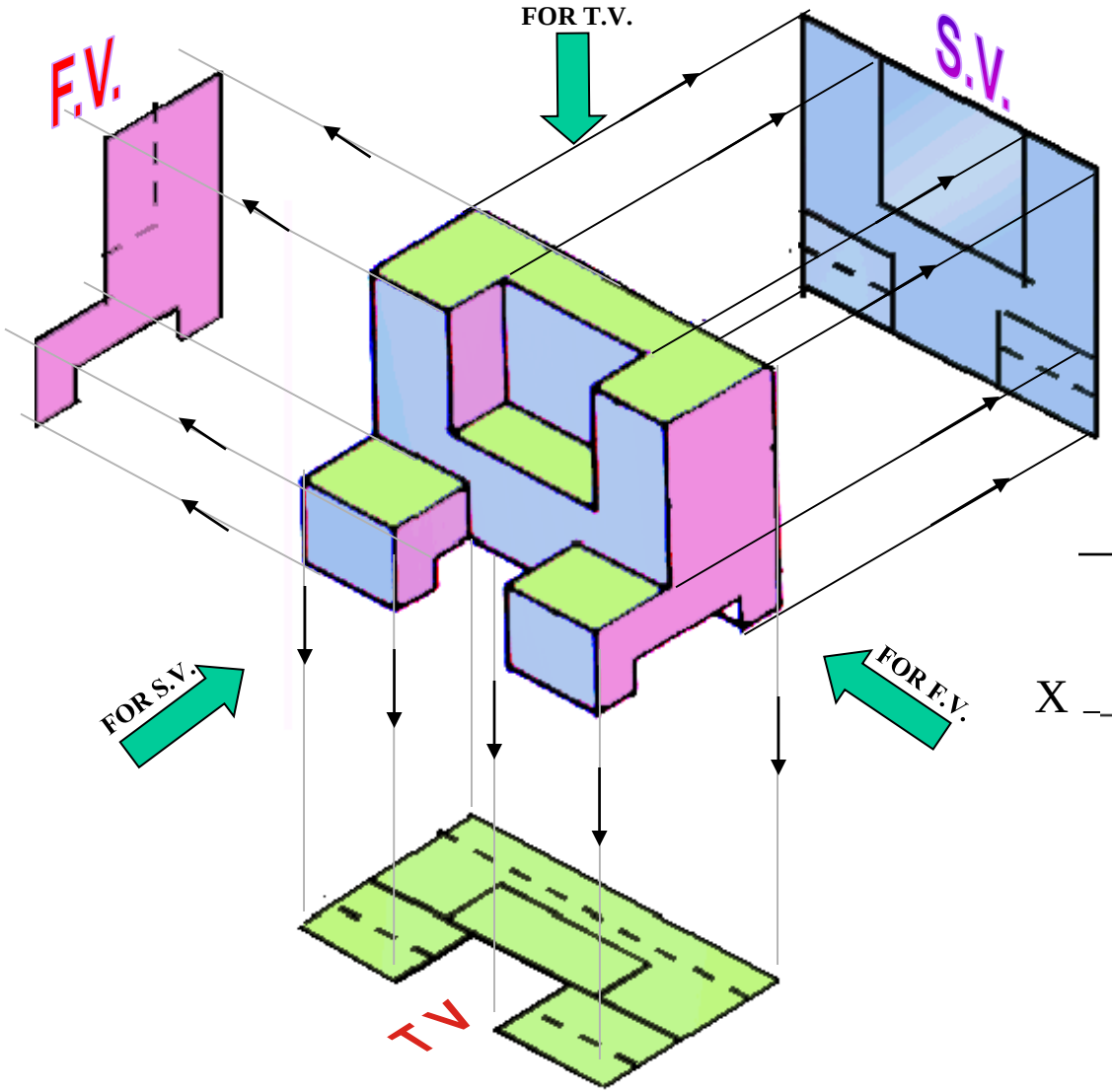




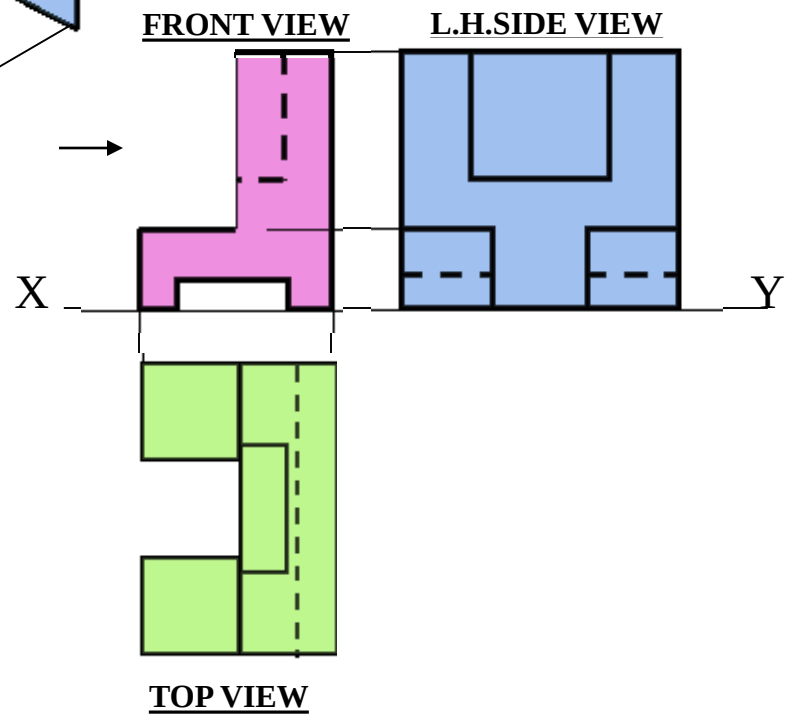



X1
RHSV
FV
X
Y
TV
Y1


FRONT VIEW
LEFT VIEW

