



# ENGINEERING GRAPHICS (BITS F110)

**BITS Pilani**

K K Birla Goa Campus

**VIKAS CHAUDHARI**

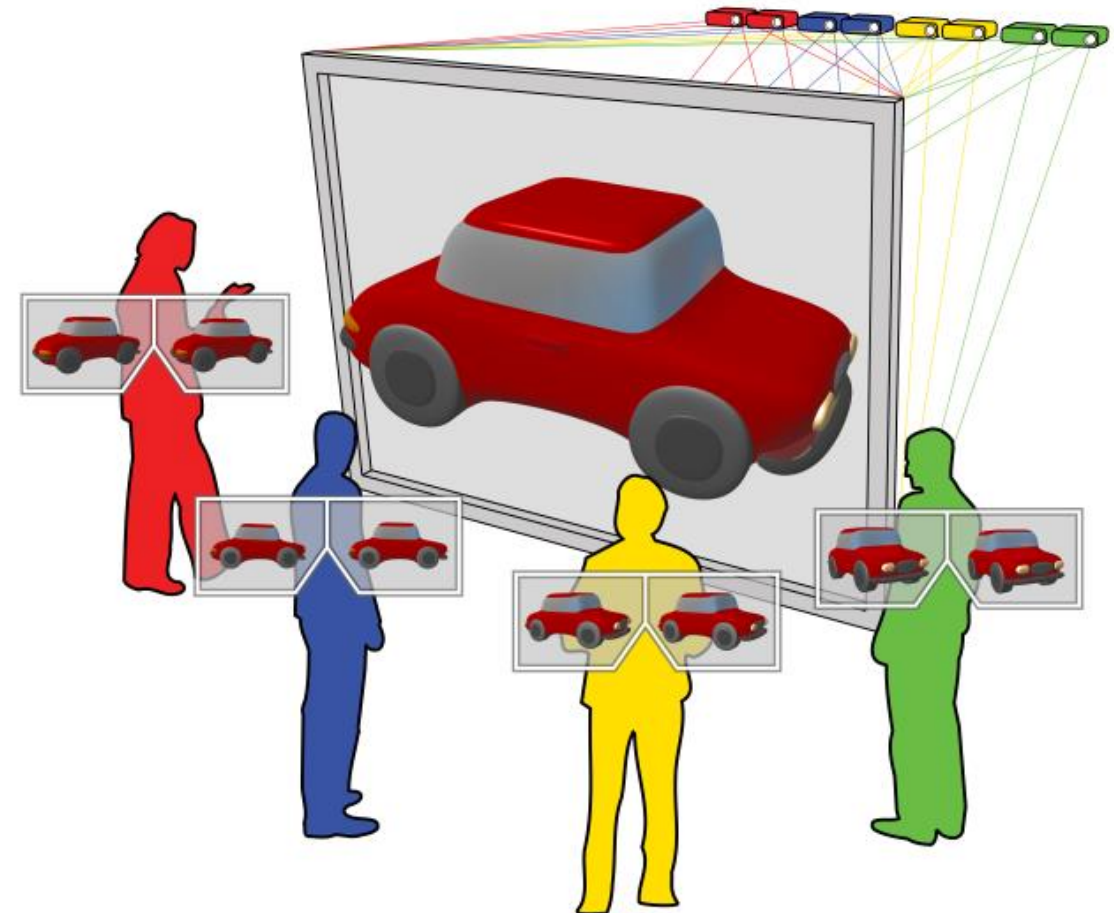


## CHAPTER- 3

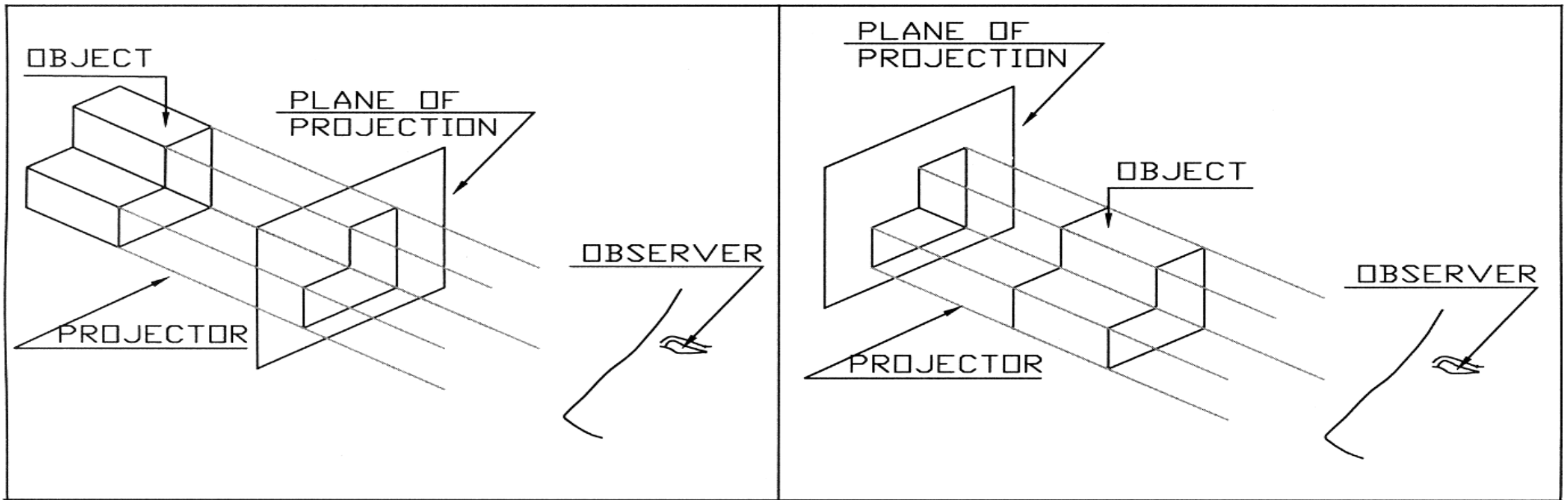
# THEORY OF PROJECTION

## □ Learning Objectives

1. To Know the elements of projection
2. To know the system of projections
3. To know the methods of projections
4. To know the standard practices in projection

