

ENGINEERING DRAWING

**Prepared by
Dr. Samy Aly Hassan**

2024 - 2025

LECTURE 5

- **Projection Methods**
- **Projection Theory**
- **Projection Systems**
- **Multi View Projections**

PROJECTION METHOD

```
graph TD; A[PROJECTION METHOD] --> B[Perspective]; A --> C[Parallel]; C --> D[Oblique]; C --> E[Orthographic]; E --> F[Isometric]; E --> G[Multi-view];
```

Perspective

Parallel

Oblique

Orthographic

Isometric

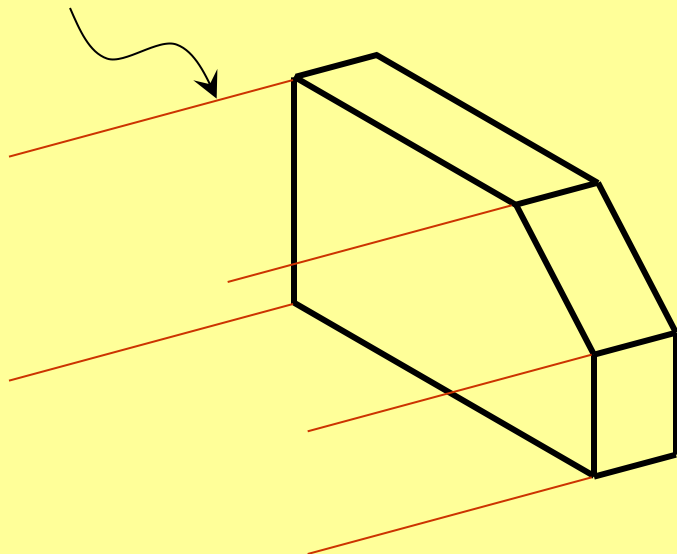
Multi-view

PROJECTION THEORY

- The projection theory is used to graphically represent 3-D objects on 2-D media (paper, computer screen).
- There are 2 types of projection : parallel and converge

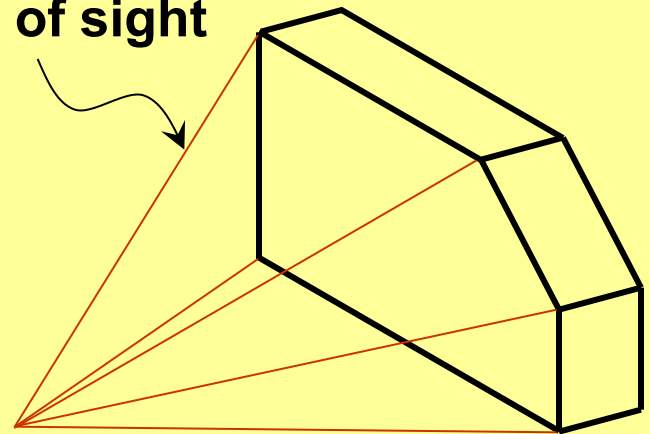
Parallel projection

Line of sight



Converge projection

Line of sight

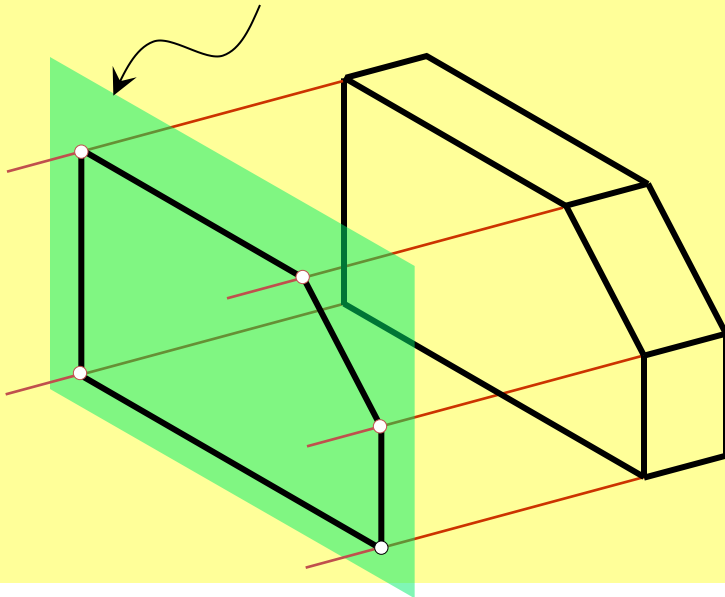


Plane of projection: is an imaginary flat plane in which the image is created.

