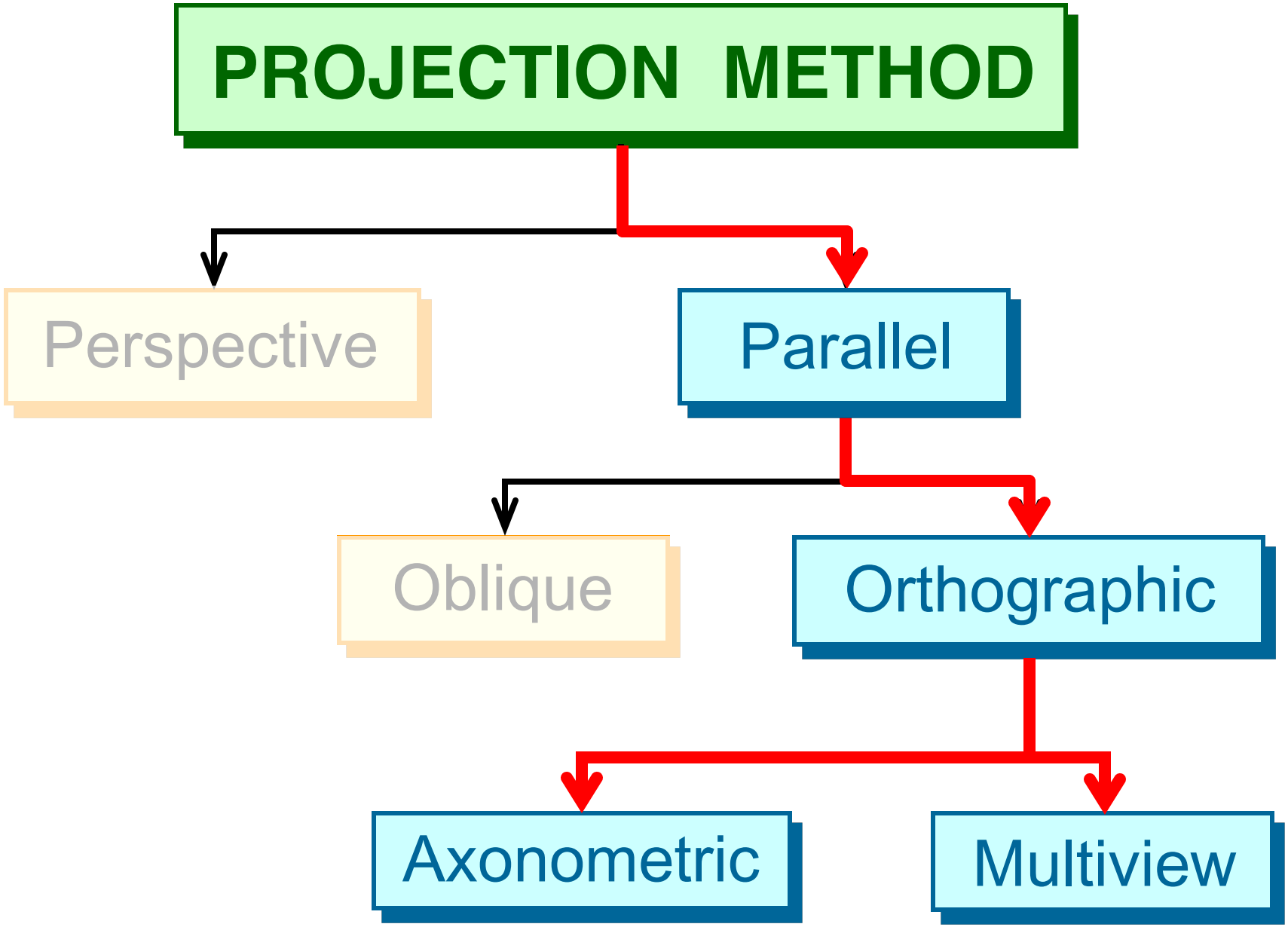
PROJECTION METHOD


PROJECTION METHOD
Perspective
Parallel
Oblique
Orthographic
Axonometric
Multiview

PROJECTION THEORY

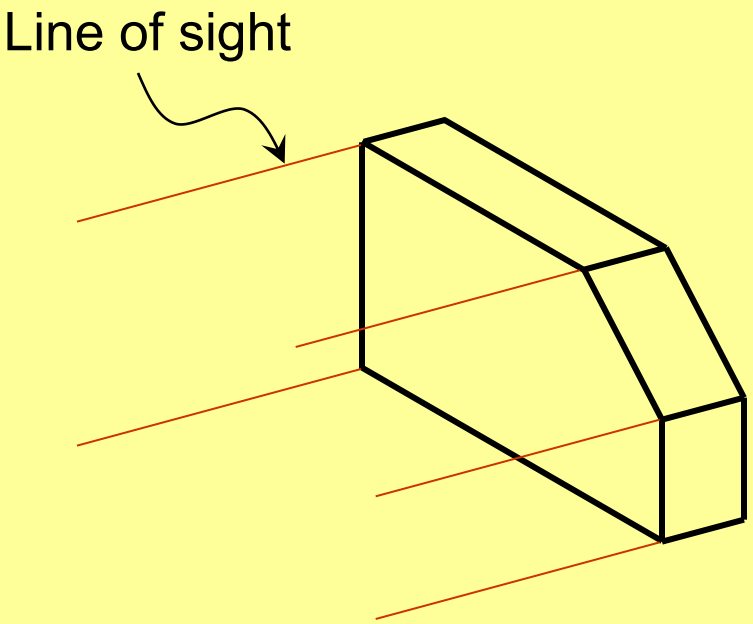
- The projection theory is used to graphically represent 3-D objects on 2-D media (paper, computer screen).

- The projection theory is based on two variables:
  1) Line of sight
  2) Plane of projection (image plane or picture plane)

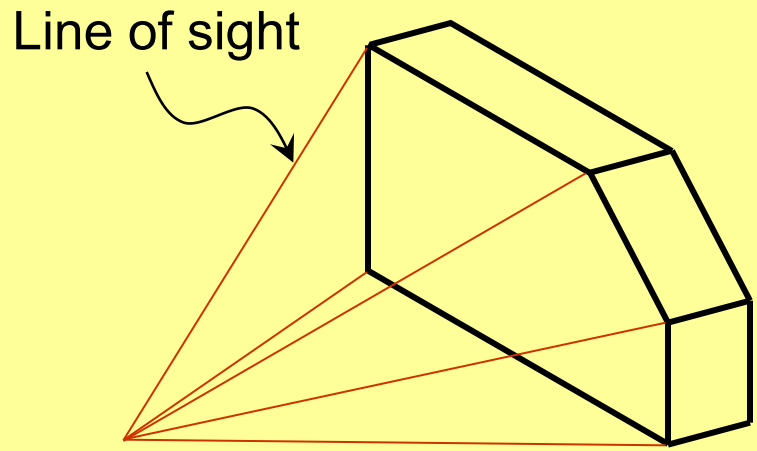
Line of sight is an imaginary ray of light between an observer's eye and an object.