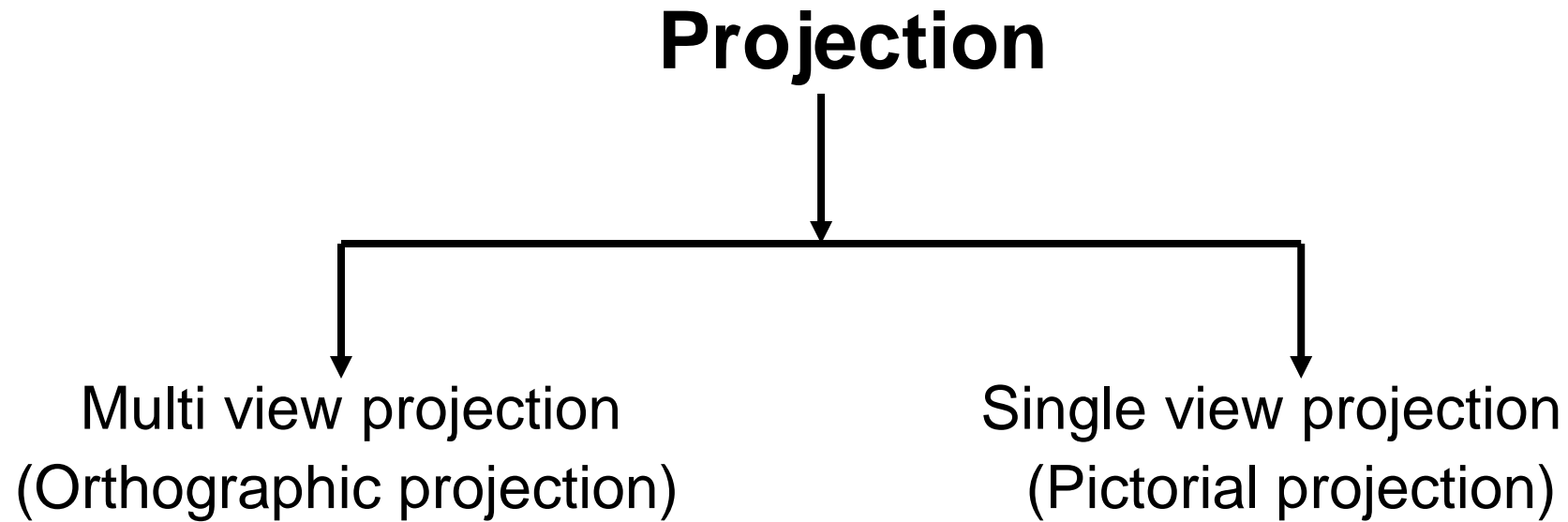


# Elements of Projection



Object, Plane of Projection and Observer are the three elements of projection

# Systems of Projection



# Systems of Projection



Projection

Multiview projection  
(Orthographic projection)

Single view projection  
(Pictorial projection)

Axonometric projection

Oblique projection

Perspective projection

Isometric

Dimetric

Trimetric

Cavalier

Cabinet

Clinographic

General

Linear

Aerial

Parallel

Angular

Oblique

# Principal Planes of Projections



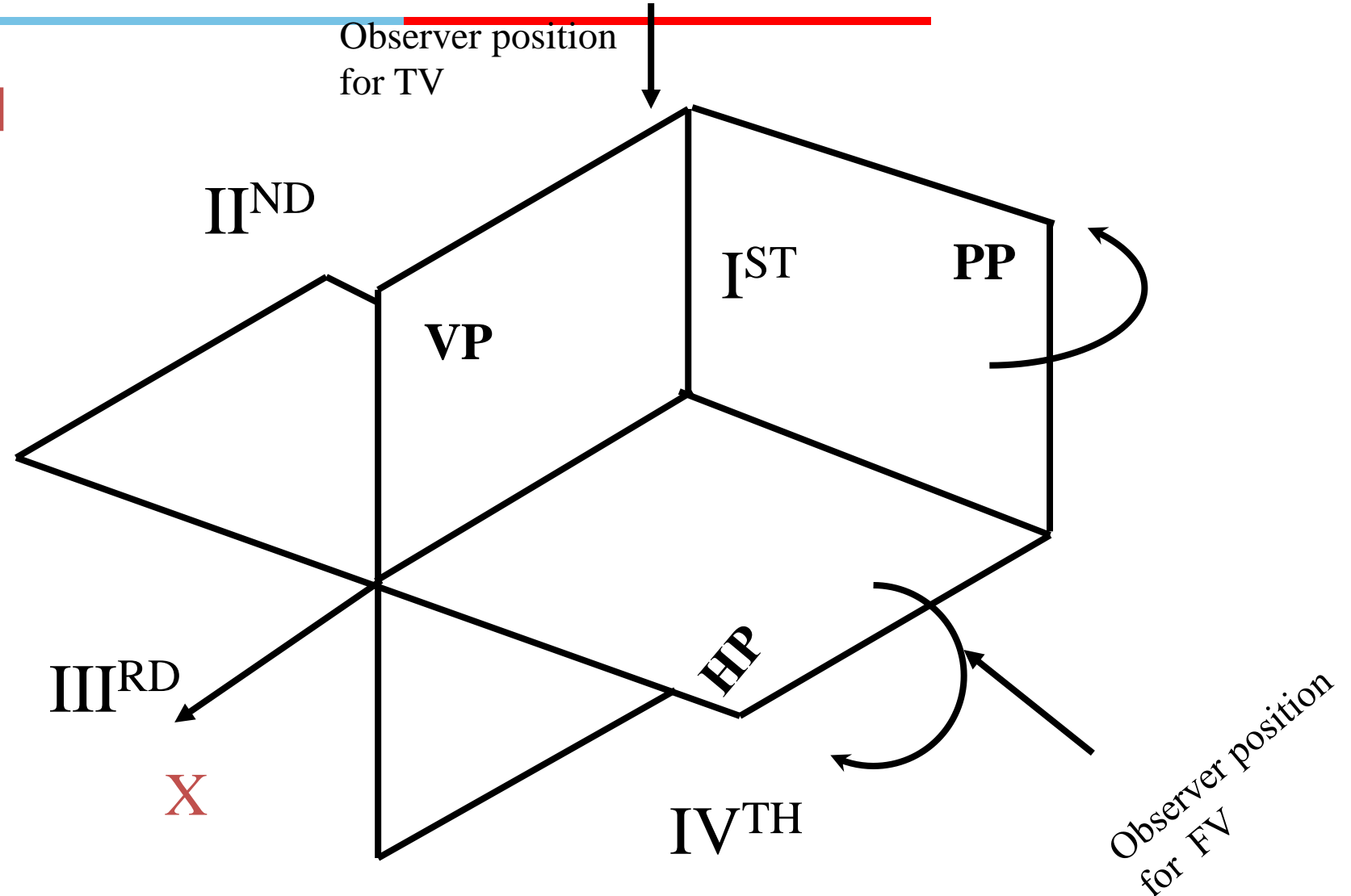
- ❑ Basically 2 planes, intersecting at right angles
- ❑ VP (Vertical Plane) & HP (Horizontal plane)
- ❑ Reference line  $xy$
- ❑ Third is the PP (Profile Plane)
- ❑ Front View (FV) or Elevation
- ❑ Top View (TV) or Plan
- ❑ Right Side View (RSV) OR Left Side View (LSV)