- The image is produced by connecting the points that appear at the projection plane.

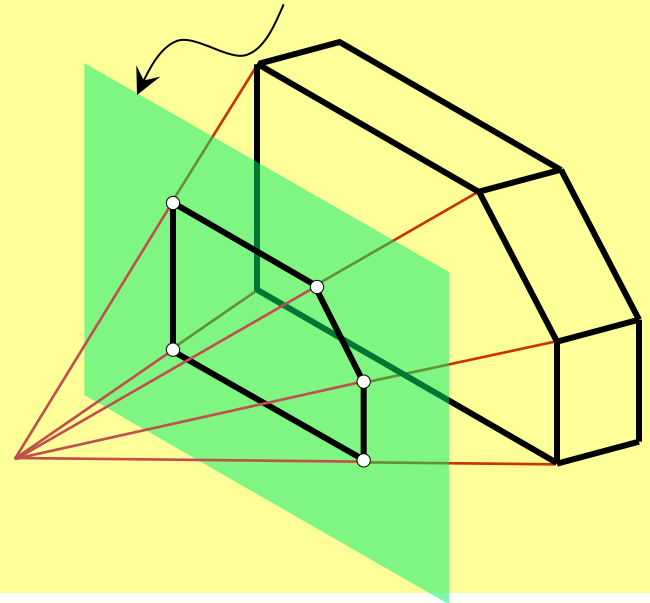
Parallel projection

Plane of projection