- There are 2 types of LOS : parallel and converge

Parallel projection



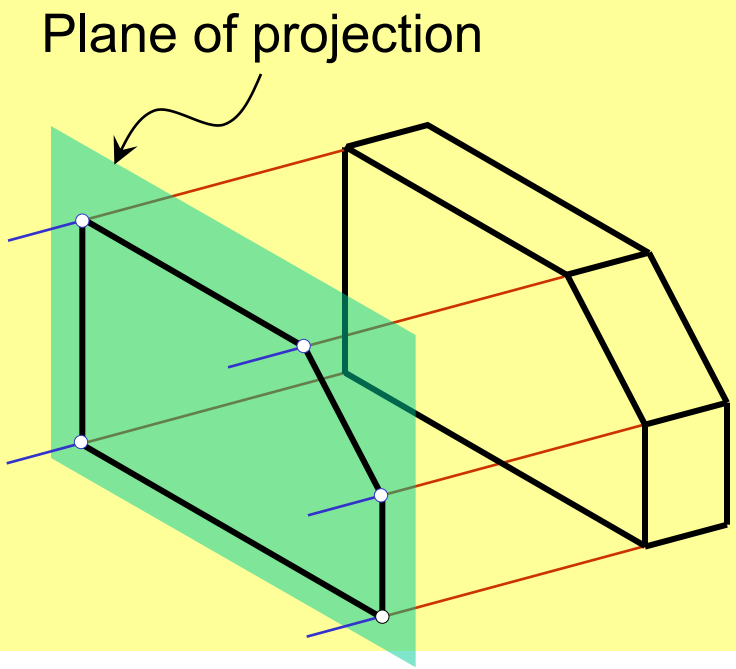
Perspective projection



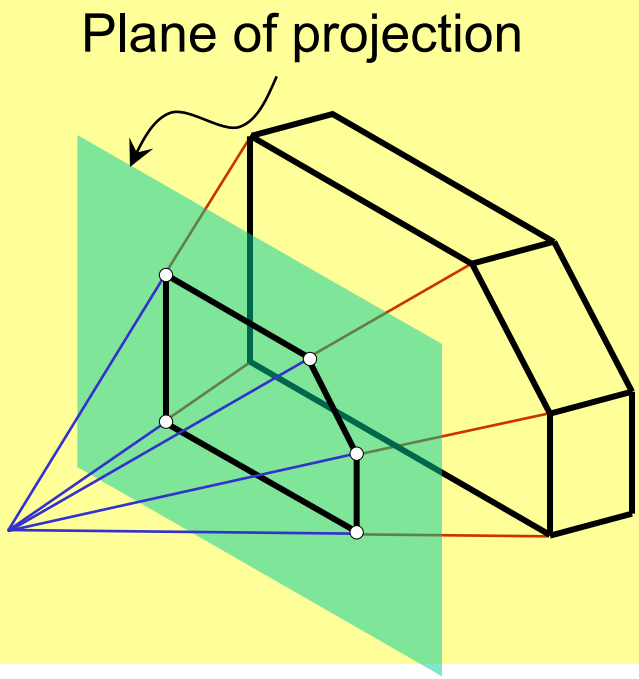
Plane of projection is an imaginary flat plane which the image is created.

- The image is produced by connecting the points where the LOS pierce the projection plane.

