Projection of Points

Prerequisite/Recapitulations

- Basics of Engineering Graphics
- Drawing, Sketching

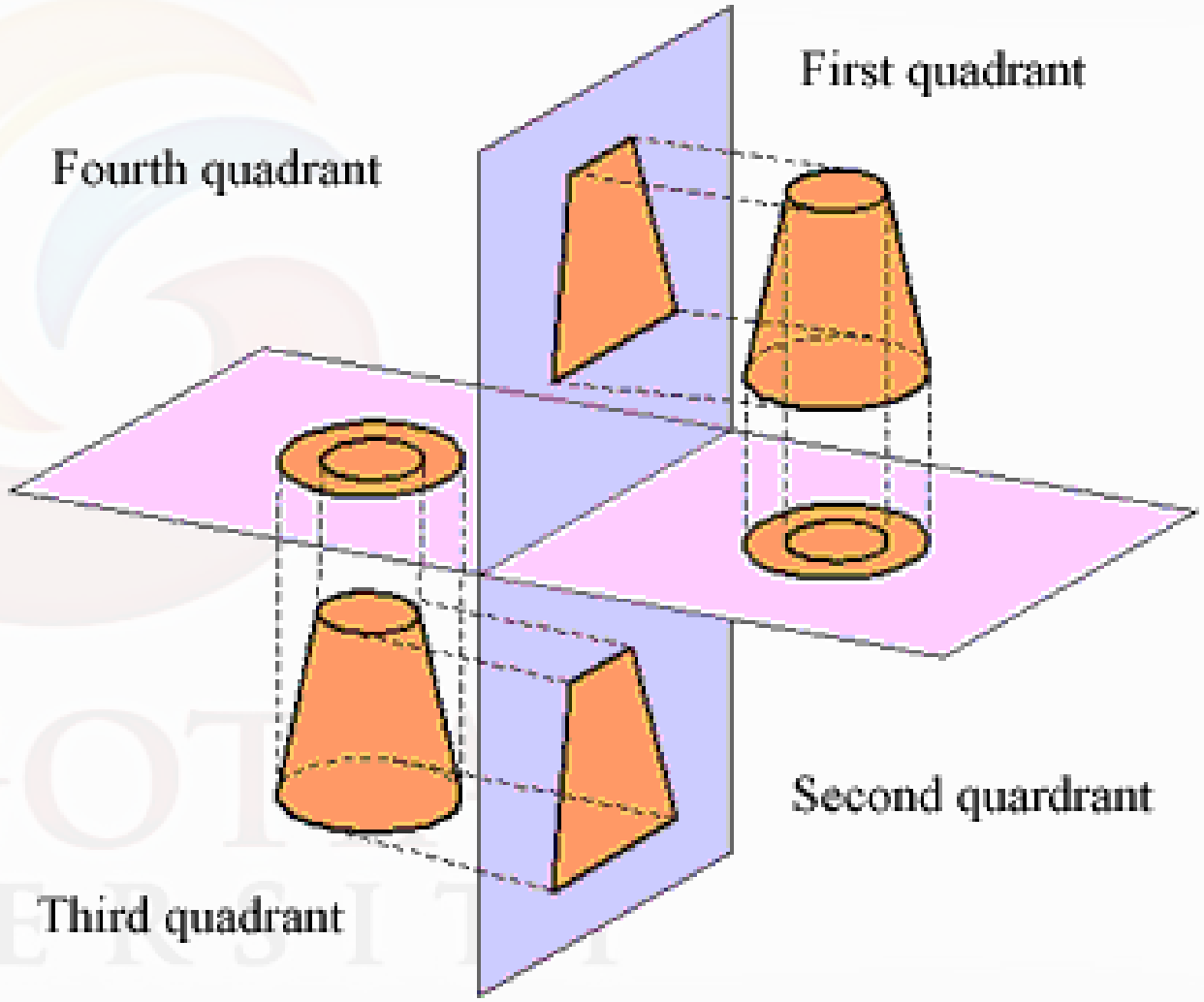
Objectives

To acquire knowledge about:

- Introduction to Projection
- Different views and Notation
- Convention used in drawing
- Point
- Projection of Point in different plane