Converge projection

Plane of projection



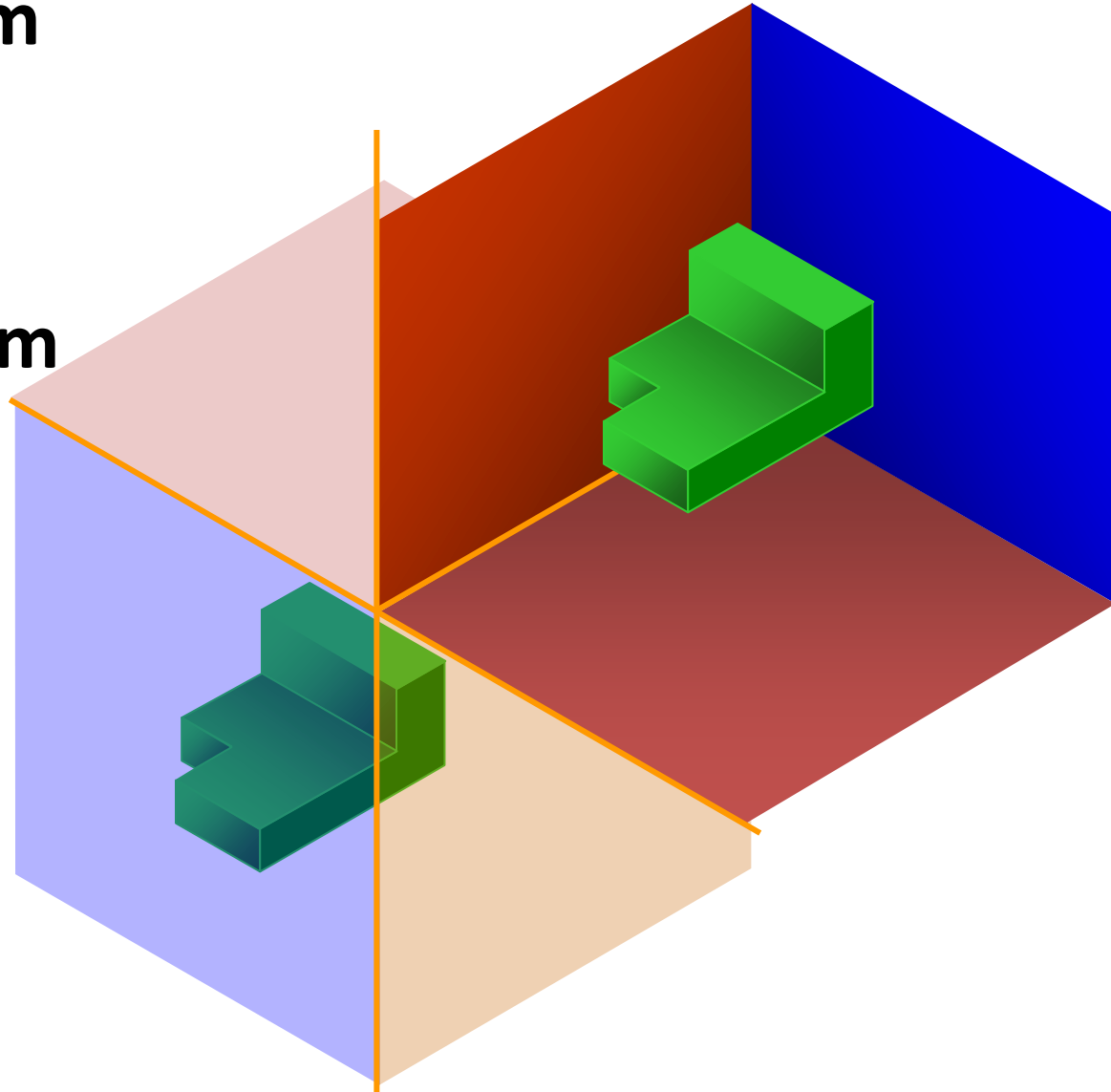
Projection systems

1. First angle system

- European countries
- ISO standard