Parallel projection

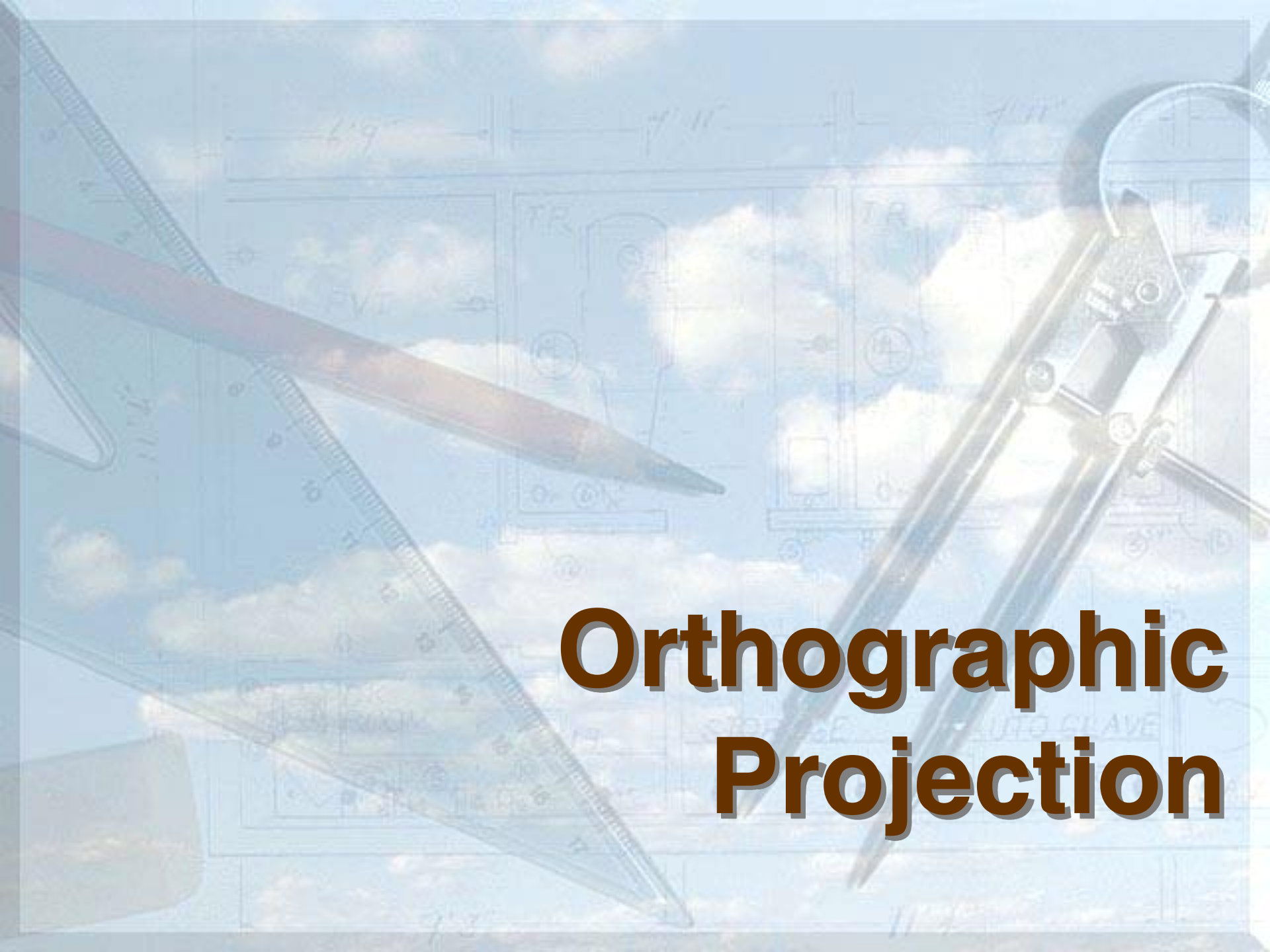


Perspective projection



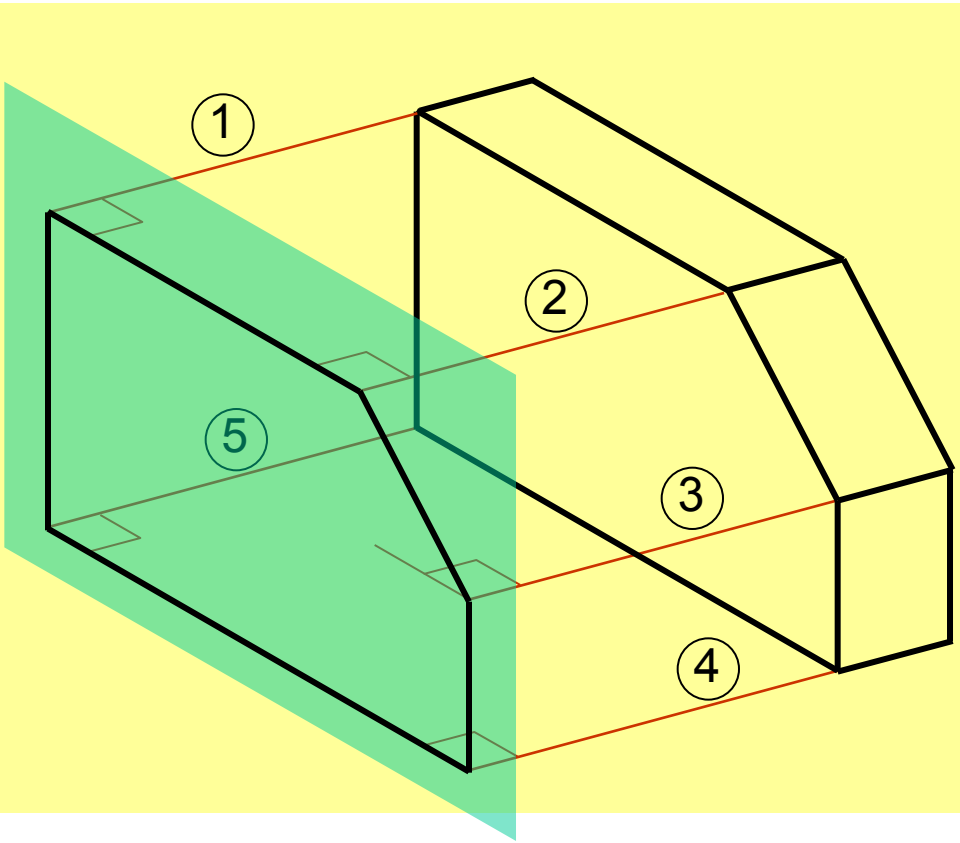
Disadvantage of Perspective Projection

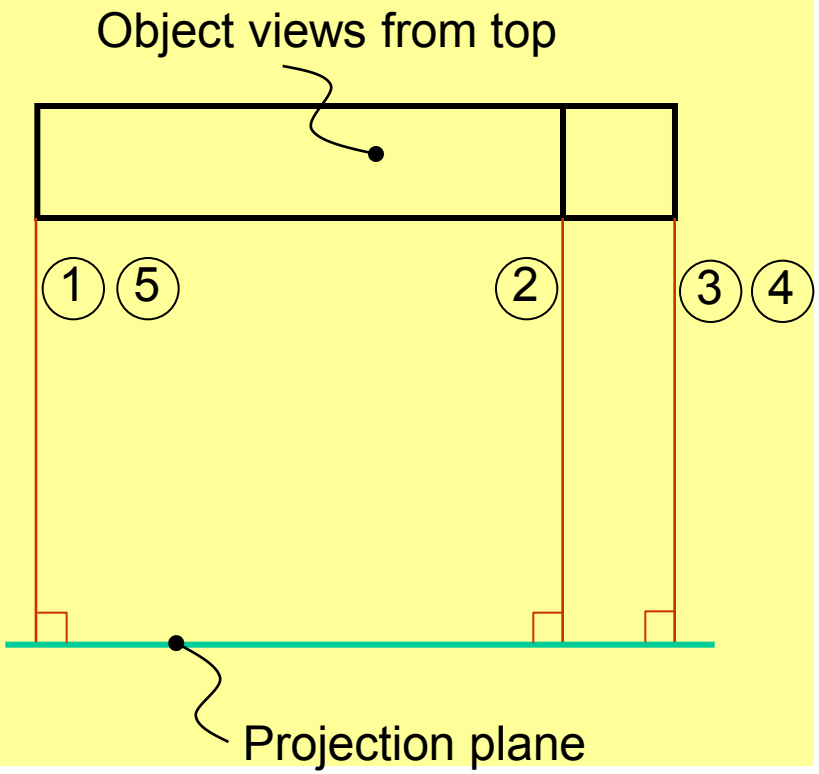
1) It is difficult to create.
2) It does not reveal exact shape and size.


Orthographic
Projection

MEANING

Orthographic projection is a parallel projection technique in which the parallel lines of sight are ***perpendicular*** to the projection plane





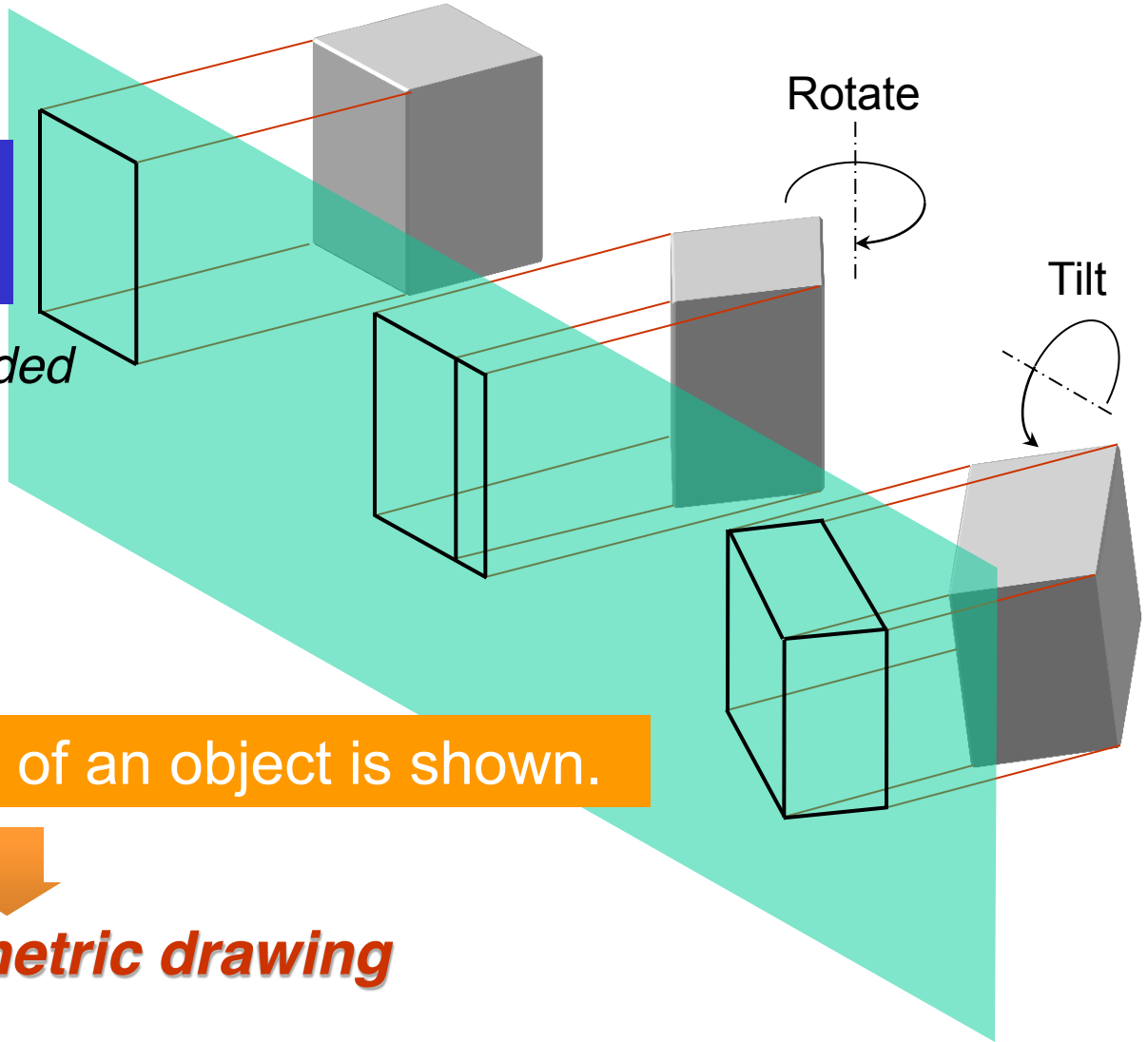
ORTHOGRAPHIC VIEW

Orthographic view depends on relative position of the object to the line of sight.