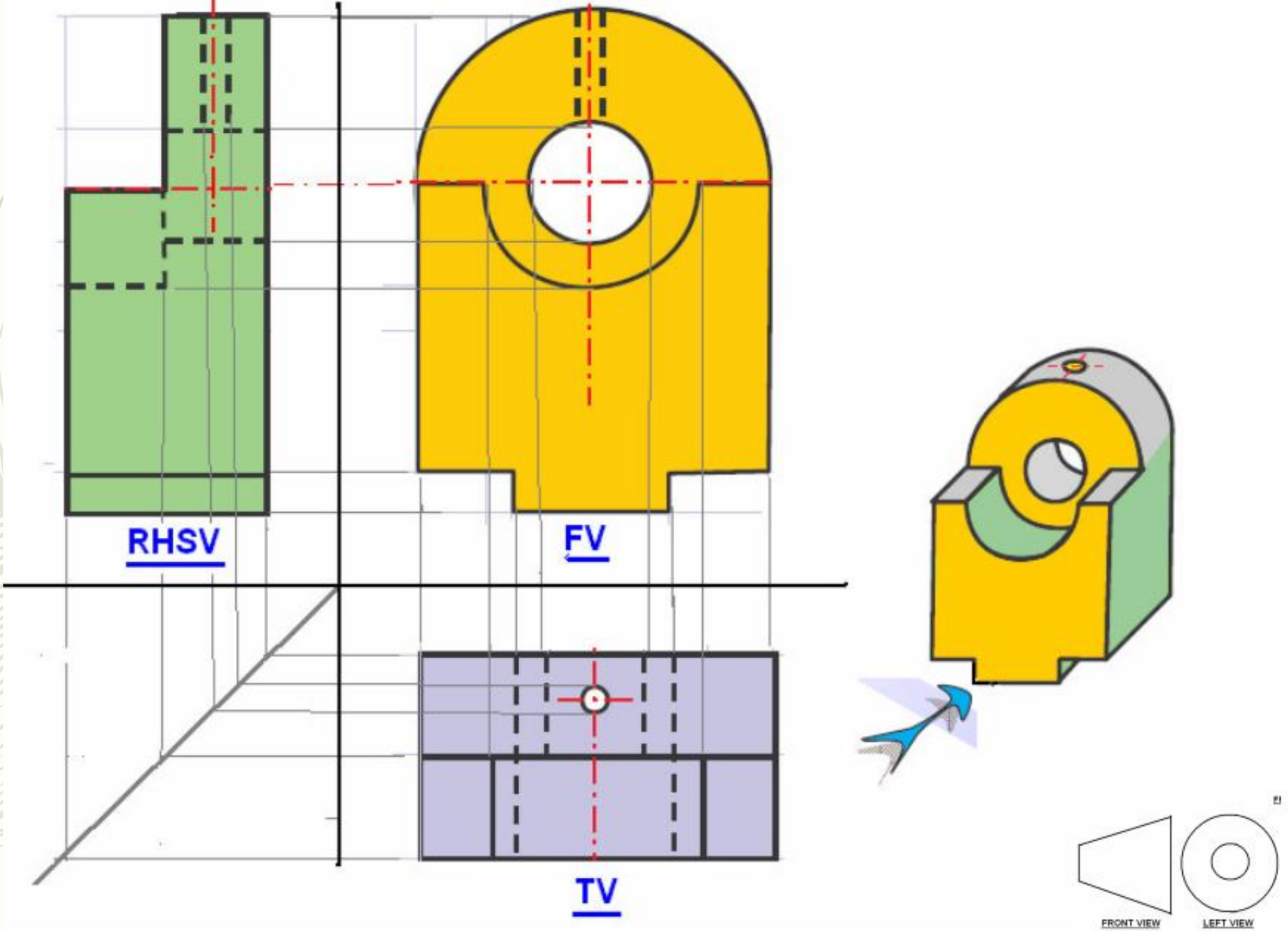


ORTHOGRAPHIC PROJECTIONS

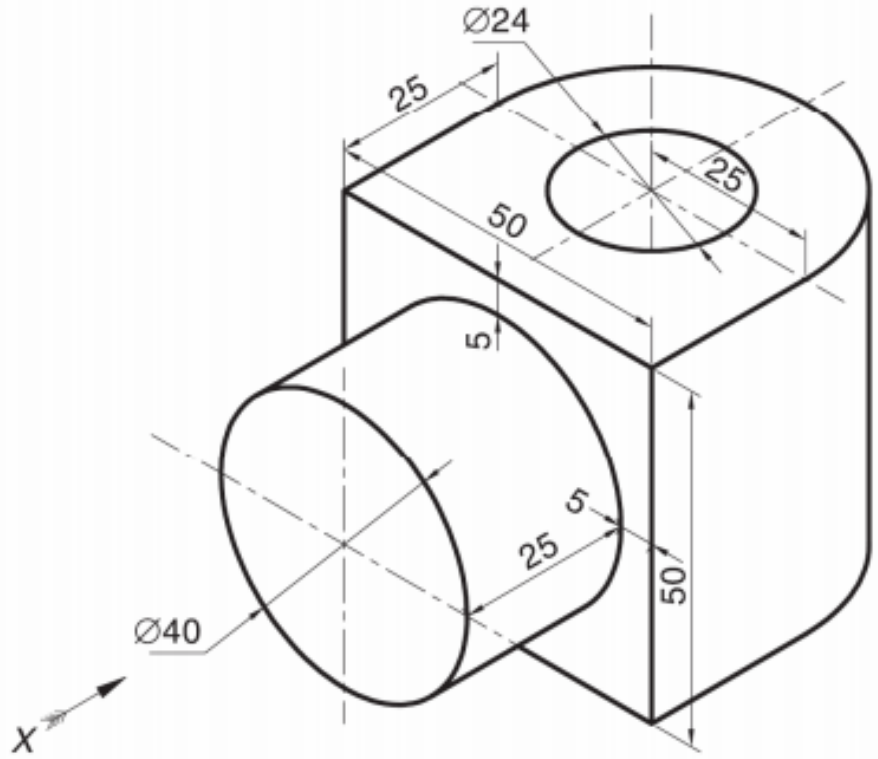


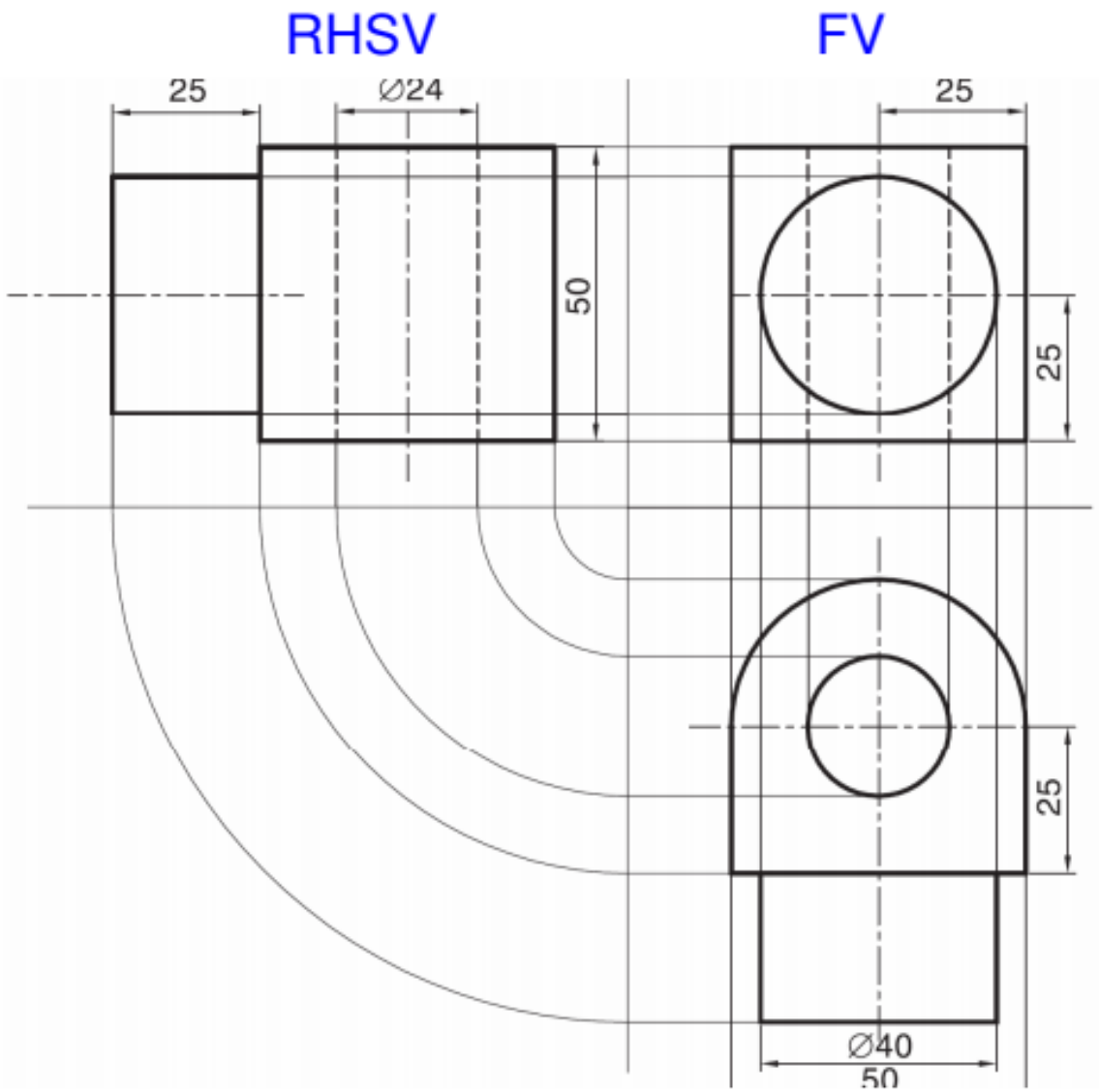