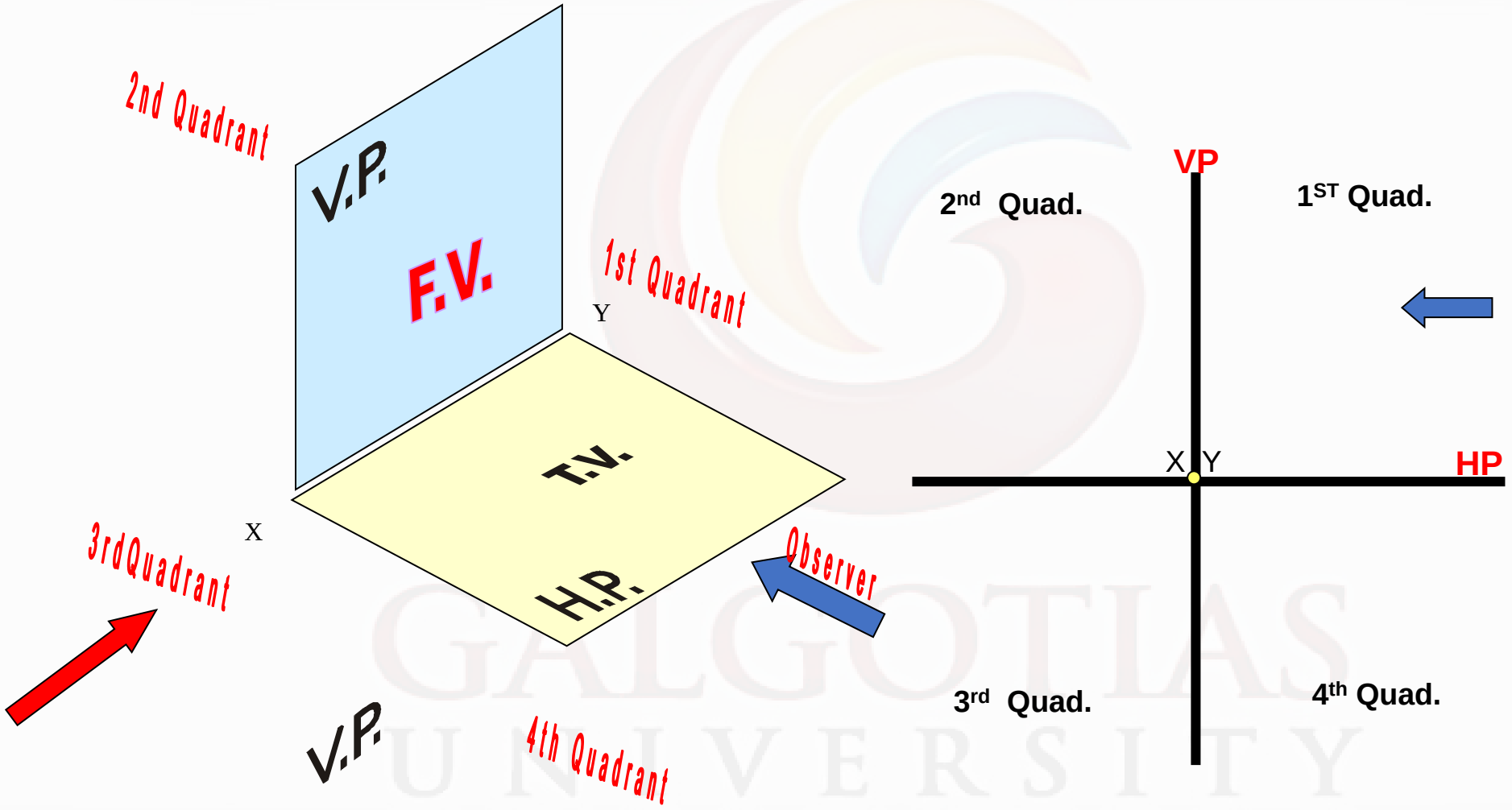
First Angle vs. Third Angle Projection

1ST ANGLE OF PROJECTION	3RD ANGLE OF PROJECTION
➢ The object is kept in the 1st quadrant.	➢ The object is assumed to keep in 3rd quadrant.
➢ The object lies in between the observer & the Plane of 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 position, the plan comes below the FV/elevation or the TV drawn below the FV.	➢ In this method, when the views are drawn in their relative position, the plan comes above the elevation or TV is drawn above the FV.
➢ The left side view is drawn to the right side of the FV.	➢ The left side view is drawn to the left side of the FV.
➢ The right side view is drawn to the left side of the FV.	➢ The right side view is drawn to the right side Of the FV.
➢ This method of projection is used In European Countries & bureau of Indian standard is adopted w.e.f. 1981.	➢ This method of projection is used In U.S.A & other countries