Two dimensions of an object is shown.

More than one view is needed to represent the object.

Multiview drawing



Three dimensions of an object is shown.

Axonometric drawing

ORTHOGRAPHIC VIEW

NOTES

- Orthographic projection technique can produce either

  1. ***Multiview drawing***
     that each view show an object in two dimensions.

  2. ***Axonometric drawing***
     that show all three dimensions of an object in one view.

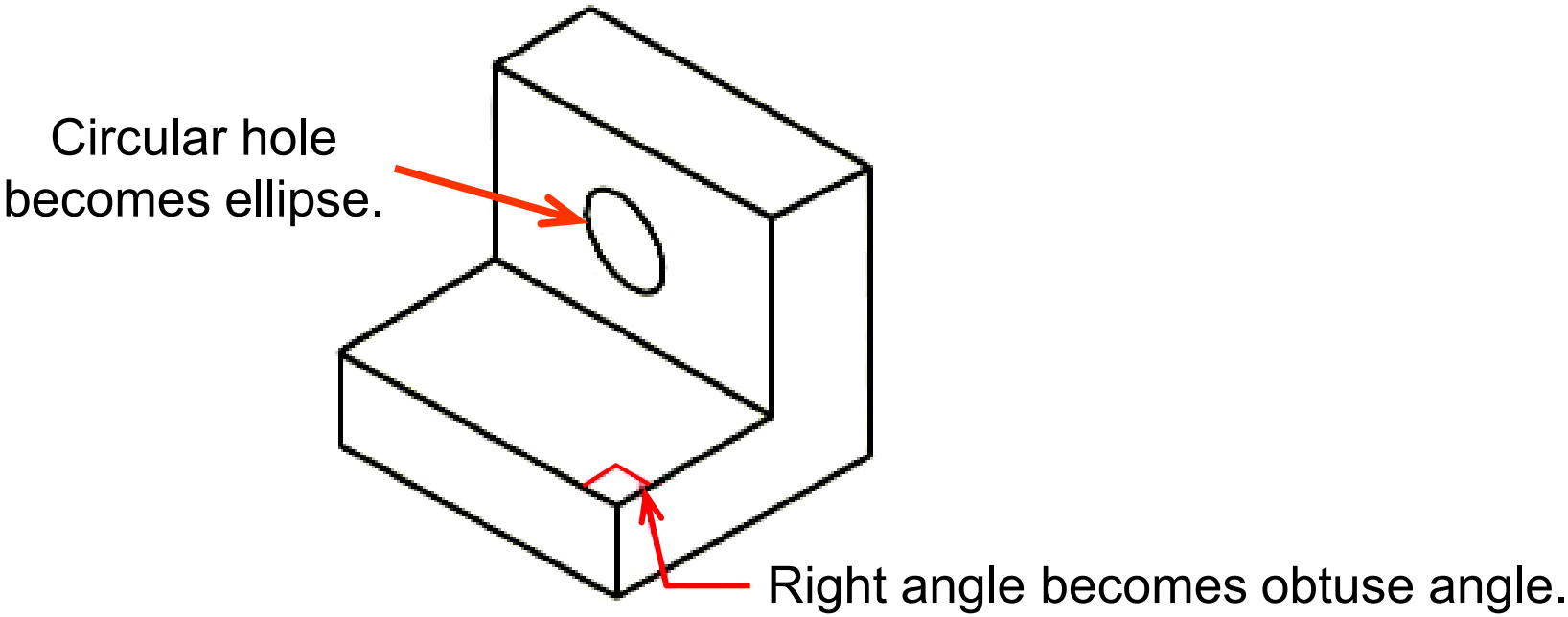
- Both drawing types are used in technical drawing for communication.