# Planes of Projections



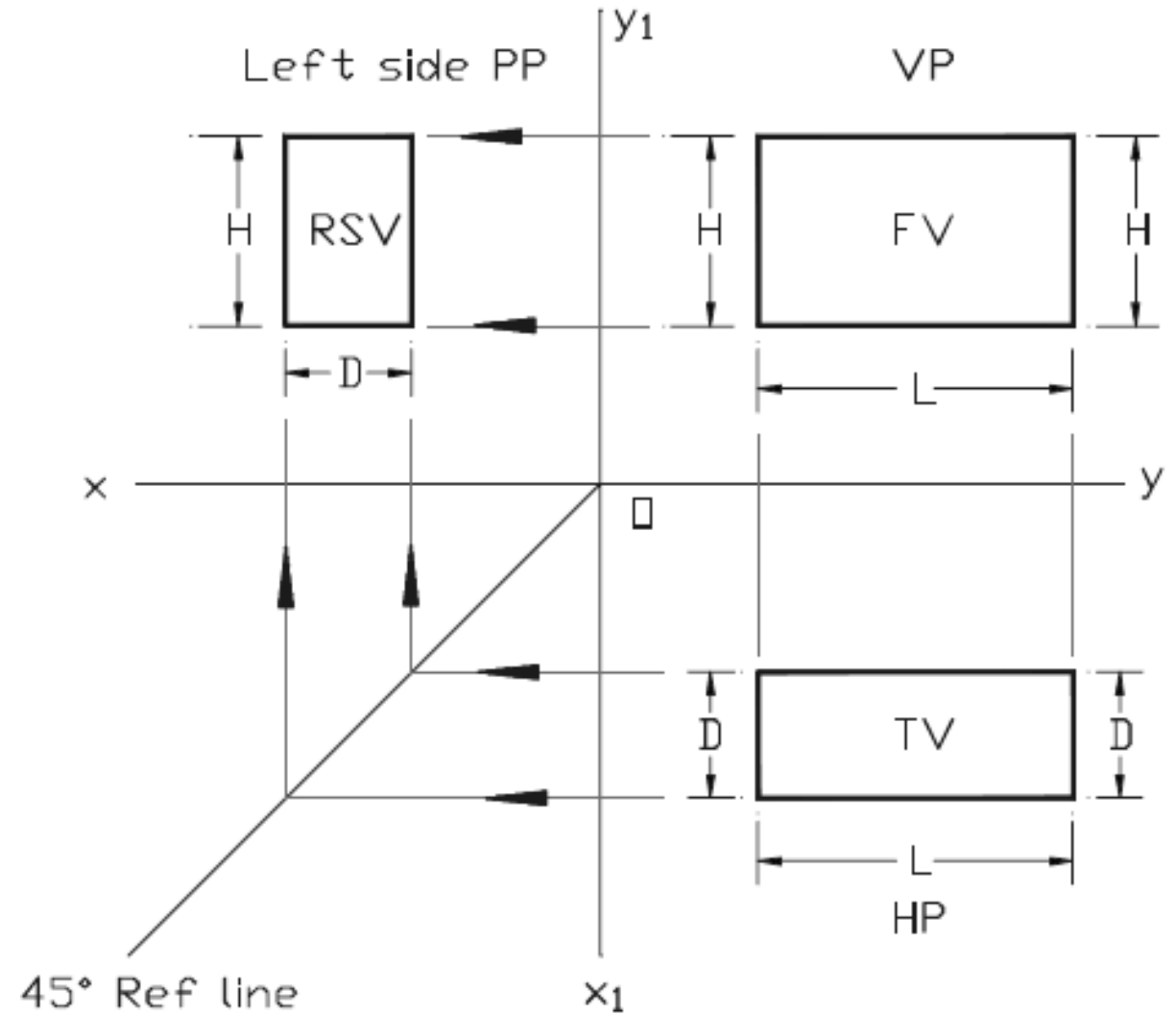
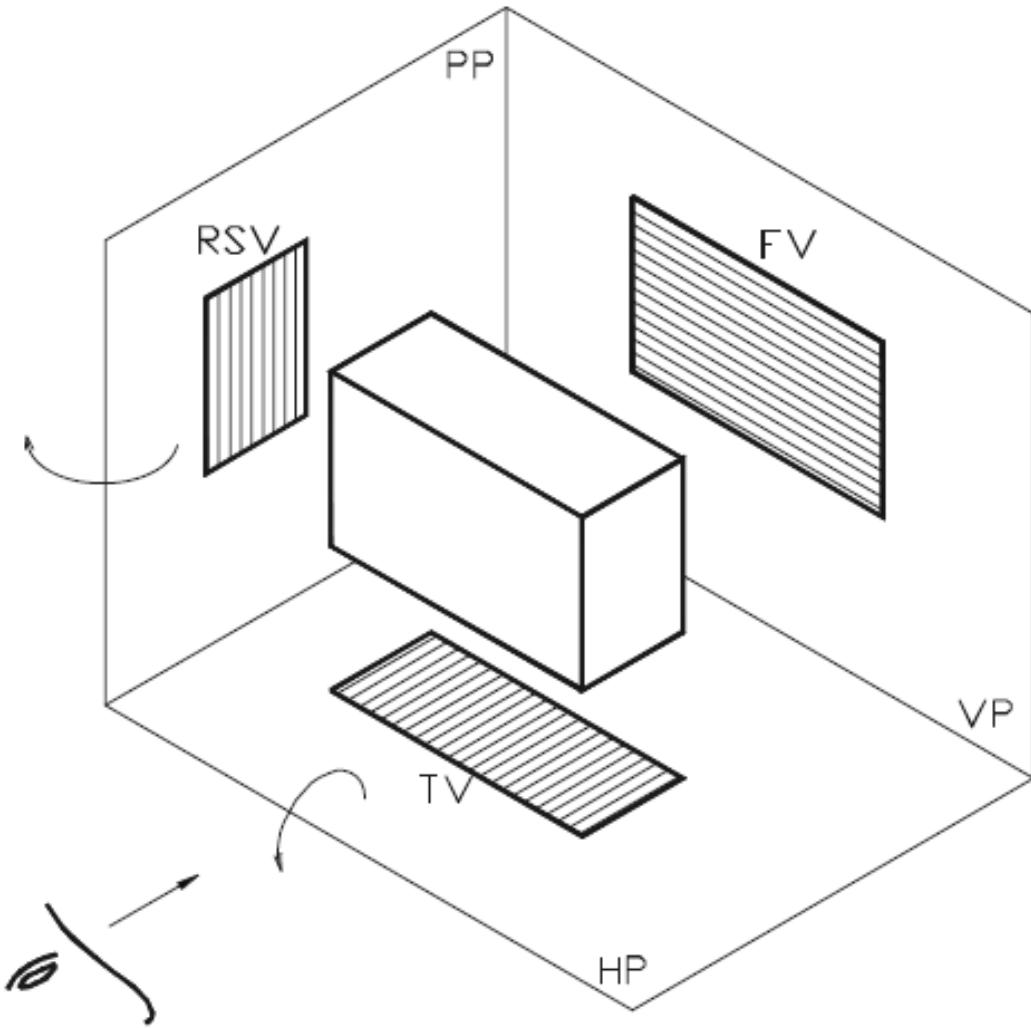
## Principal Planes and Principal axes

- ❑ Object can be situated in any of the quadrants
- ❑ Position of the object is described by above, below, behind, in front of
- ❑ Planes are assumed to be transparent