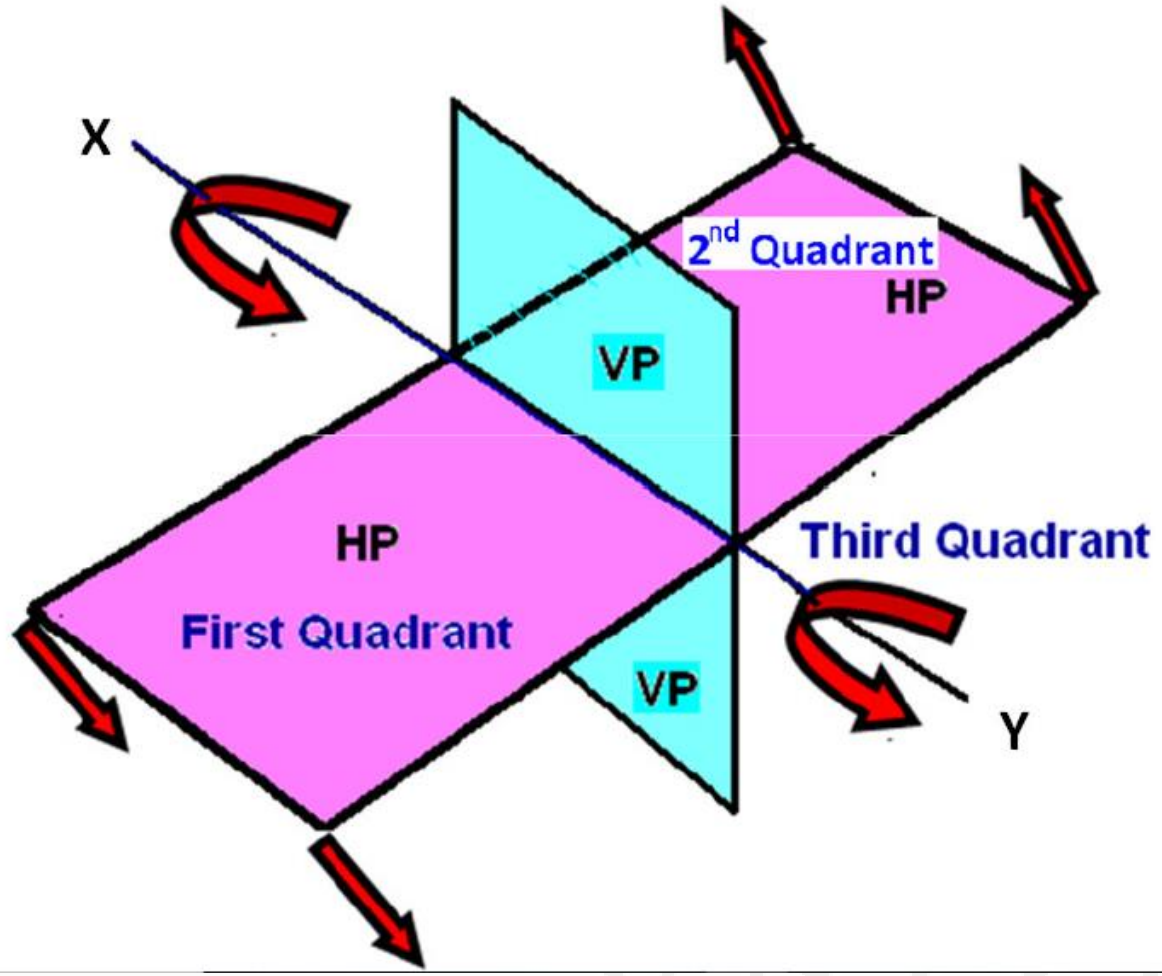


Introduction

Different Views & Notations



Direction of rotation of the HP



Convention:

Horizontal plane is always rotated clockwise

Convention

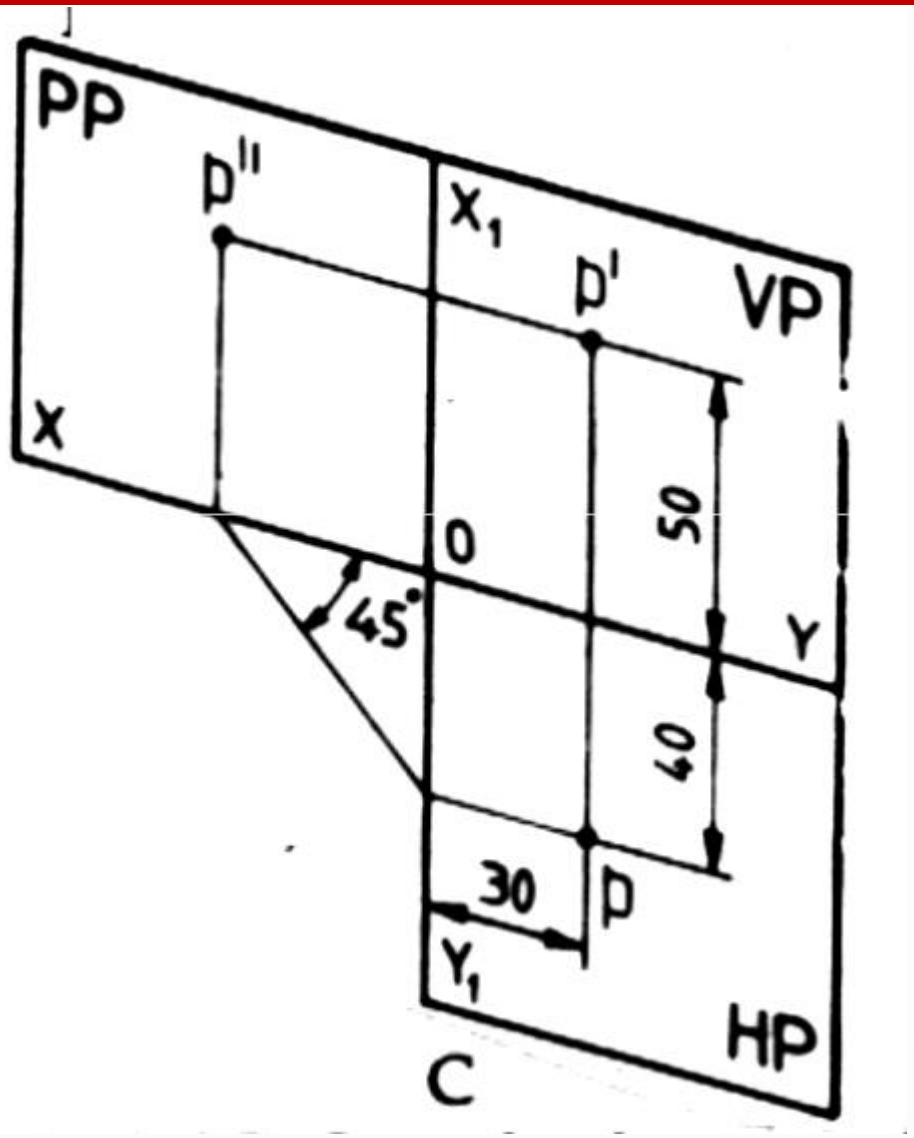
- Top views are represented by only small letters e.g. *a*
- Their front views are conventionally represented by small letters with dashes e.g. *a'*
- Profile or side views are represented by small letters with double dashes e.g. *a''*