Axonometric (Isometric) Drawing

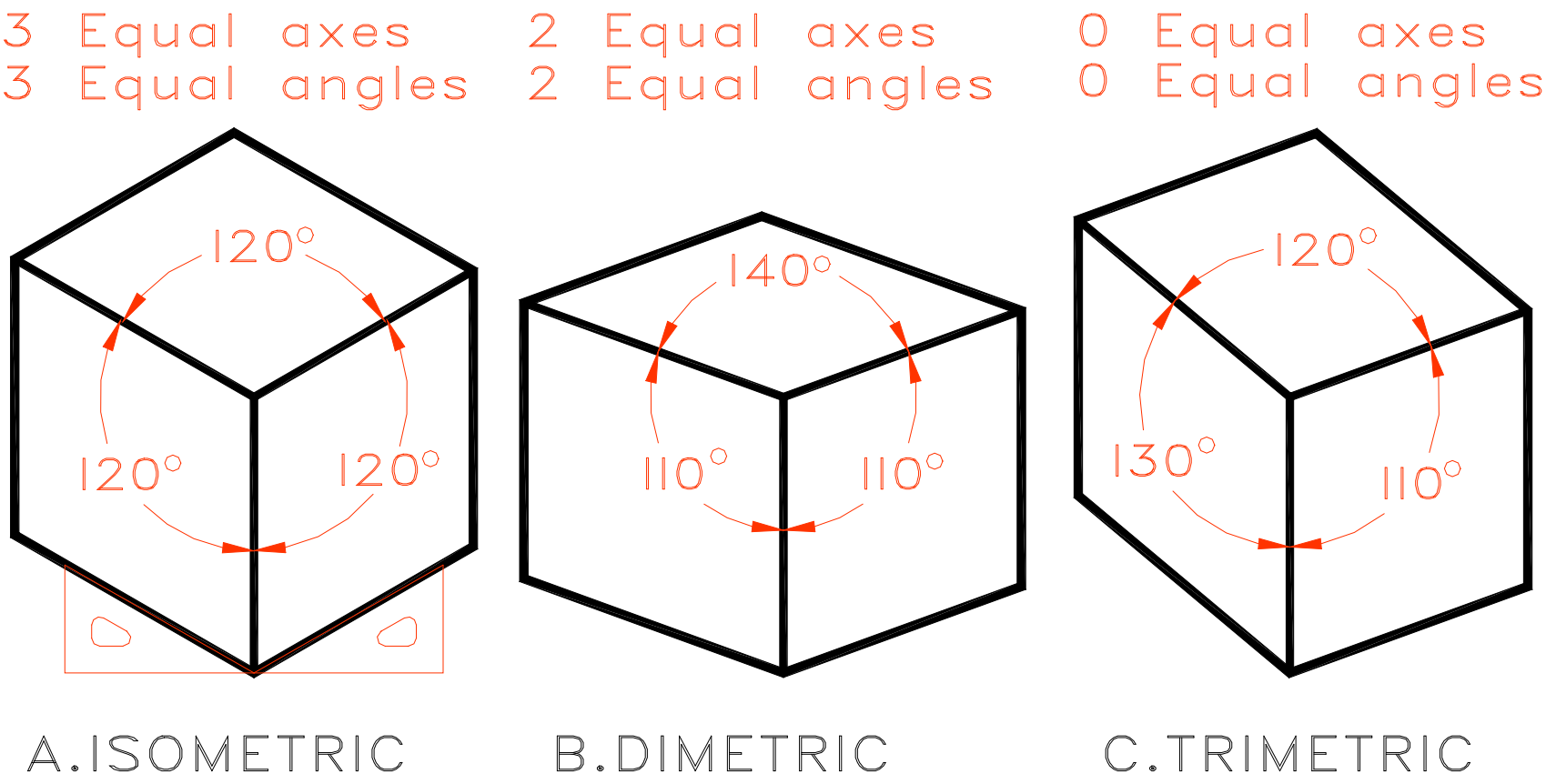
Advantage Easy to understand

Disadvantage Shape and angle distortion

Example Distortions of shape and size in isometric drawing



Types of Axonometrics

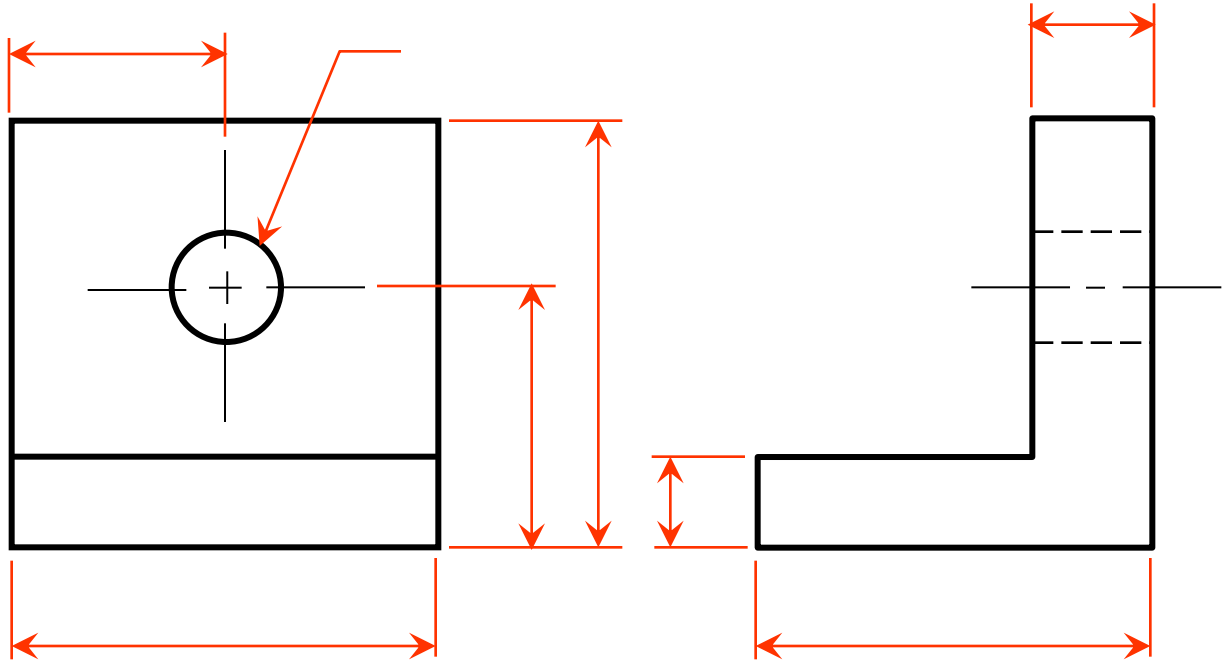


Multiview Drawing

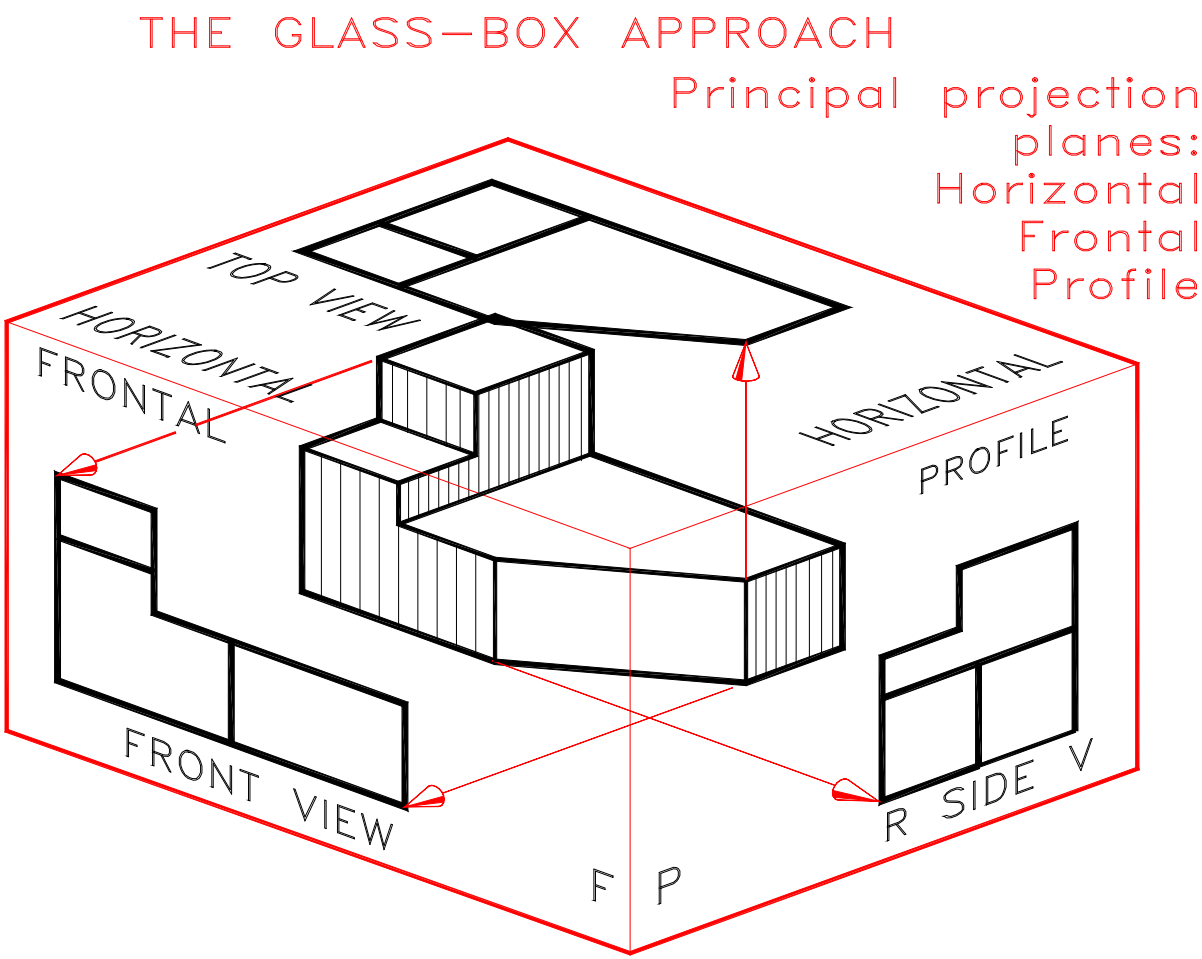
Advantage It represents accurate **shape and size.**

Disadvantage Require practice in writing and reading.