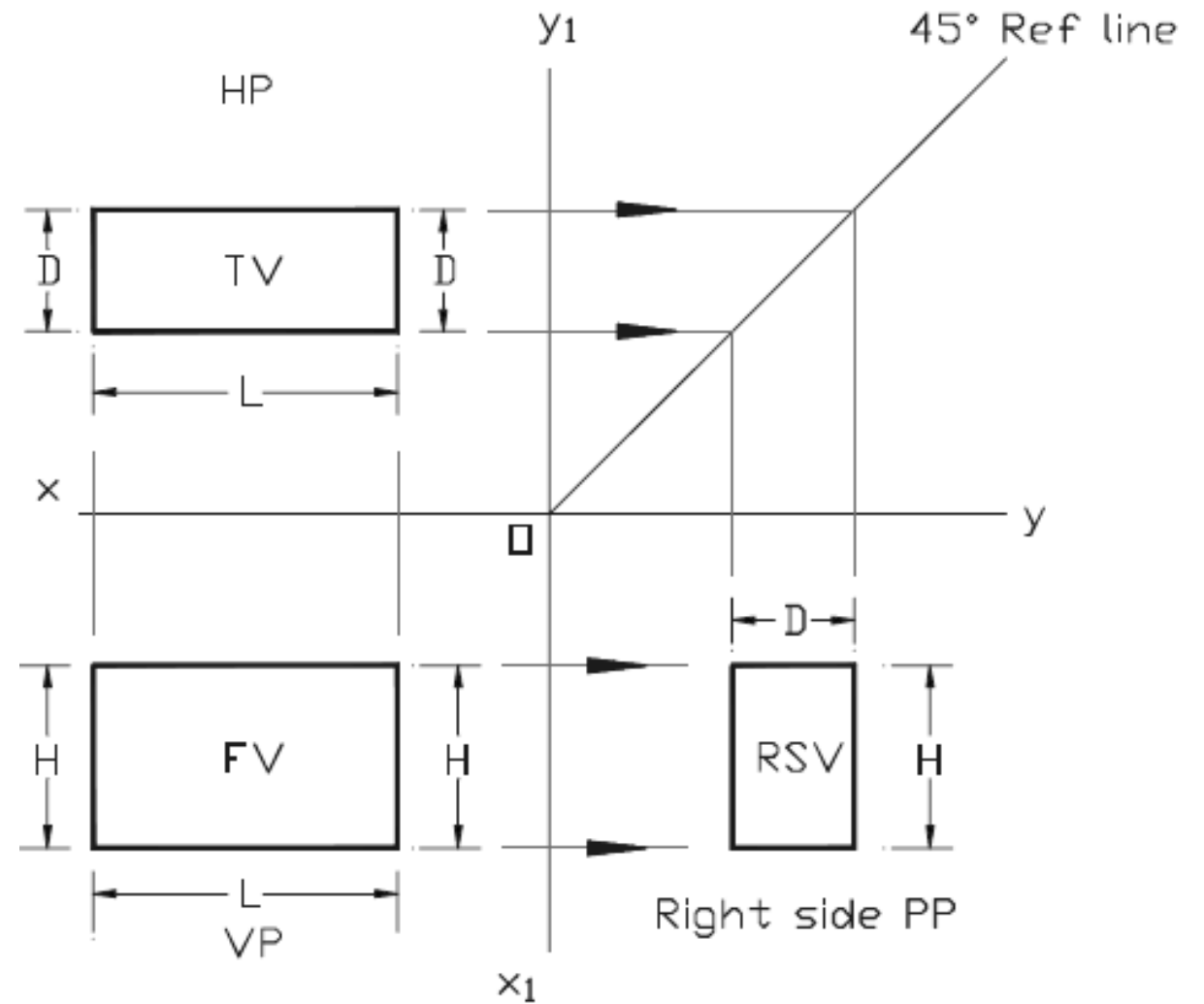
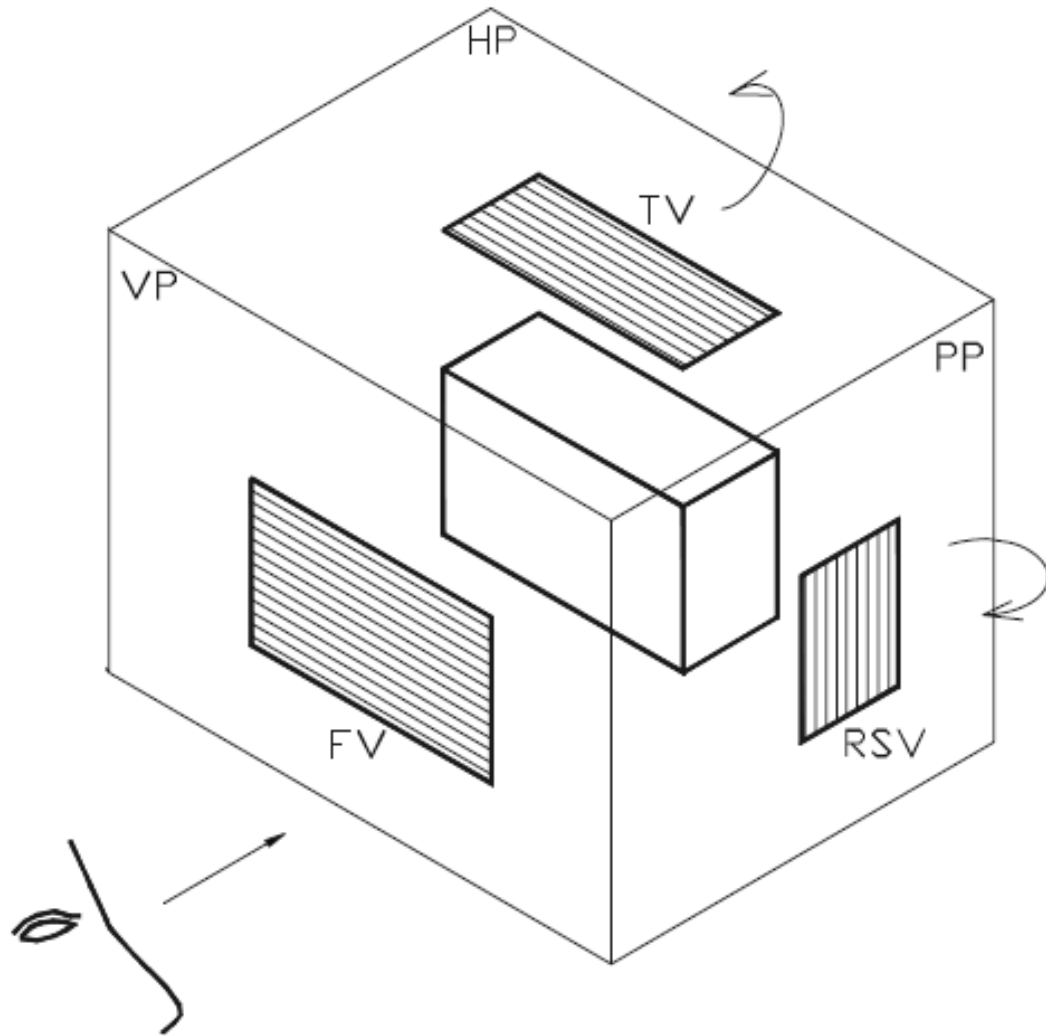