PICTORIAL PRESENTATION IS GIVEN

DRAW THREE VIEWS OF THIS OBJECT
BY FIRST ANGLE PROJECTION METHOD

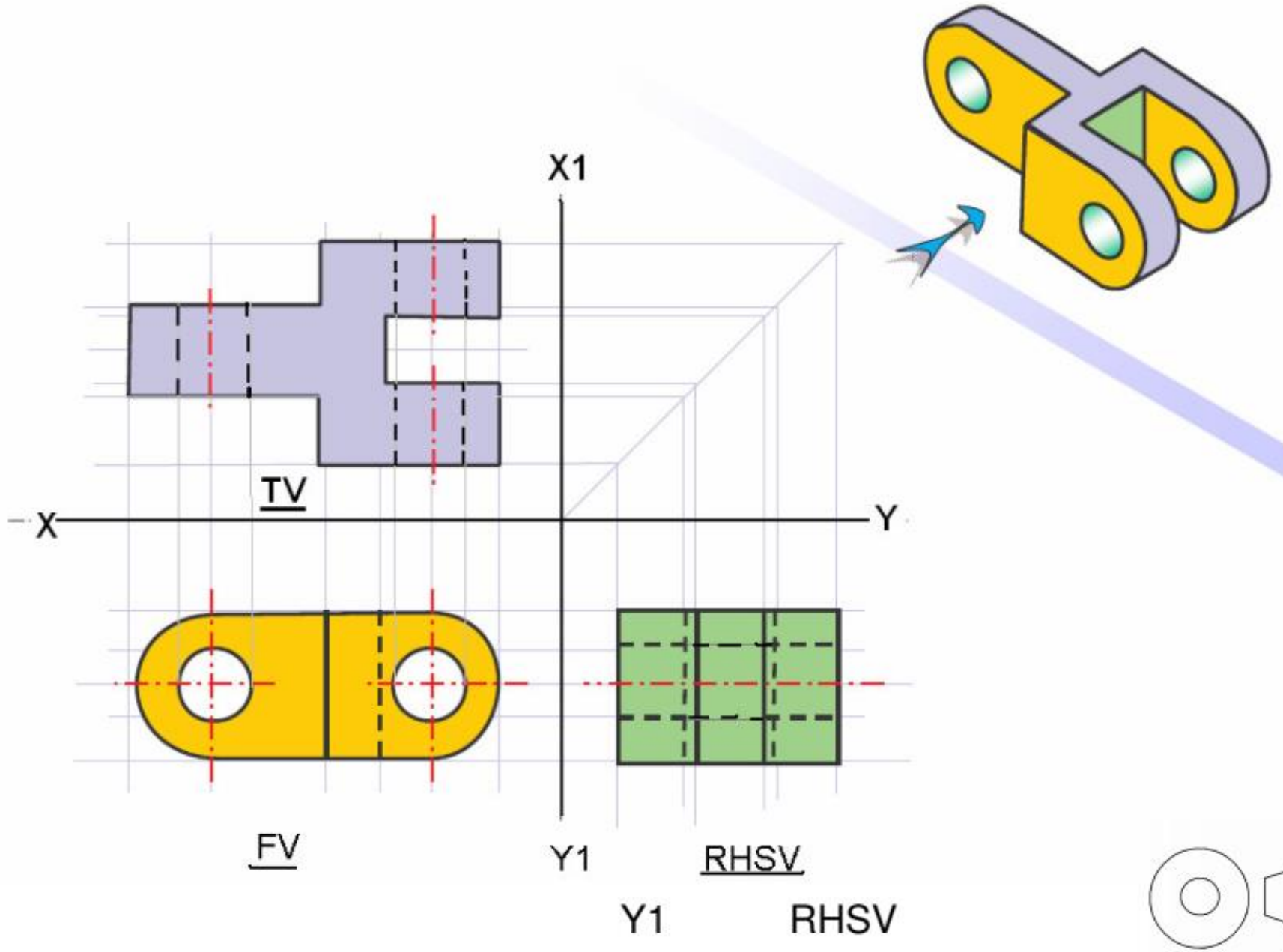

RHSV
FV
TV
FRONT VIEW
LEFT VIEW

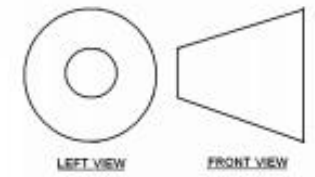
Objects with circular features : holes, flanges, etc