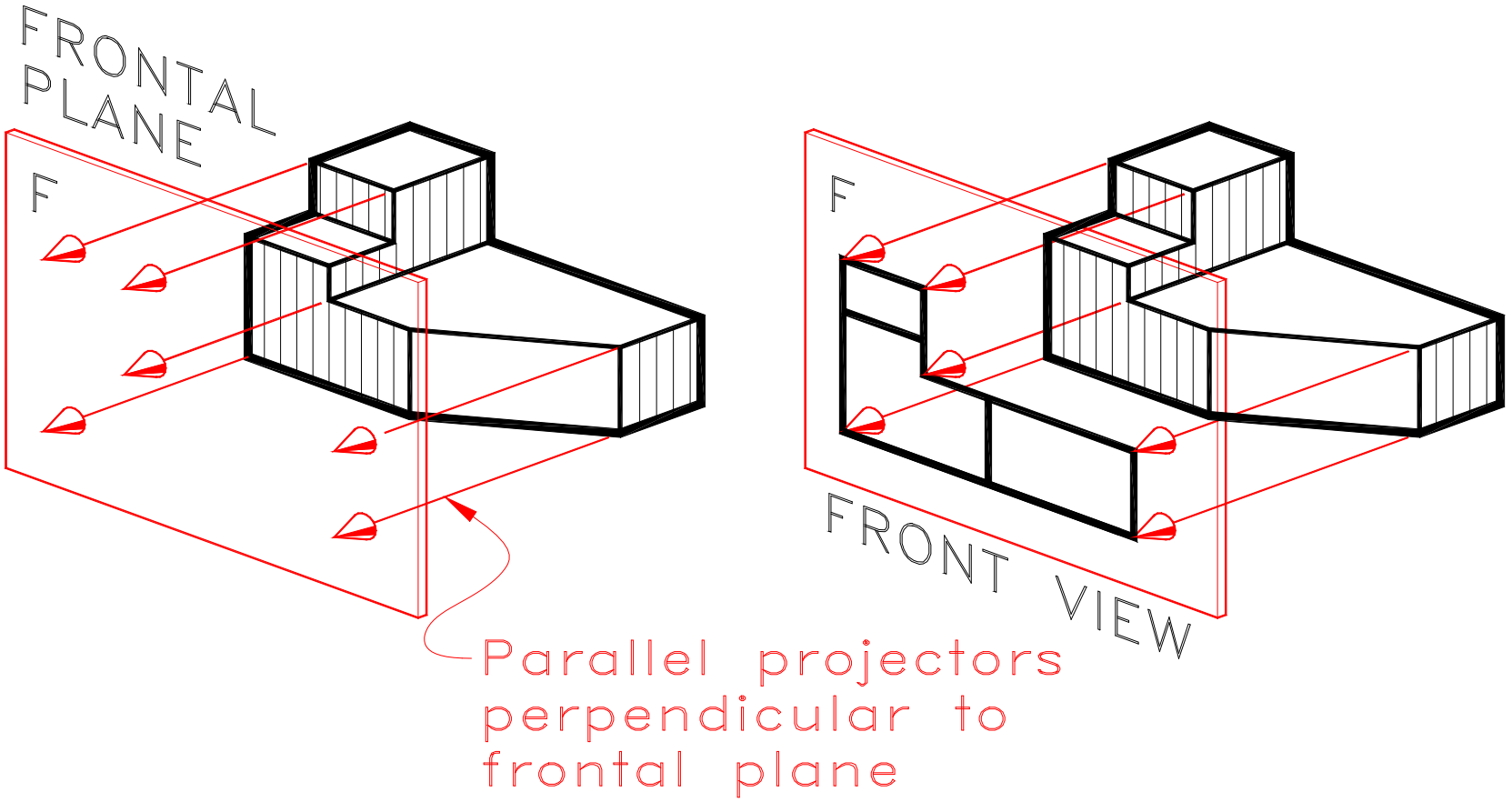
Example Multiviews drawing (2-view drawing)