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"

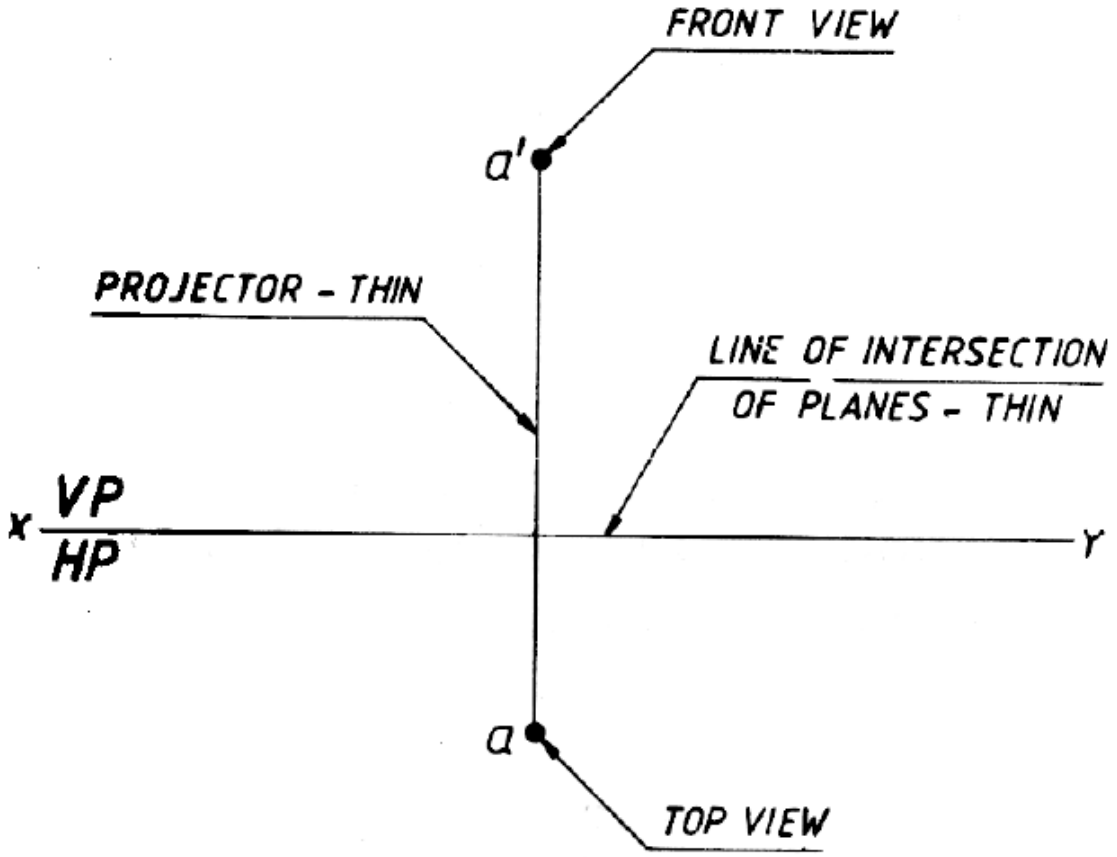
Convention

- **The line of intersection of HP and VP is denoted as XY.**

- **The line of intersection of VP and PP is denoted as X1Y1**

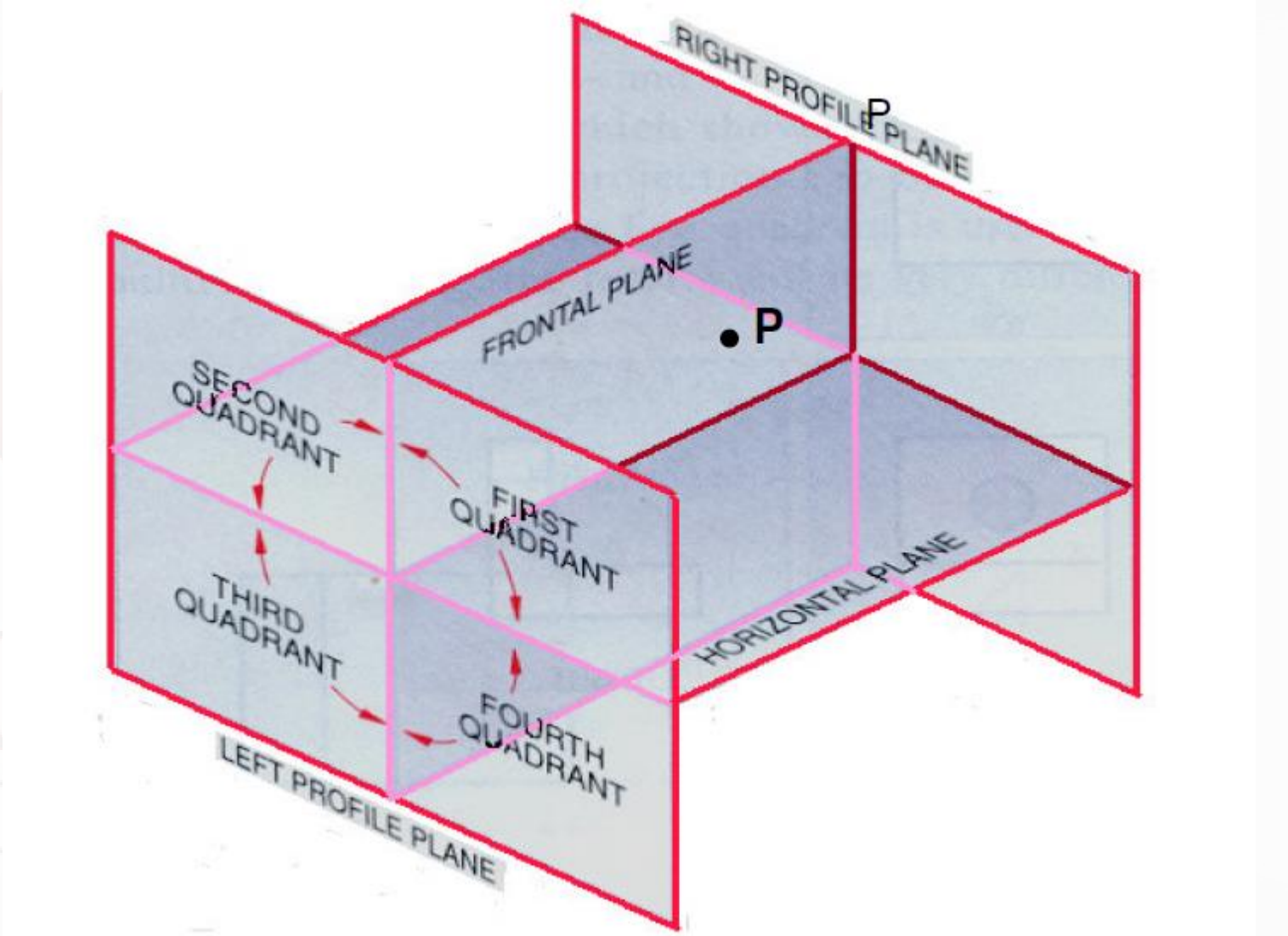


Projectors and the lines of the intersection of planes of projections are shown as thin lines.



Point

Define its position with respect to the coordinates.
With respect to the VP, HP, & PP