TV


X1
TV
X
Y
FV
Y1
RHSV
Y1
RHSV


LEFT VIEW
FRONT VIEW

ORTHOGRAPHIC PROJECTIONS

OF POINTS

TO DRAW PROJECTIONS OF ANY OBJECT,
ONE MUST HAVE FOLLOWING INFORMATION

A) **OBJECT**

{ WITH IT'S DESCRIPTION, WELL DEFINED.}

B) **OBSERVER**

{ ALWAYS OBSERVING PERPENDICULAR TO RESP. REF.PLANE}.

C) **LOCATION OF OBJECT,**

{ MEANS IT'S POSITION WITH REFFERENCE TO H.P. & V.P.}

TERMS 'ABOVE' & 'BELOW' WITH RESPECTIVE TO H.P.
AND TERMS 'INFRONT' & 'BEHIND' WITH RESPECTIVE TO V.P
FORM 4 QUADRANTS.
OBJECTS CAN BE PLACED IN ANY ONE OF THESE 4 QUADRANTS.

IT IS INTERESTING TO LEARN THE EFFECT ON THE POSITIONS OF VIEWS (FV, TV)
OF THE OBJECT WITH RESP. TO X-Y LINE, WHEN PLACED IN DIFFERENT QUADRANTS.

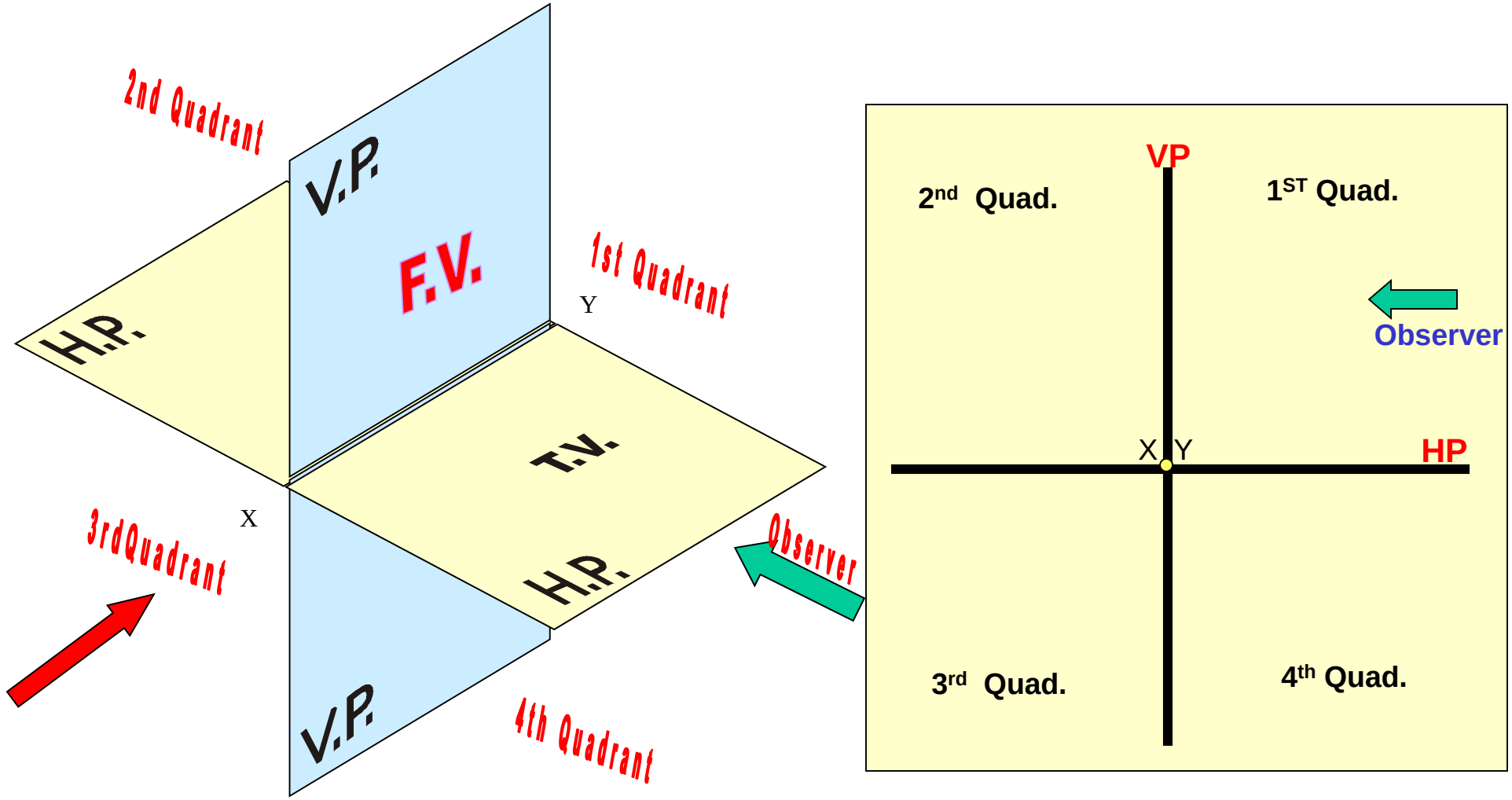
STUDY ILLUSTRATIONS GIVEN ON HEXT PAGES AND NOTE THE RESULTS.TO MAKE IT EASY HERE A POINT (A) IS TAKEN AS AN OBJECT. BECAUSE IT'S ALL VIEWS ARE JUST POINTS.