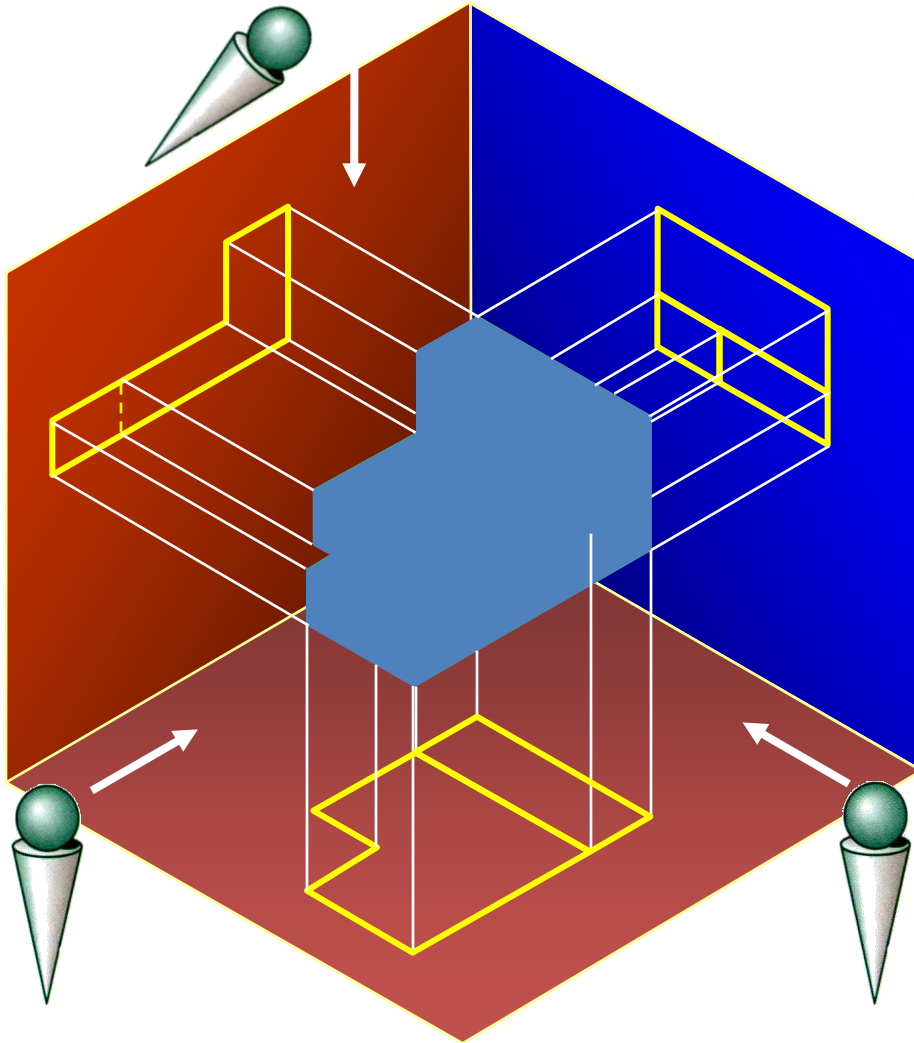
2. Third angle system

- Canada, USA,
Japan, Thailand

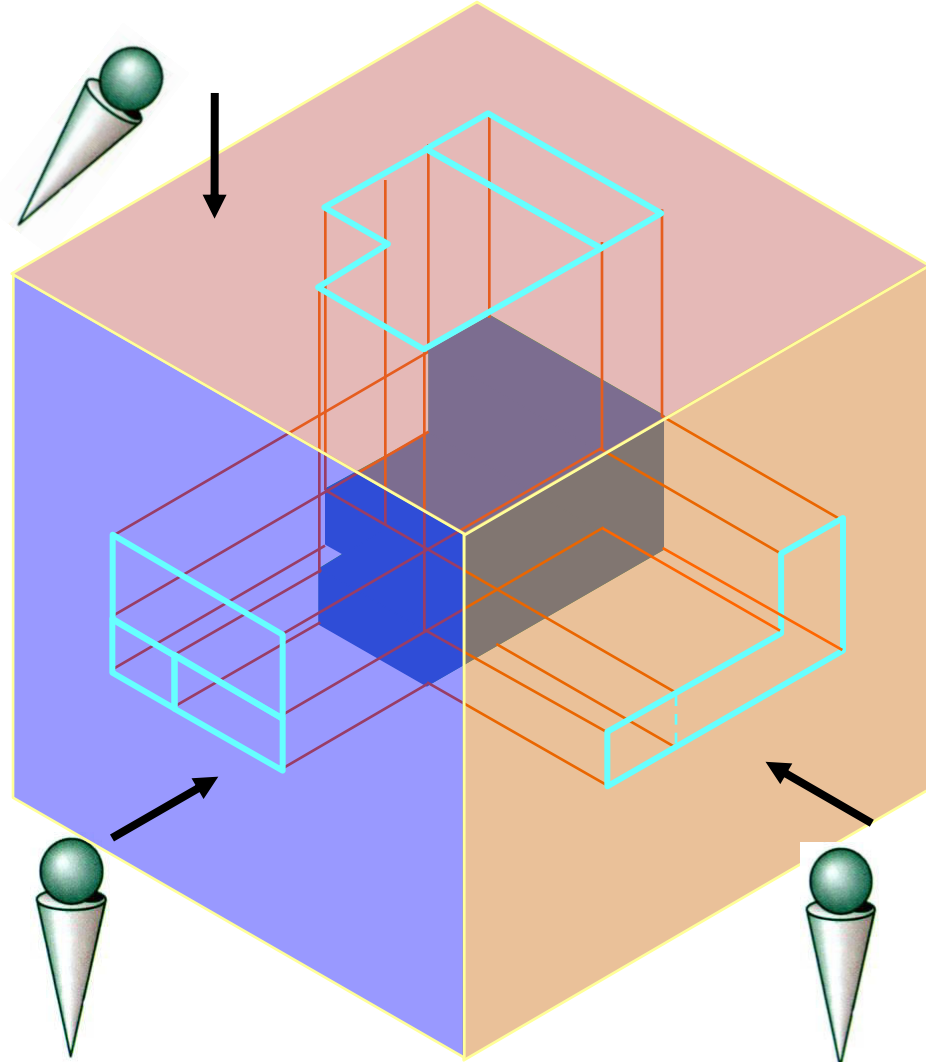


Orthographic views

1st angle system
(Opaque planes)