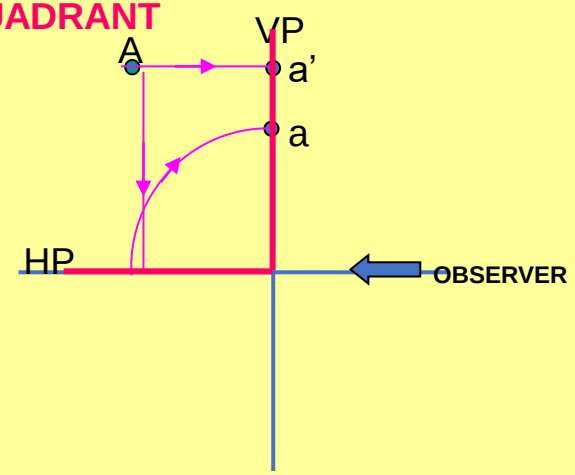


Projection of a Point

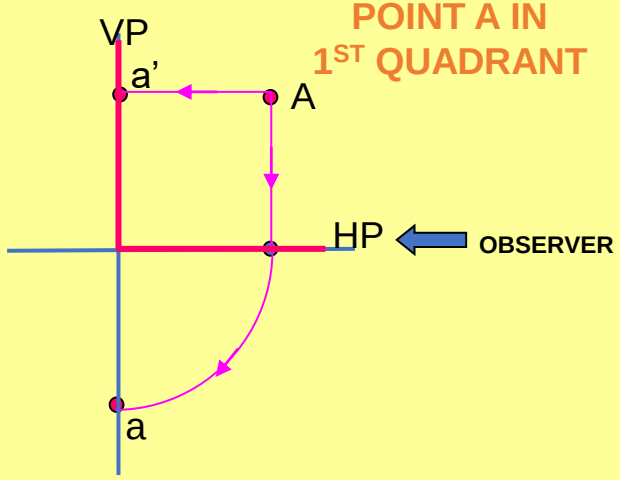
Point A is Placed In different quadrants and it's Fv & Tv are brought in same plane for Observer to see clearly.
Fv is visible as it is a view on VP. But as Tv is is a view on Hp, it is rotated downward 90^0, In clockwise direction.The In front part of Hp comes below xy line and the part behind Vp comes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

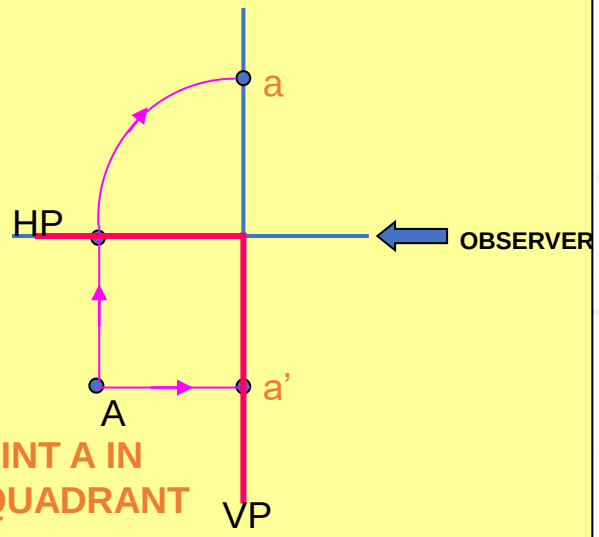
Observe and note the process.