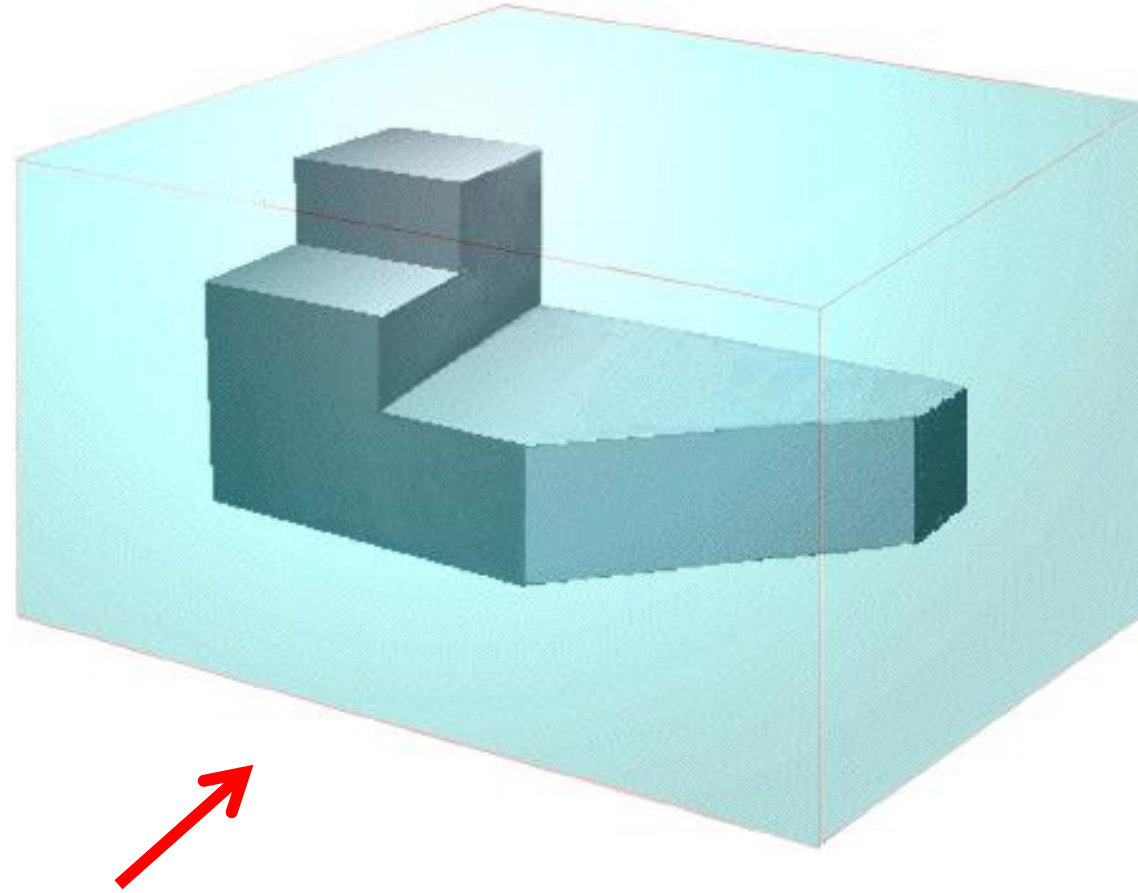
# 1st Angle Method of Projection



# III<sup>rd</sup> Angle Method of Projection



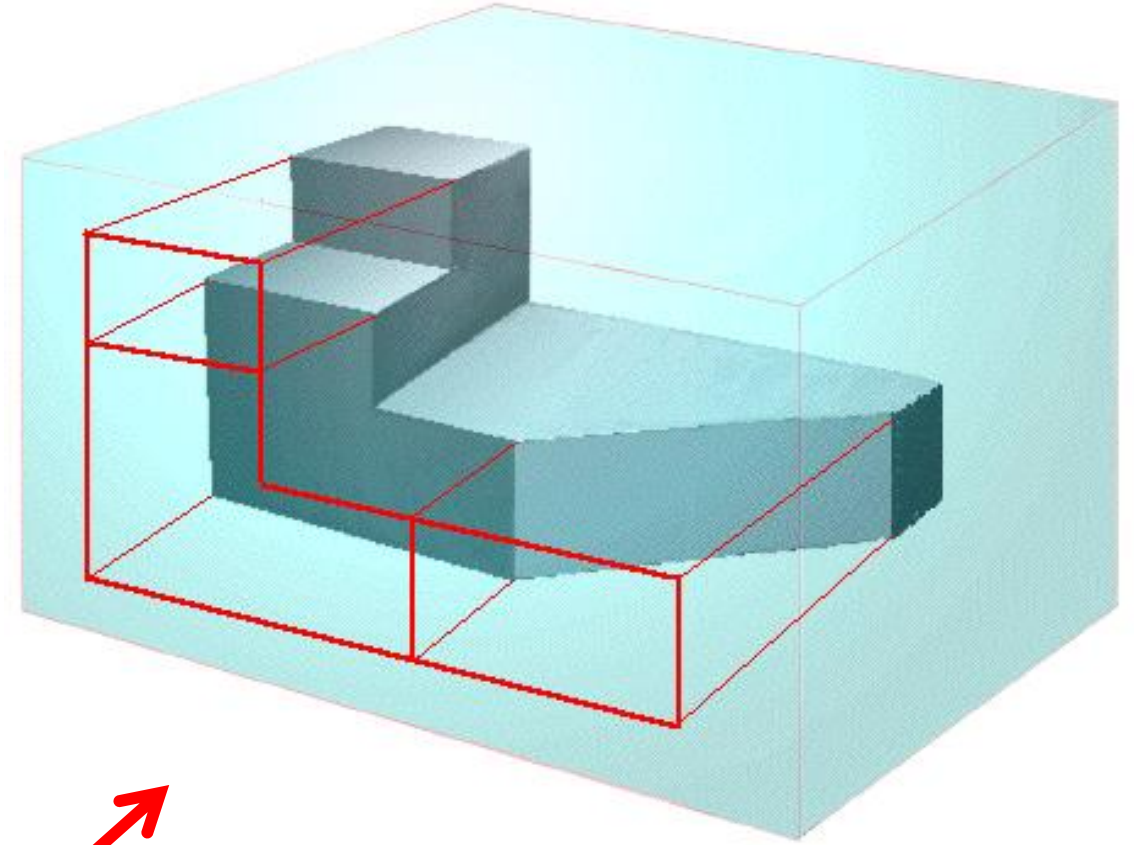
# Example (III Angle Method)