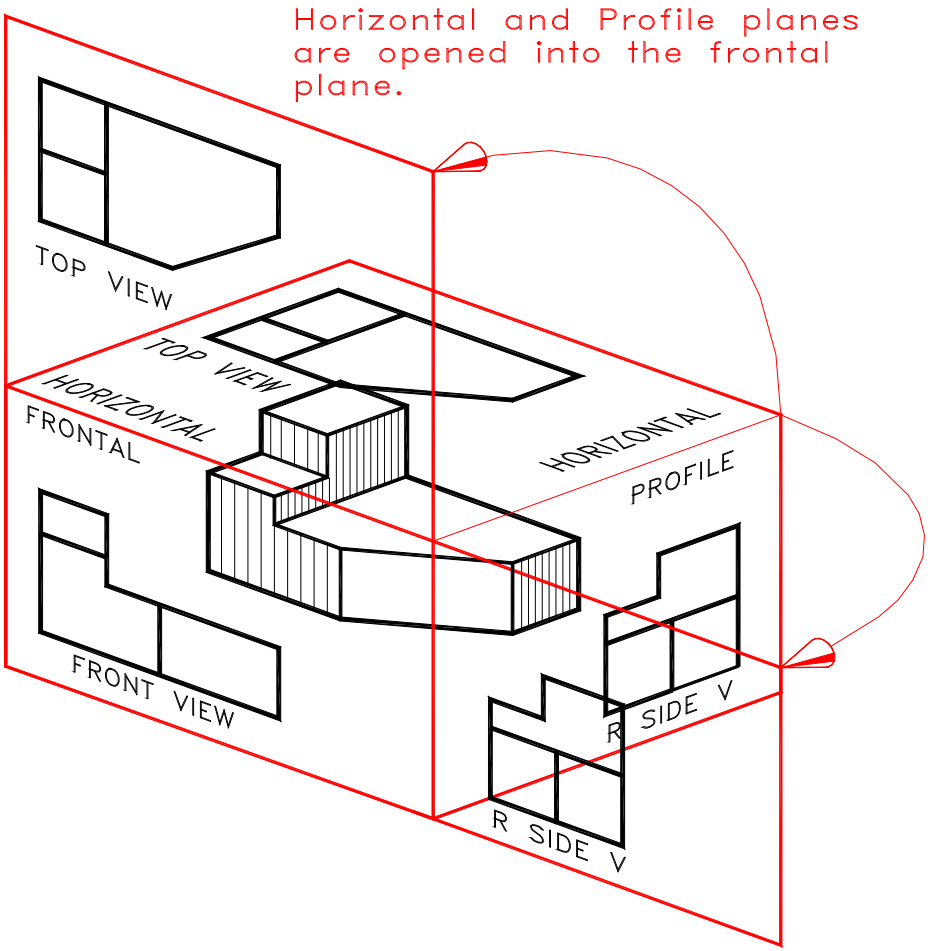
The Glass Box Approach



Orthographic Projection

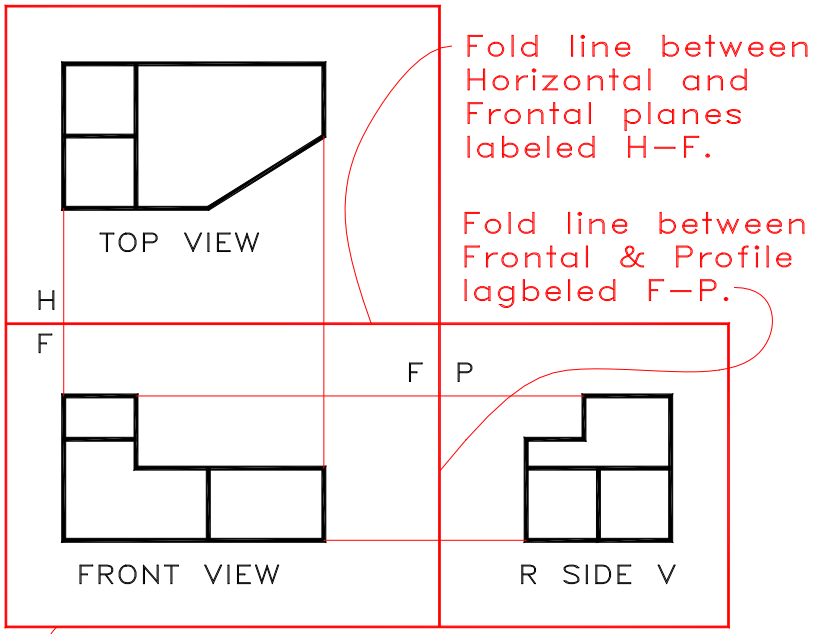


Opening the Box



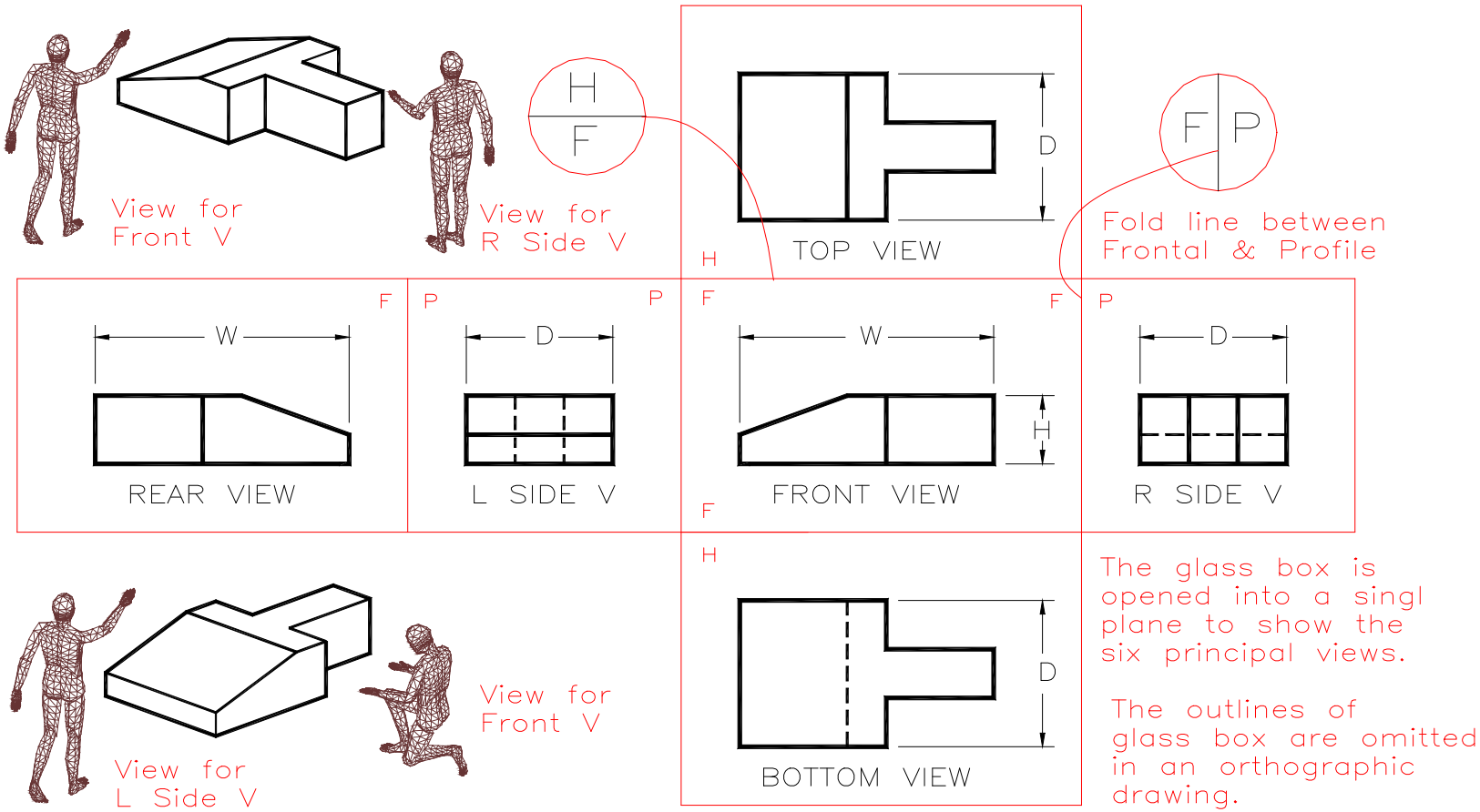
Final Views

The standard arrangement of three orthographic views:
Top View above the Front View
R Side View right of the Front View