POINT A IN 2ND QUADRANT

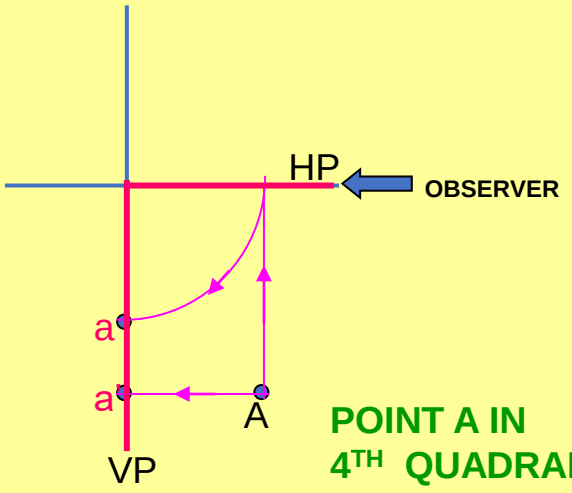


POINT A IN 1ST QUADRANT





POINT A IN 3RD QUADRANT

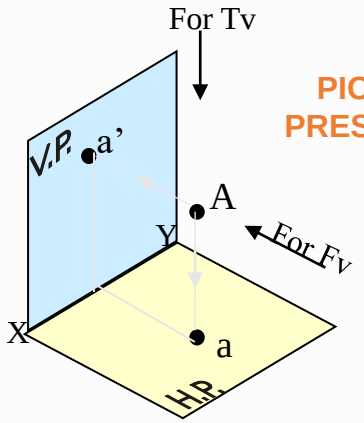


POINT A IN 4TH QUADRANT

Point in different quadrants

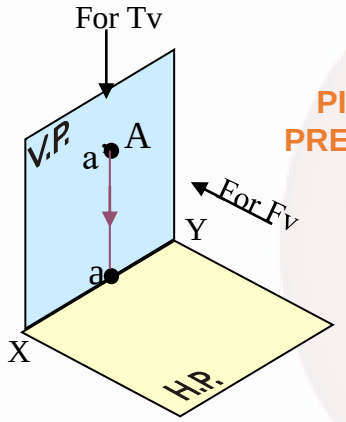
Projection of a Point in first quadrant

POINT A ABOVE HP & INFRONT OF VP



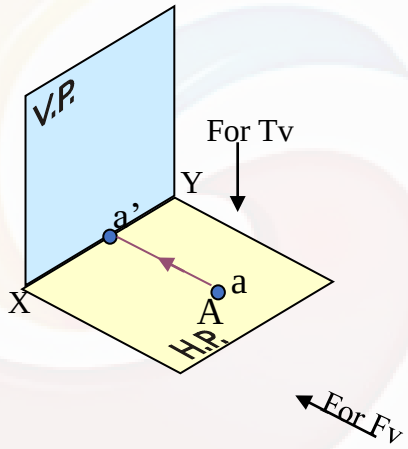
PICTORIAL PRESENTATION

POINT A ABOVE HP & IN VP



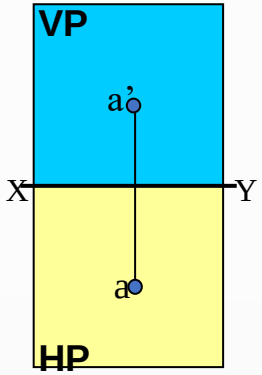
PICTORIAL PRESENTATION

POINT A IN HP & INFRONT OF VP

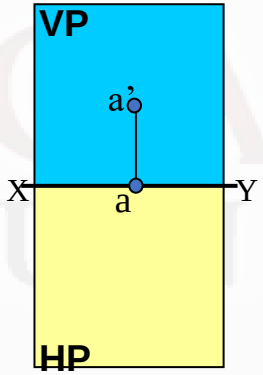


ORTHOGRAPHIC PRESENTATIONS OF ALL ABOVE CASES.

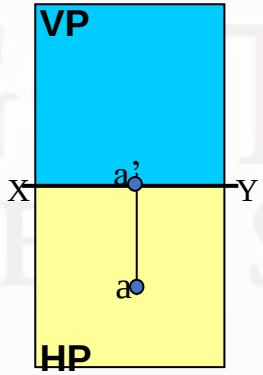
Fv above xy, Tv below xy.



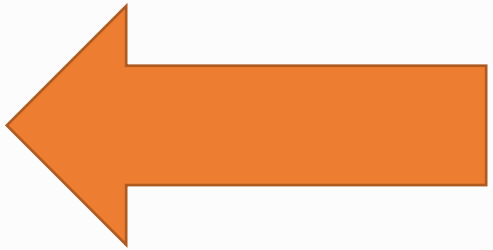
Fv above xy, Tv on xy.



Fv on xy, Tv below xy.