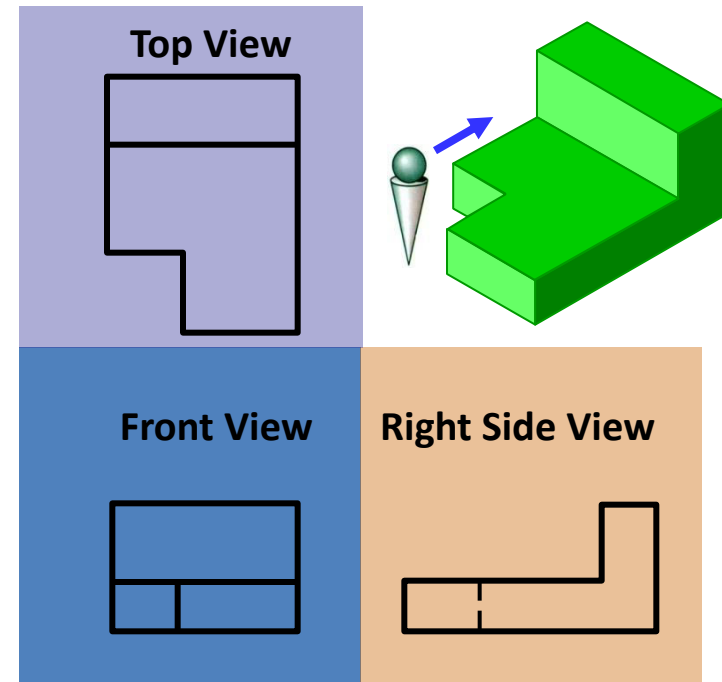
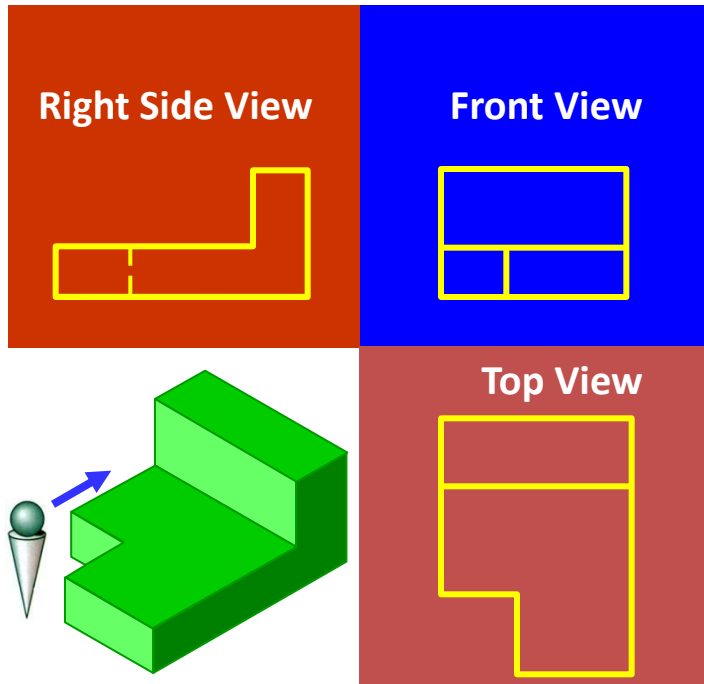
3rd angle system
(transparent planes/glass box)