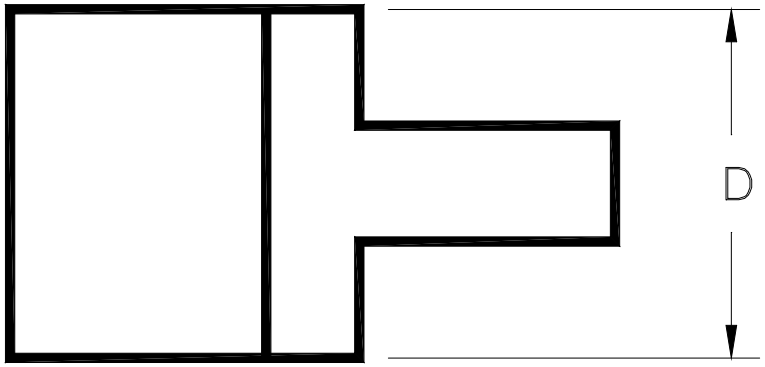


Six Orthographic Views

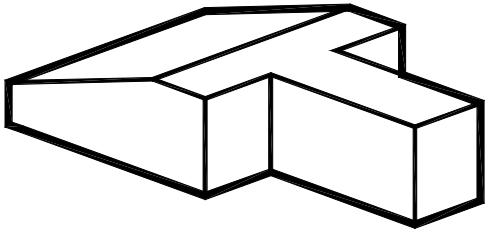
Laying Out All Six Views

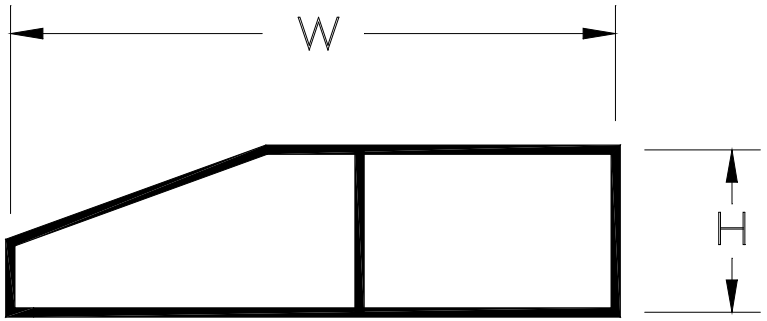


Three Primary Views

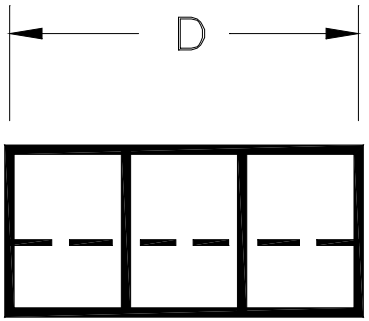


TOP VIEW



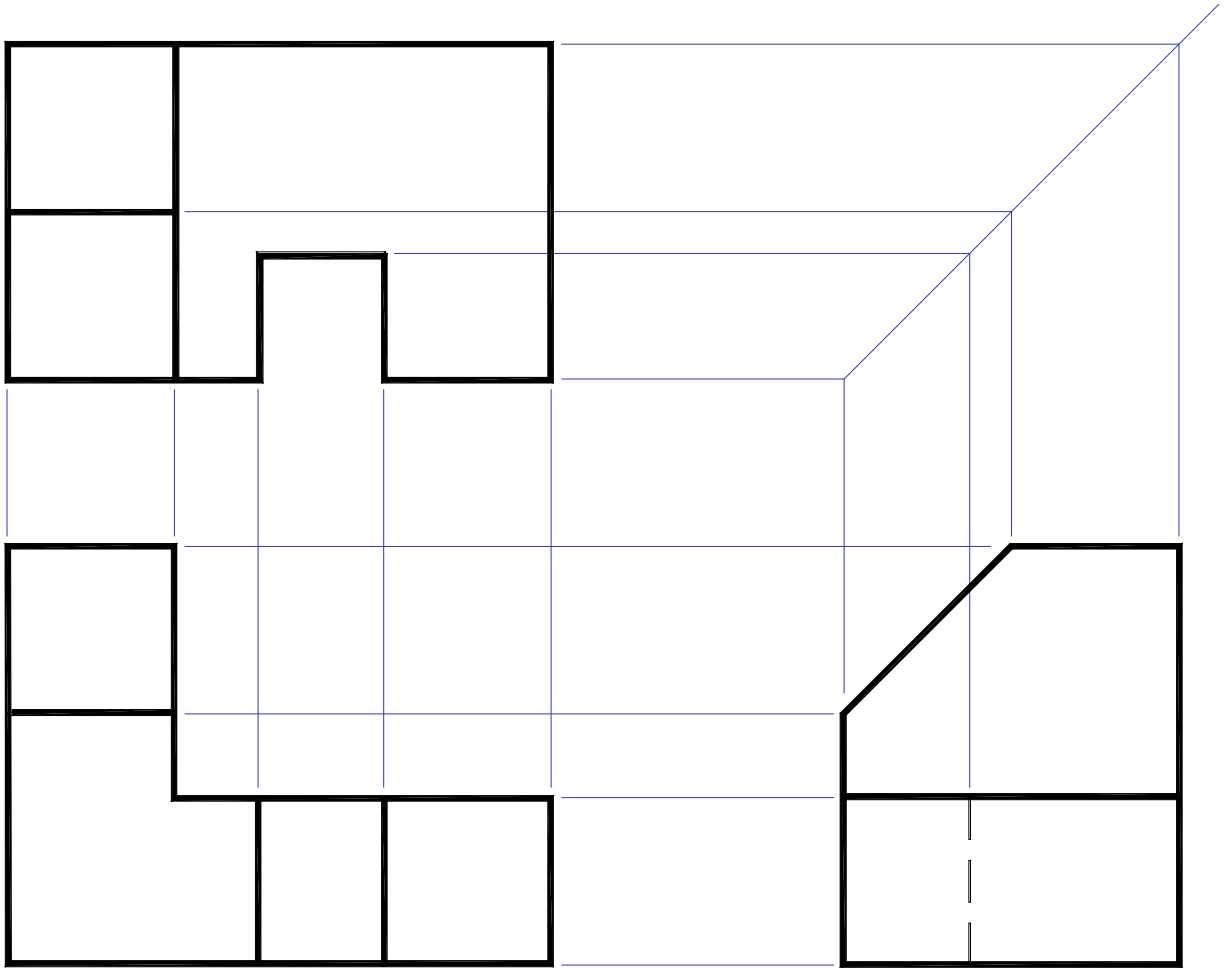


FRONT VIEW

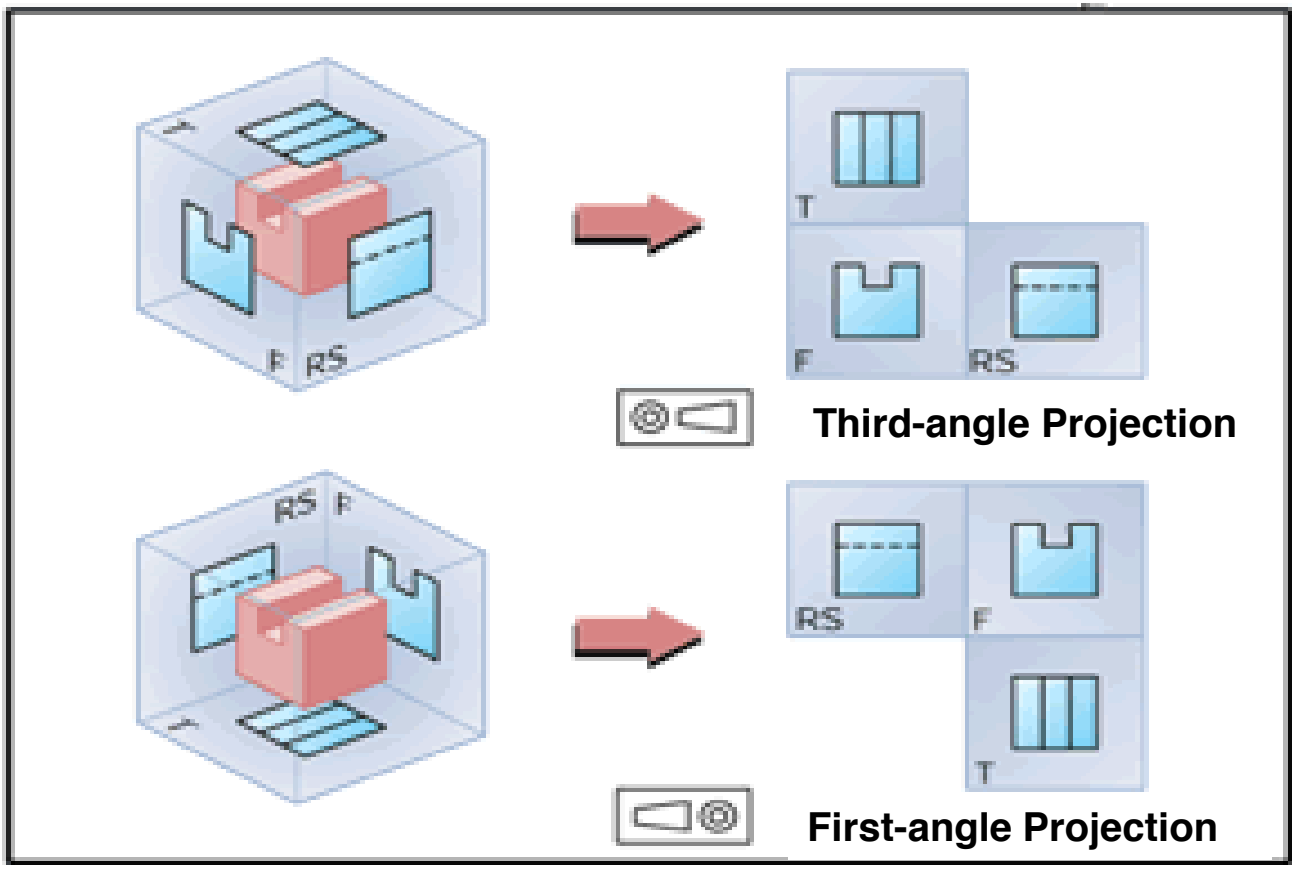


R SIDE V

Construction of Views



First and Third Angle Projections



- First Angle – International
- Third Angle – U.S.