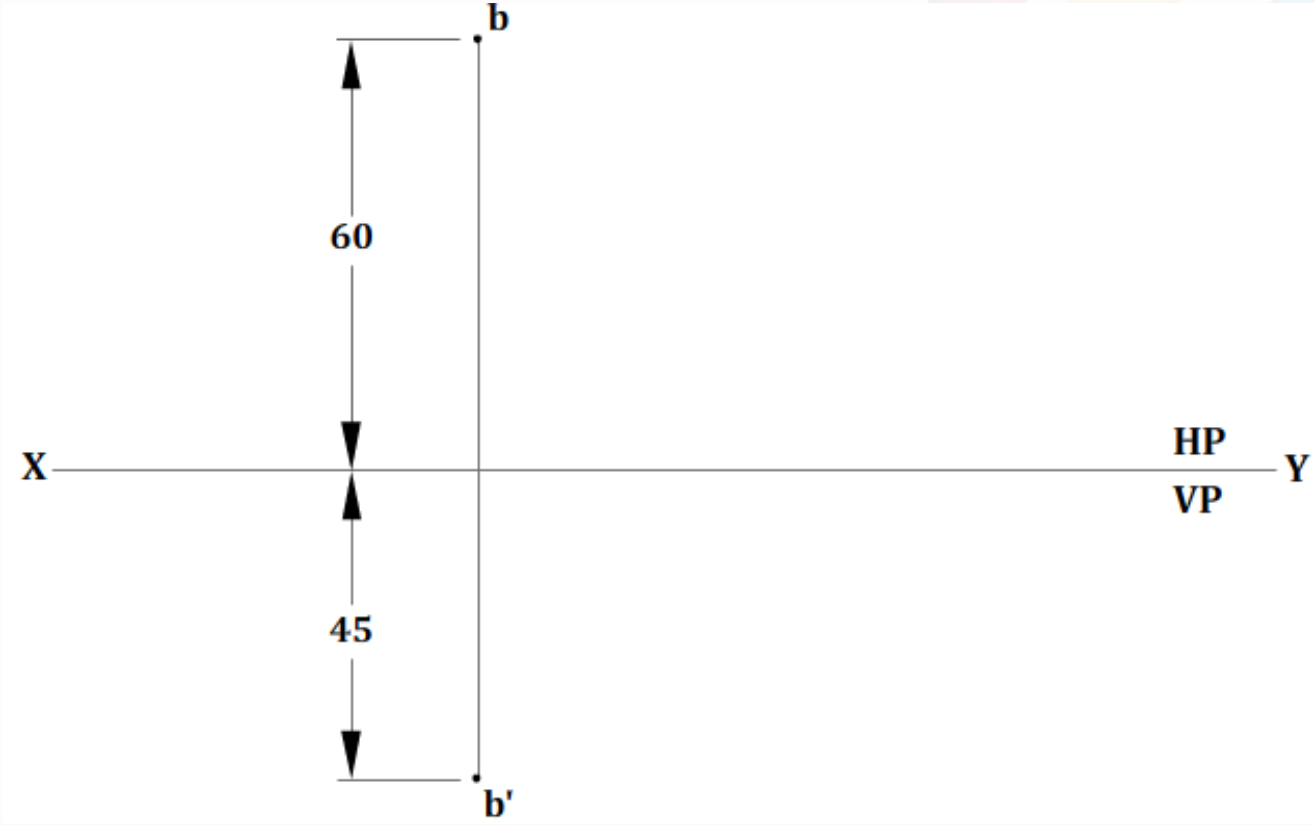


Projection in first quadrant



PROBLEM NO.01:-

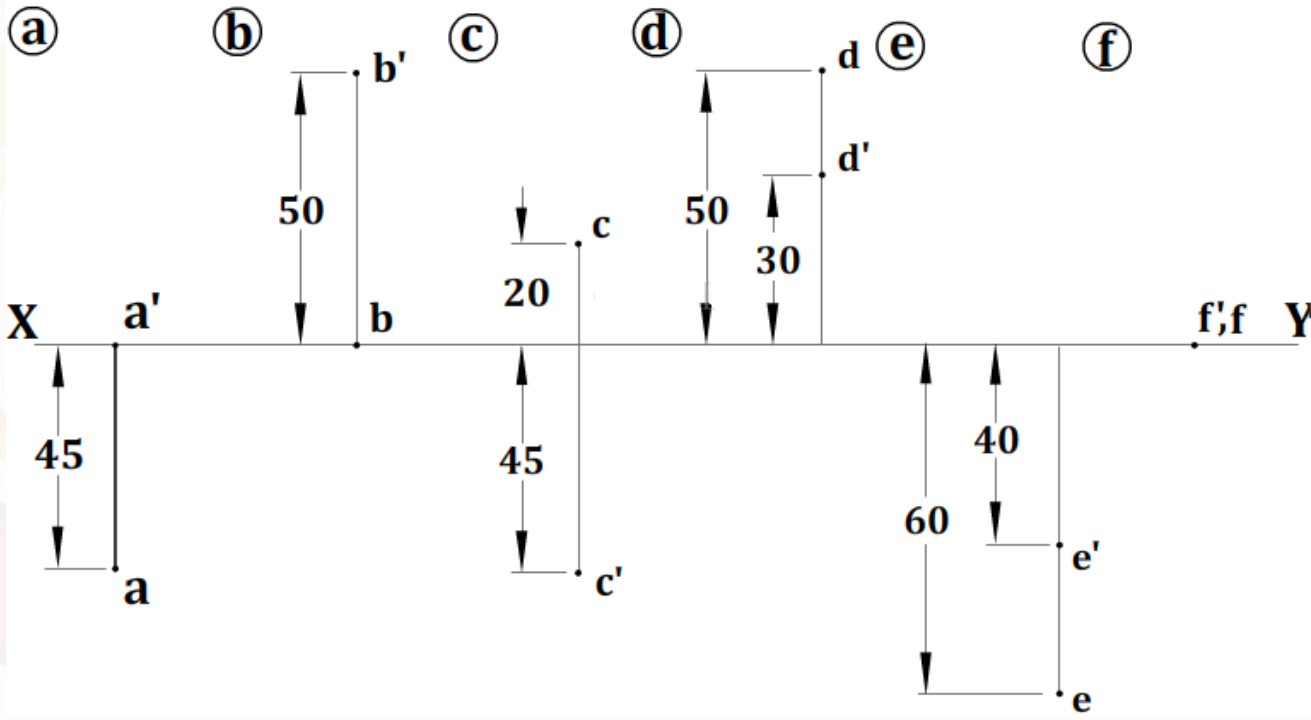
Q.) A point B is 45 mm below HP and 60 mm behind VP. Draw the projections of the point.



PROBLEM NO.02:-

Q.) Draw the projections of the following points on a common reference line (x y)

1) Point A on HP and 45 mm in front of VP.
2) Point B in VP and 50 mm above HP.
3) Point C 45 mm below HP and 20 mm behind VP.
4) Point D 30 mm above HP and 50 mm behind VP.
5) Point E 40 mm below HP and 60 mm in front of VP.
6) Point F on HP and in VP



Summary

A point is defined as a geometrical element that has no dimension. In engineering drawing the point is represented as a very small circle or a dot.

Or, a point is represents a location in space or on a drawing & has no width, height or depth.

A point is simple & simple entity denoted by capital alphabets (A, B, C… Z)

Its front view is denoted by a’

Its top view is denoted by a

Questions

- What are the notations used in denoting the projection of point?
- A point A is 20 mm above HP and 30 mm in front of VP. Draw its projections
- A point D is 20 mm below HP and 30 mm in front of VP. Draw its projections.
- Draw the projections of the following points on the same ground line, keeping the distance between projectors equal to 25 mm. (i) Point A, 20 mm above HP, 25 mm behind VP; (ii) Point B, 25 mm below HP, 20 mm behind VP; (iii) Point C, 20 mm below HP, 30 mm in front of VP; (iv) Point D, 20 mm above HP, 25 mm in front of VP; (v) Point E, on HP, 25 mm behind VP; (vi) Point F, on VP, 30 mm above HP

References

- Engineering Drawing by N. D. Bhatt and V. M. Panchal
- Engineering Graphics by K. C. John
- NPTEL

GALGOTIAS UNIVERSITY

Thank You