Views arrangement

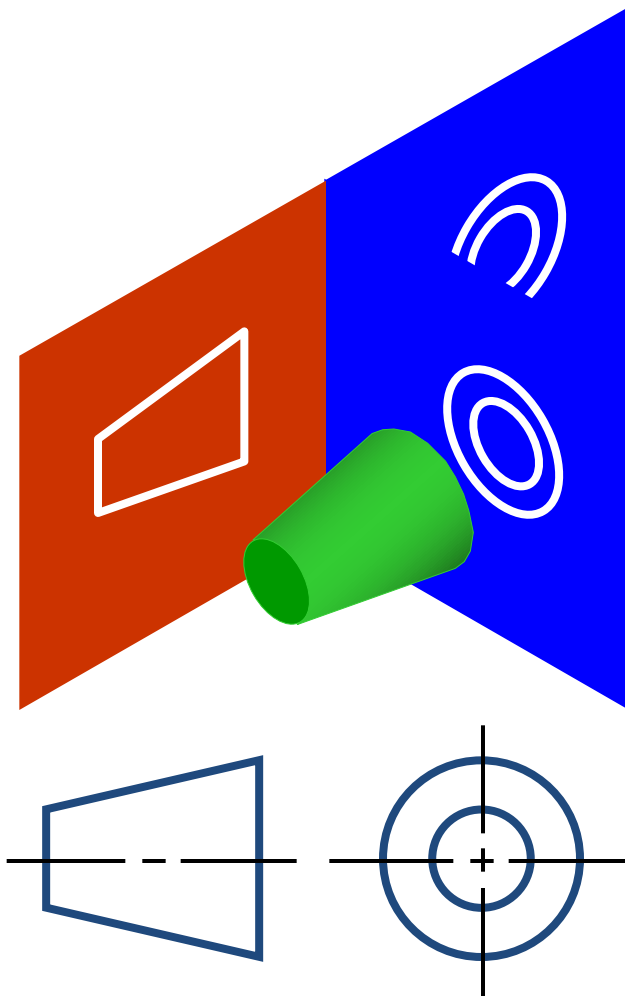
3rd angle system

1st angle system

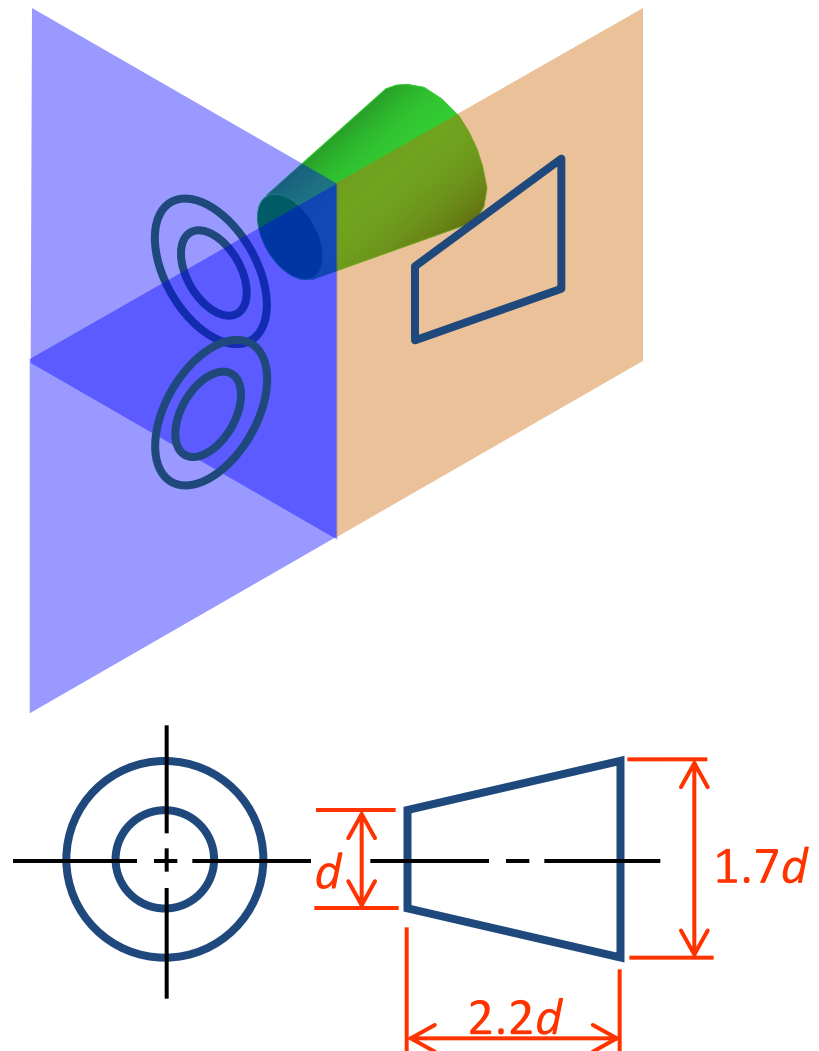


Projection symbols

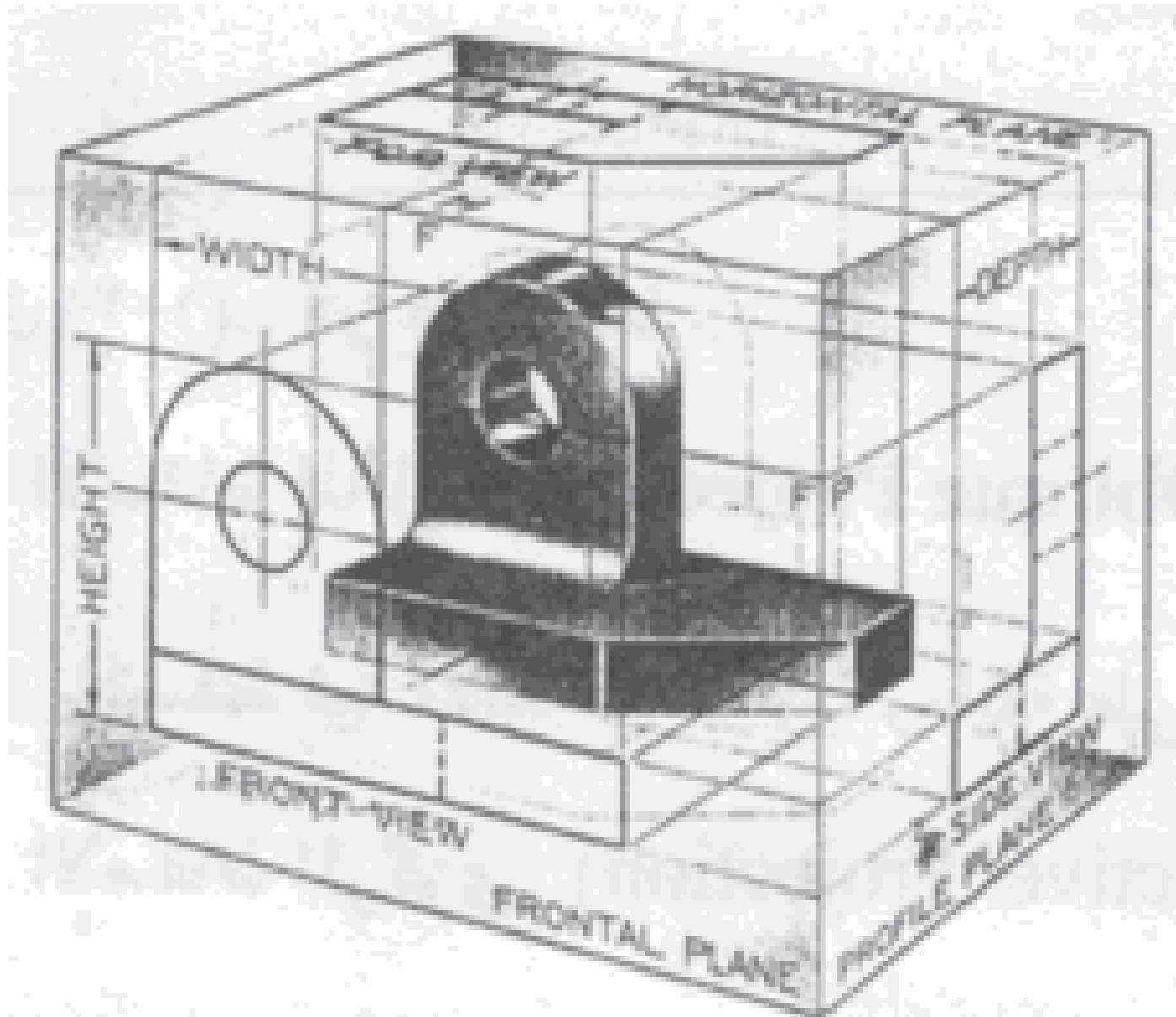