# Example (III Angle Method)



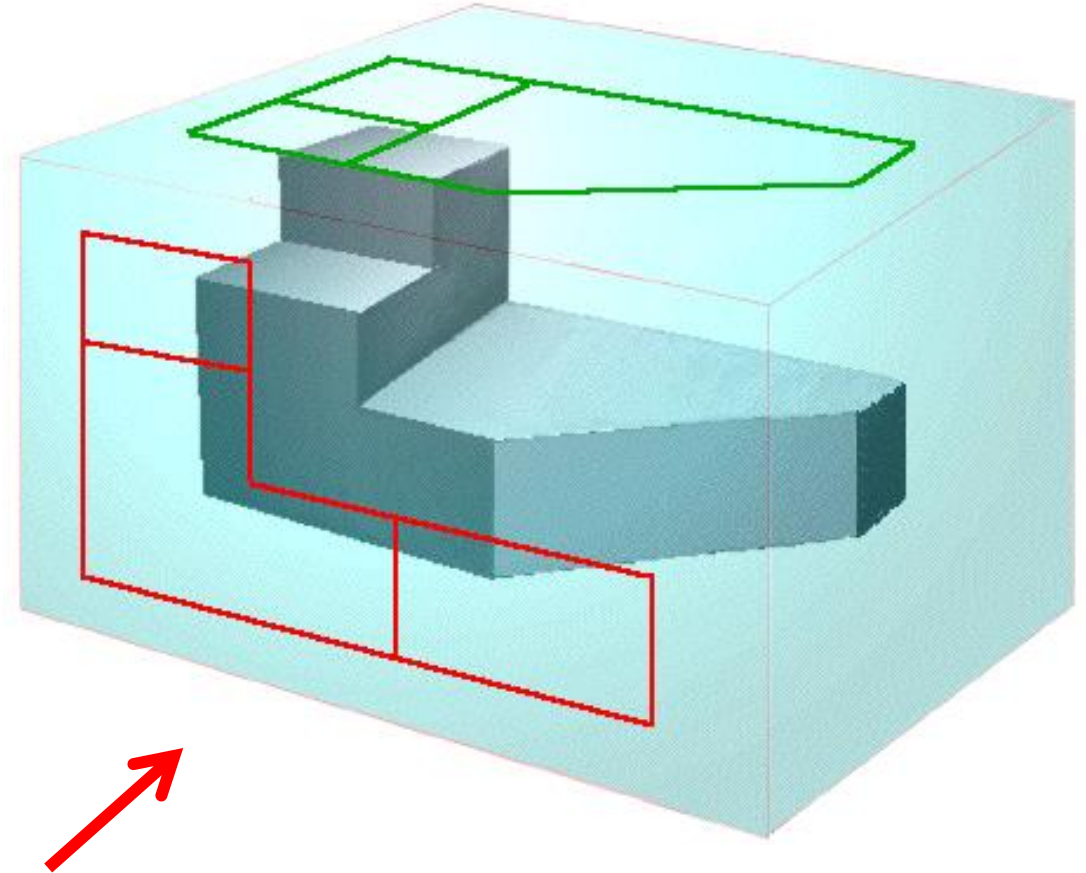
- Project all key points to get front view



# Example (III Angle Method)



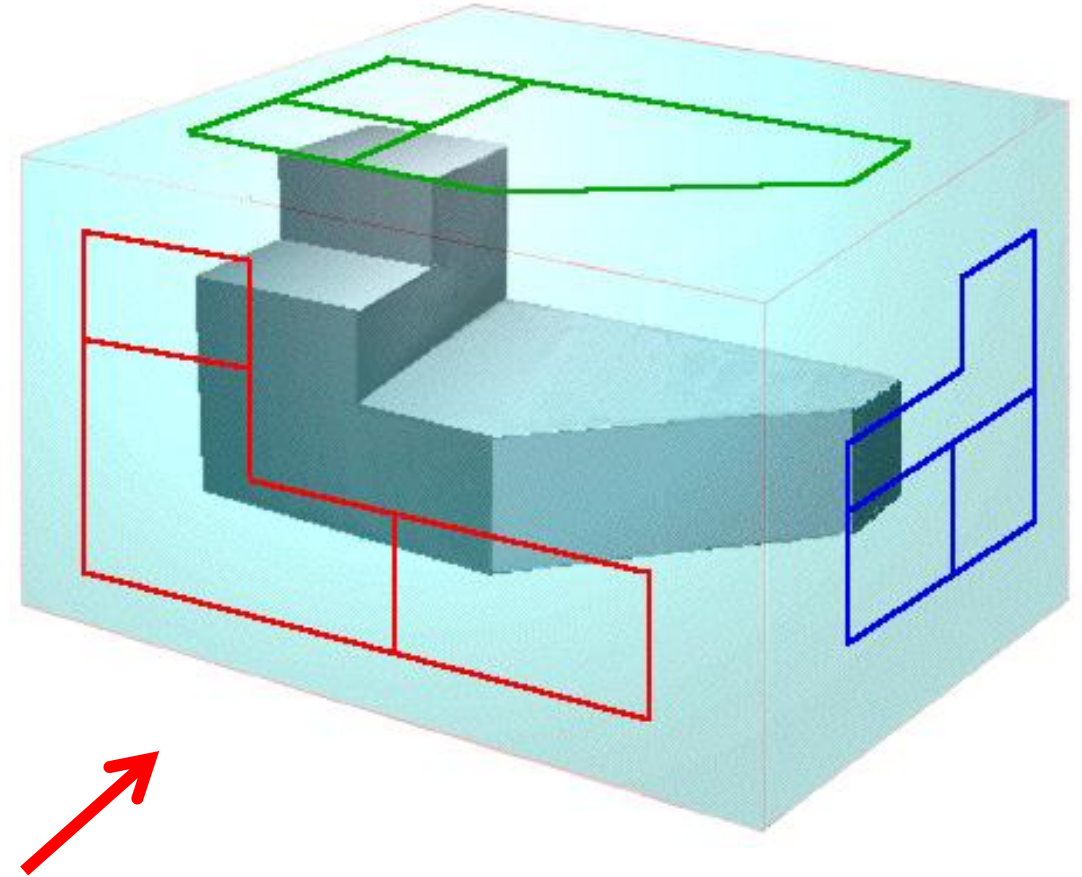
- ❑ Project all key points to get top view



# Example (III Angle Method)



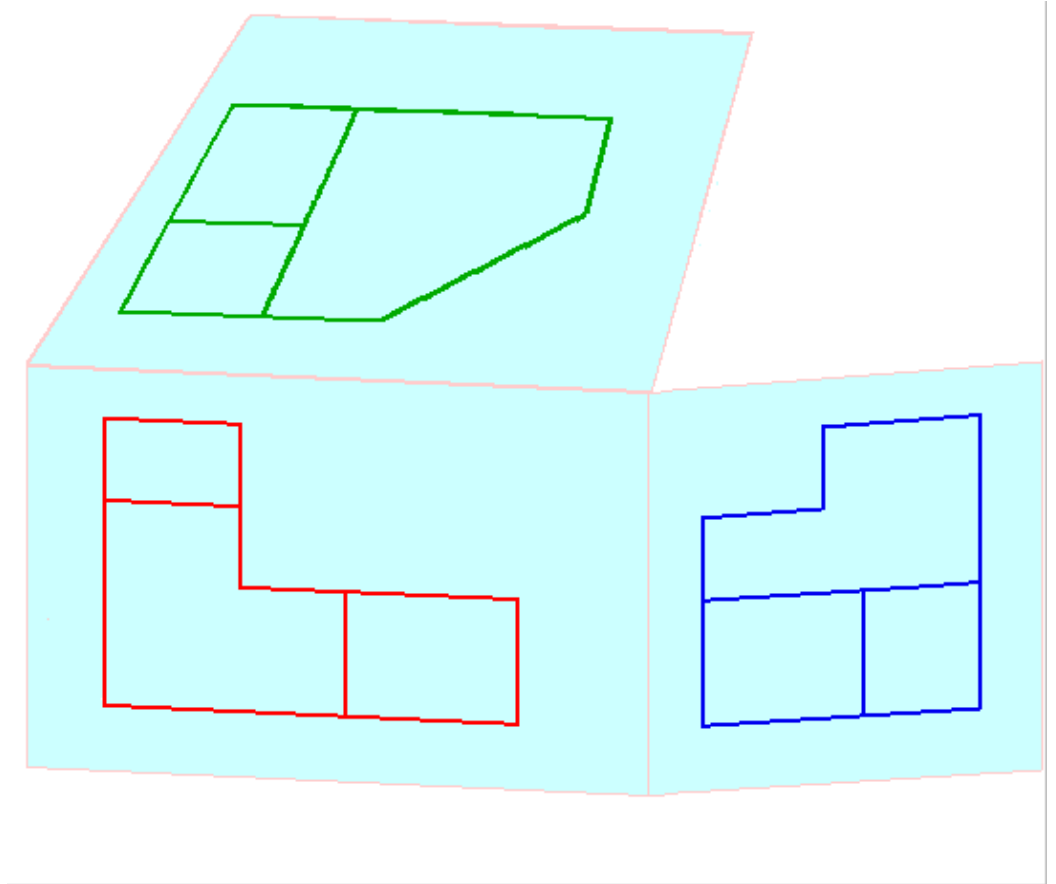
- ❑ Project all key points to get right side view