NOTATIONS

FOLLOWING NOTATIONS SHOULD BE FOLLOWED WHILE NAMEING DIFFERENT VIEWS IN ORTHOGRAPHIC PROJECTIONS.

OBJECT	POINT A	LINE AB
IT'S TOP VIEW	a	a b
IT'S FRONT VIEW	a`	a` b`
IT'S SIDE VIEW	a``	a``b``

SAME SYSTEM OF NOTATIONS SHOULD BE FOLLOWED INCASE NUMBERS, LIKE 1, 2, 3 – ARE USED.

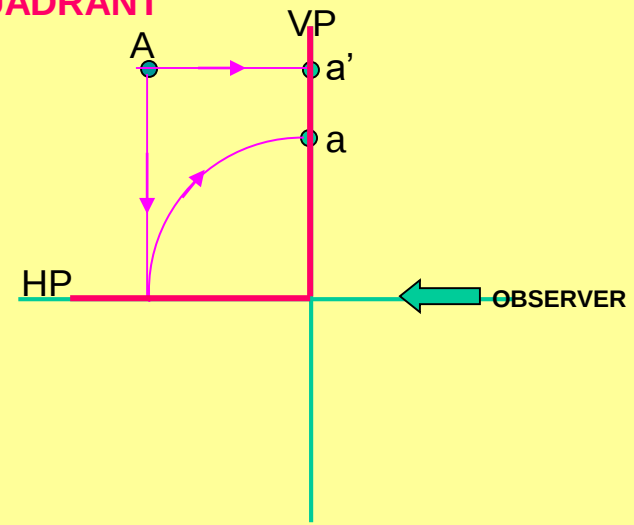


THIS QUADRANT PATTERN,
IF OBSERVED ALONG X-Y LINE (IN RED ARROW DIRECTION)
WILL EXACTLY APPEAR AS SHOWN ON RIGHT SIDE AND HENCE,
IT IS FURTHER USED TO UNDERSTAND ILLUSTRATION PROPERLLY.

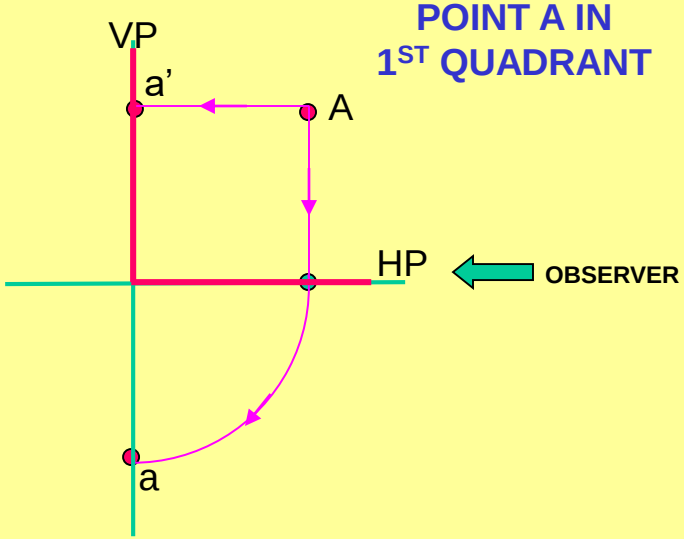
Point A is Placed In different quadrants and it's Fv & Tv are brought in same plane for Observer to see clearly.
FV is visible as it is a view on VP. But as TV is a view on HP, it is rotated downward 90^0, In clockwise direction. The front part of HP comes below the xy line and the part behind VP comes above.

Observe and note the process.

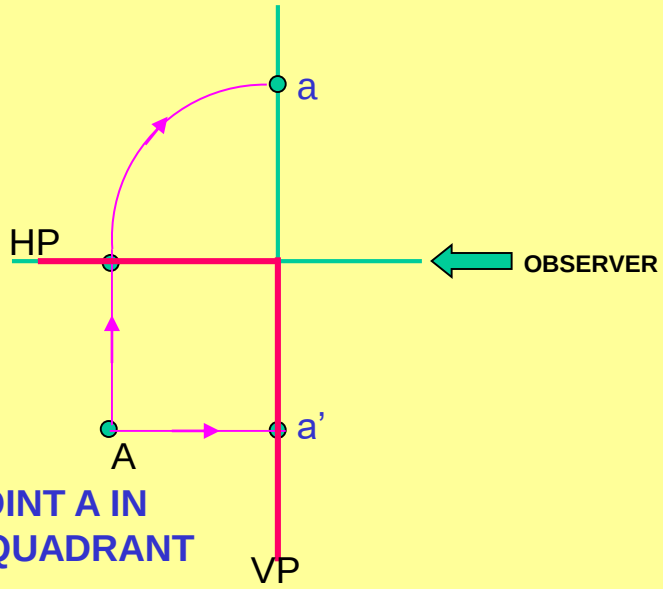
POINT A IN 2ND QUADRANT



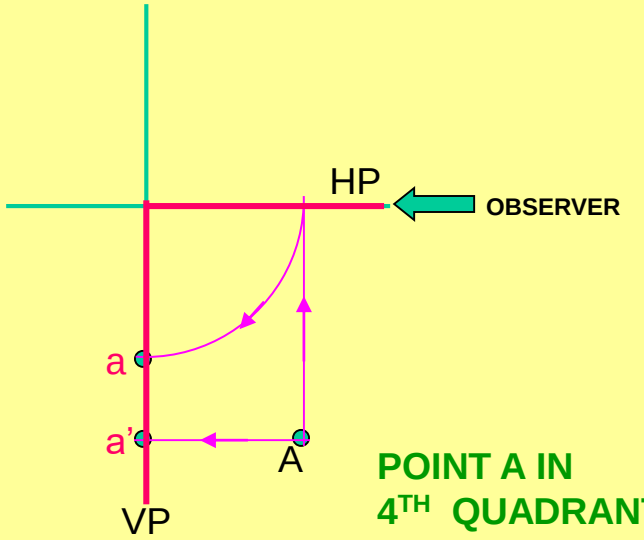
POINT A IN 1ST QUADRANT



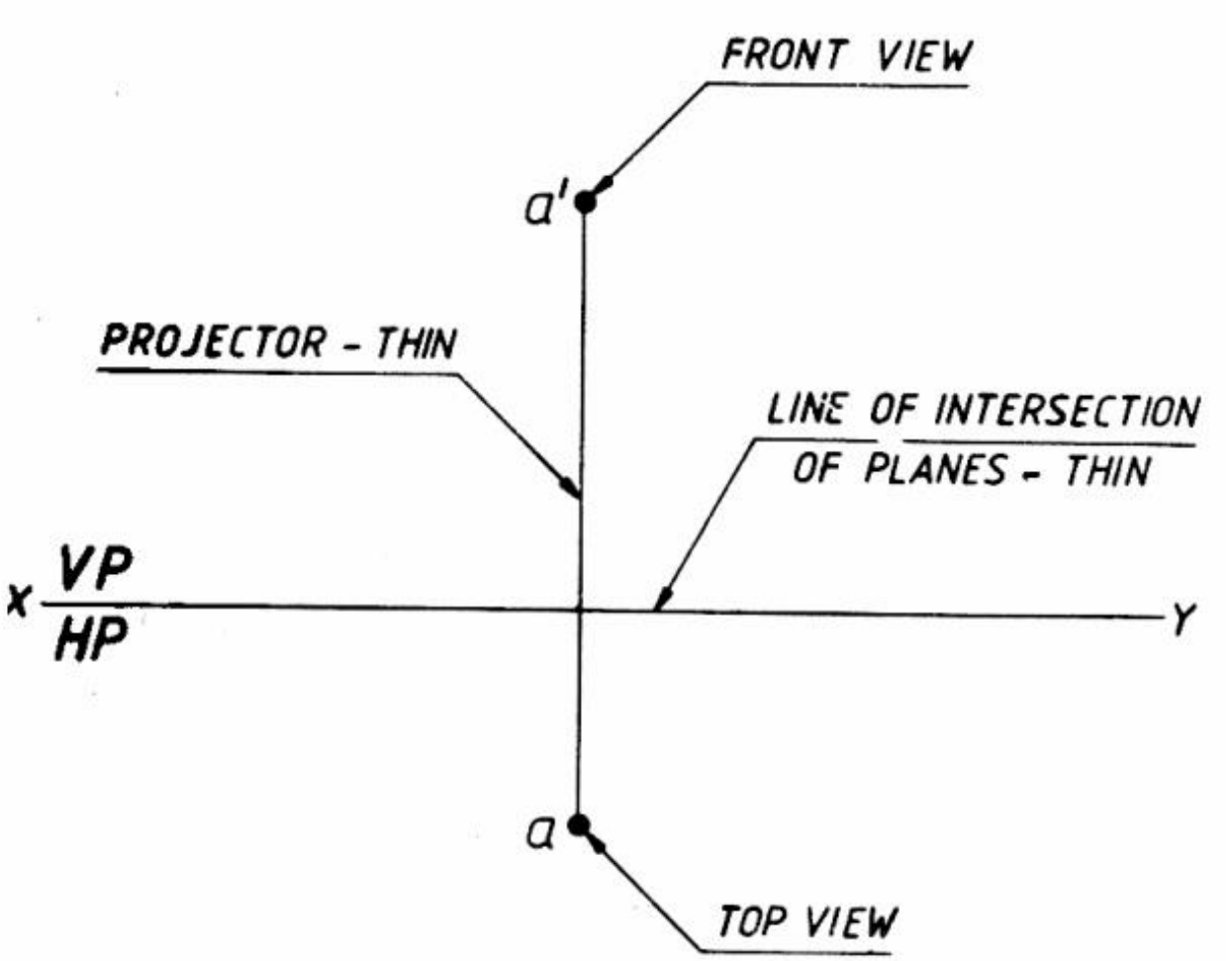
POINT A IN 3RD QUADRANT



POINT A IN 4TH QUADRANT



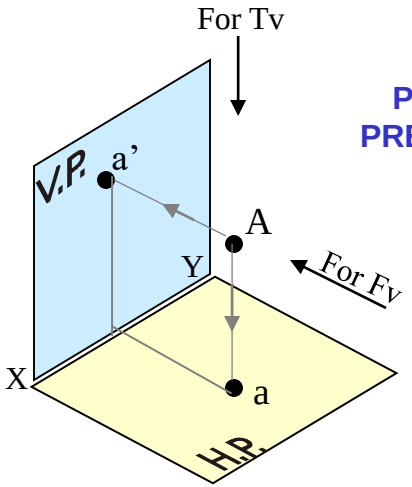
Convention



- **Projectors and the lines of the intersection of planes of projections are shown as thin lines.**

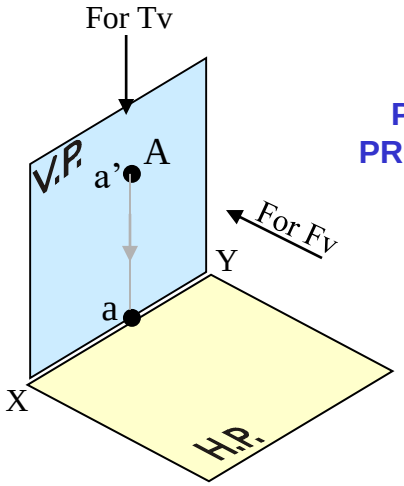
PROJECTIONS OF A POINT IN FIRST QUADRANT.