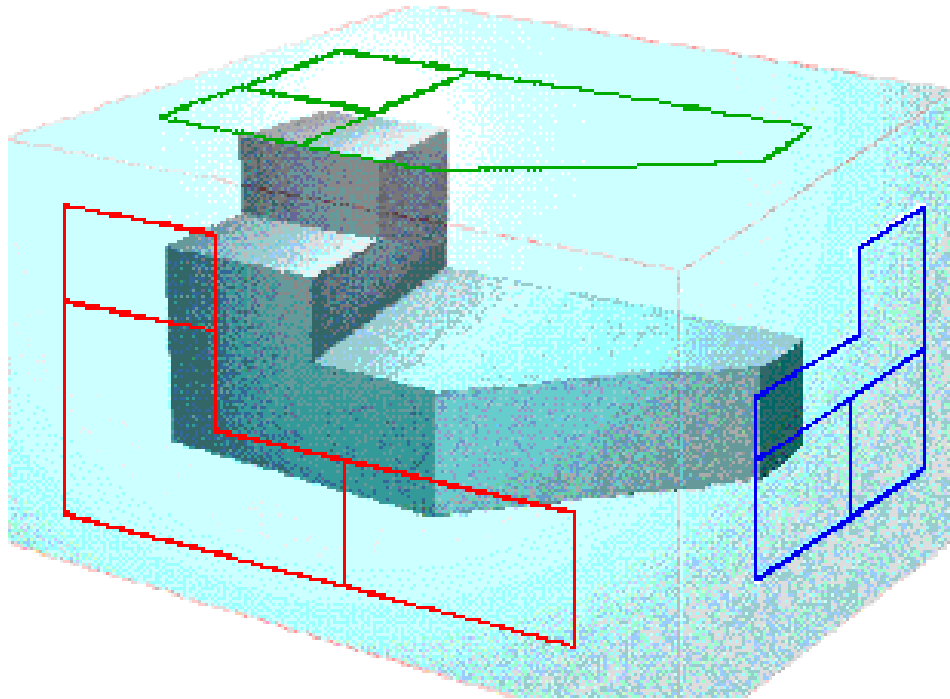
# Example (III Angle Method)



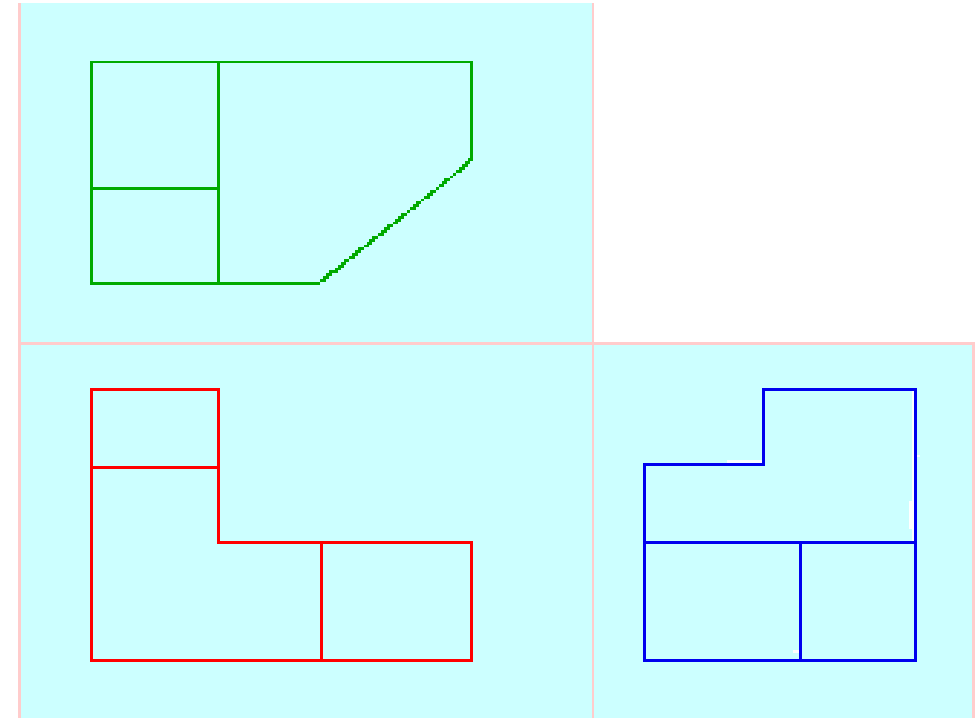
- Now rotate HP & PP to open the 3<sup>rd</sup> quadrant