POINT A ABOVE HP & INFRONT OF VP



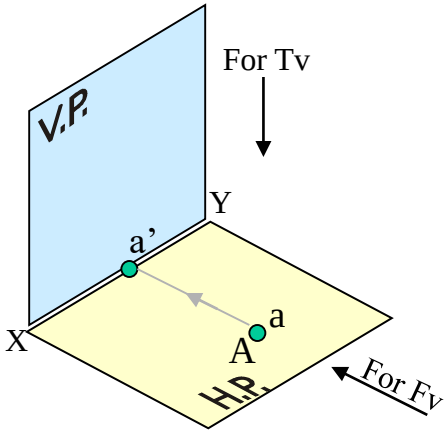
PICTORIAL PRESENTATION

POINT A ABOVE HP & IN VP



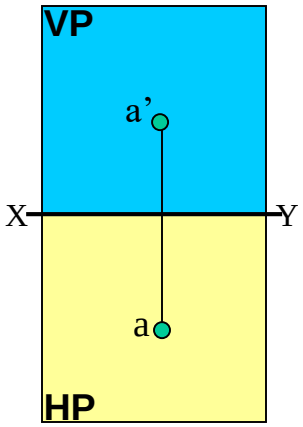
PICTORIAL PRESENTATION

POINT A IN HP & INFRONT OF VP

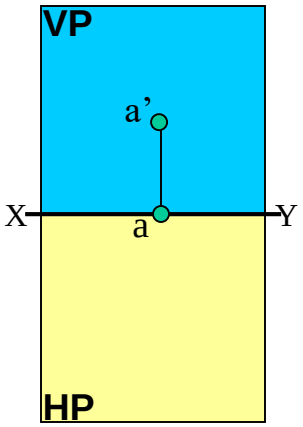


ORTHOGRAPHIC PRESENTATIONS OF ALL ABOVE CASES.

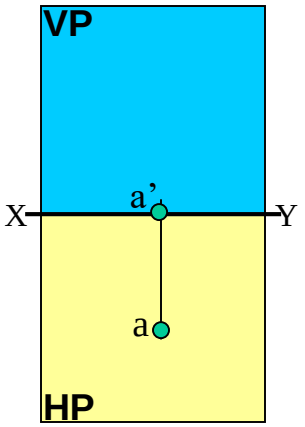
Fv above xy, Tv below xy.



Fv above xy, Tv on xy.



Fv on xy, Tv below xy.




Have
a nice
day!