# Example (III Angle Method)



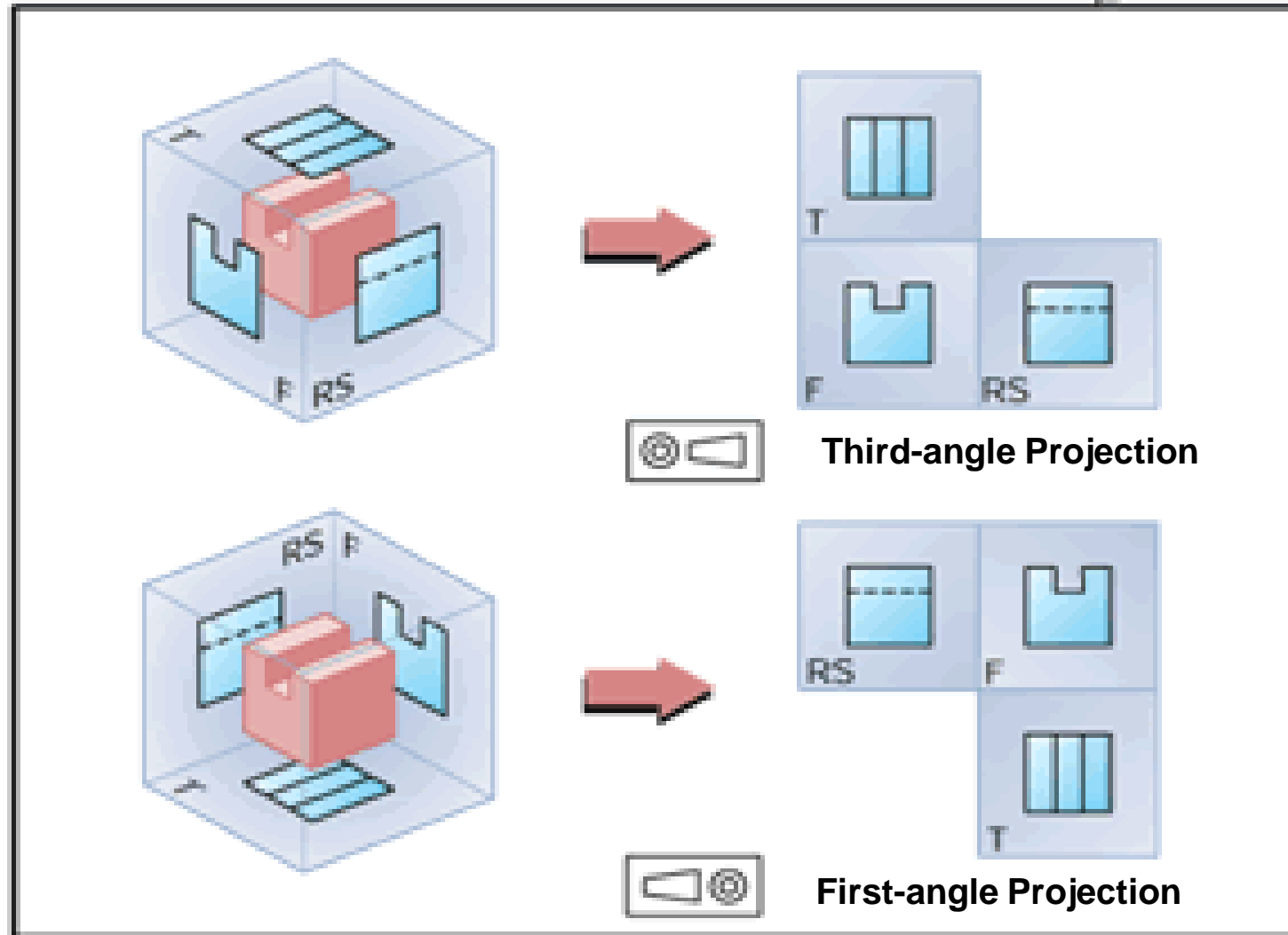
Object in 3<sup>rd</sup> quadrant



Projections



# Comparison of I and III Angle Method of Projections



# Why not II and IV quadrants are used for placing an object?



# I. S. I. Code of Practice



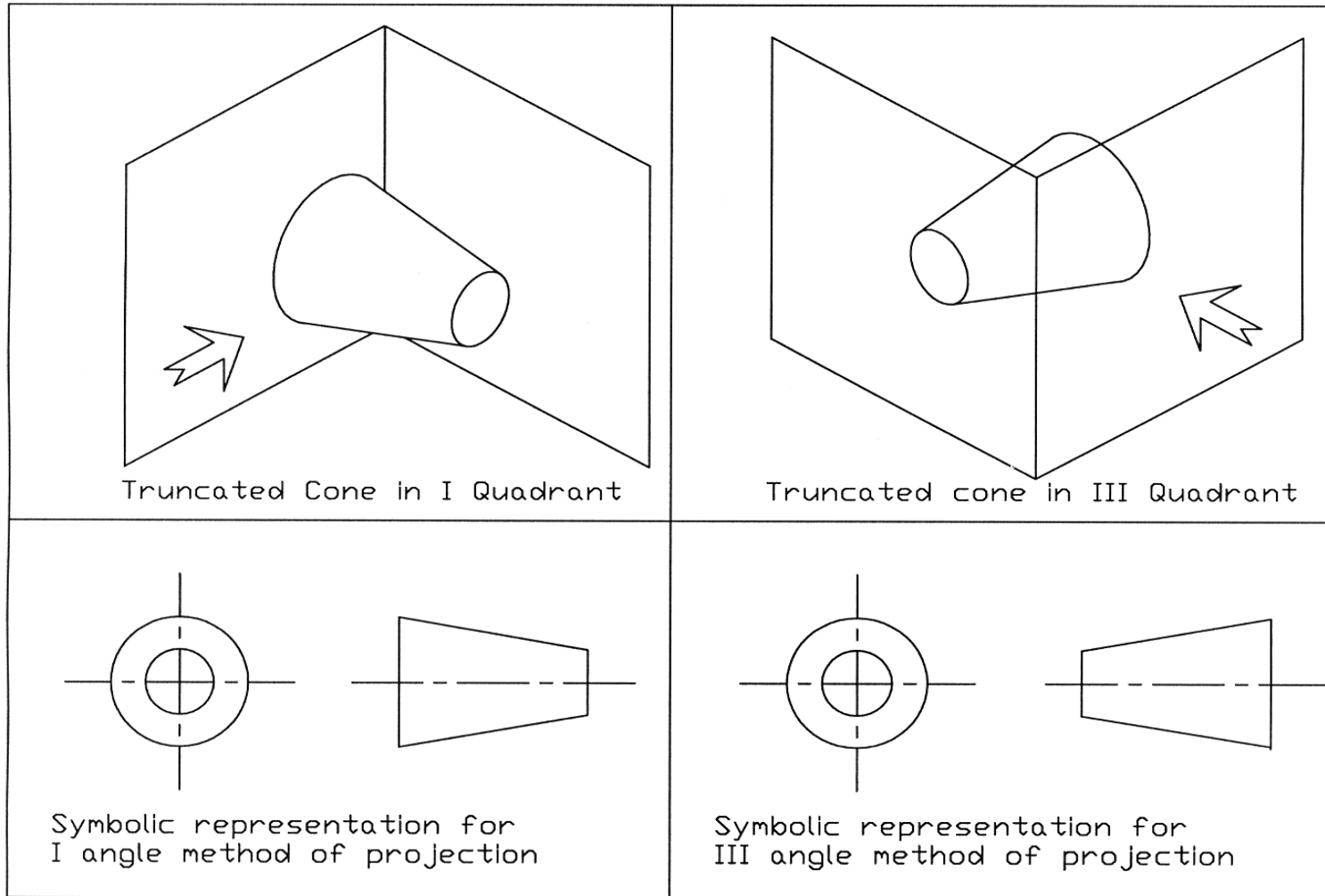
- ❑ The method of first-angle projection is the British standard practice.
- ❑ The third-angle projection is the standard practice followed in America and in the continent of Europe.
- ❑ In our country, the first-angle projection method was formerly in use. The Indian Standard Institution (I.S.I.), in its earlier versions of 'Indian Standard Code of Practice for General Drawing' published in 1955 and revised in 1960 had recommended the use of third-angle projection method.

# I. S. I. Code of Practice



- ❑ In the second revised version of this standard published in December 1973, the committee responsible for its preparation has left the option of selecting first or third-angle projection method to the users.
- ❑ Persons engaged in engineering profession may come across drawings from industries and organizations following any one method.
- ❑ **It is therefore necessary for them to be perfectly conversant with both the methods.**

# Symbolic Representation





**Thank You!**