1st angle system

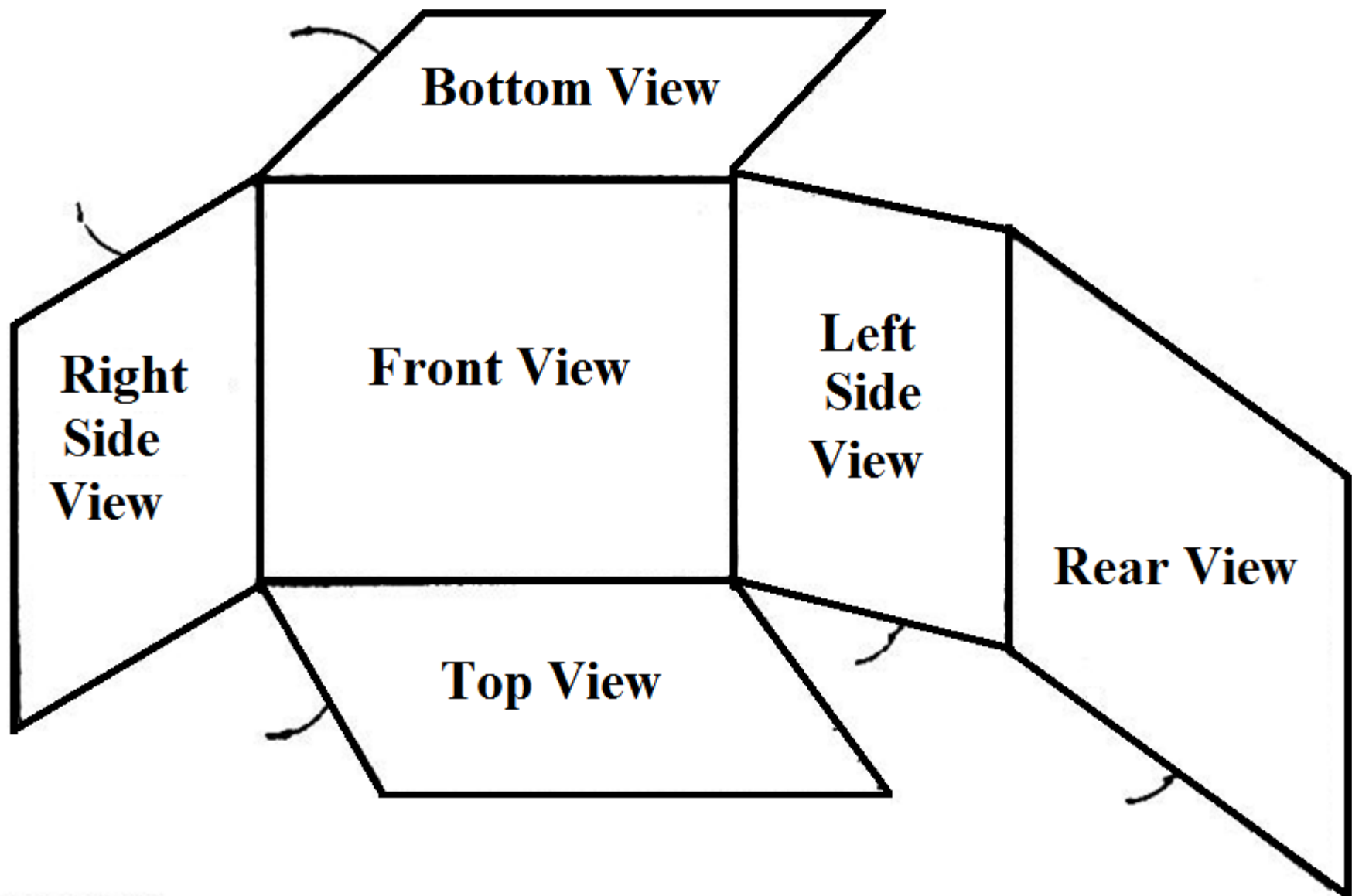


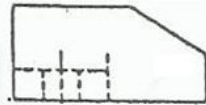
3rd angle system



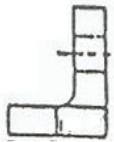
MULTIVIEW PROJECTION



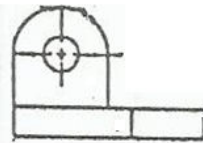




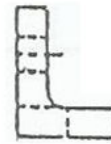
BOTTOM



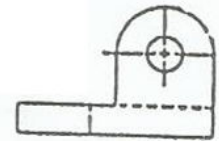
R. DIDE



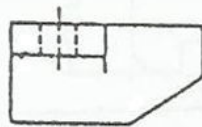
FRONT



L. SIDE

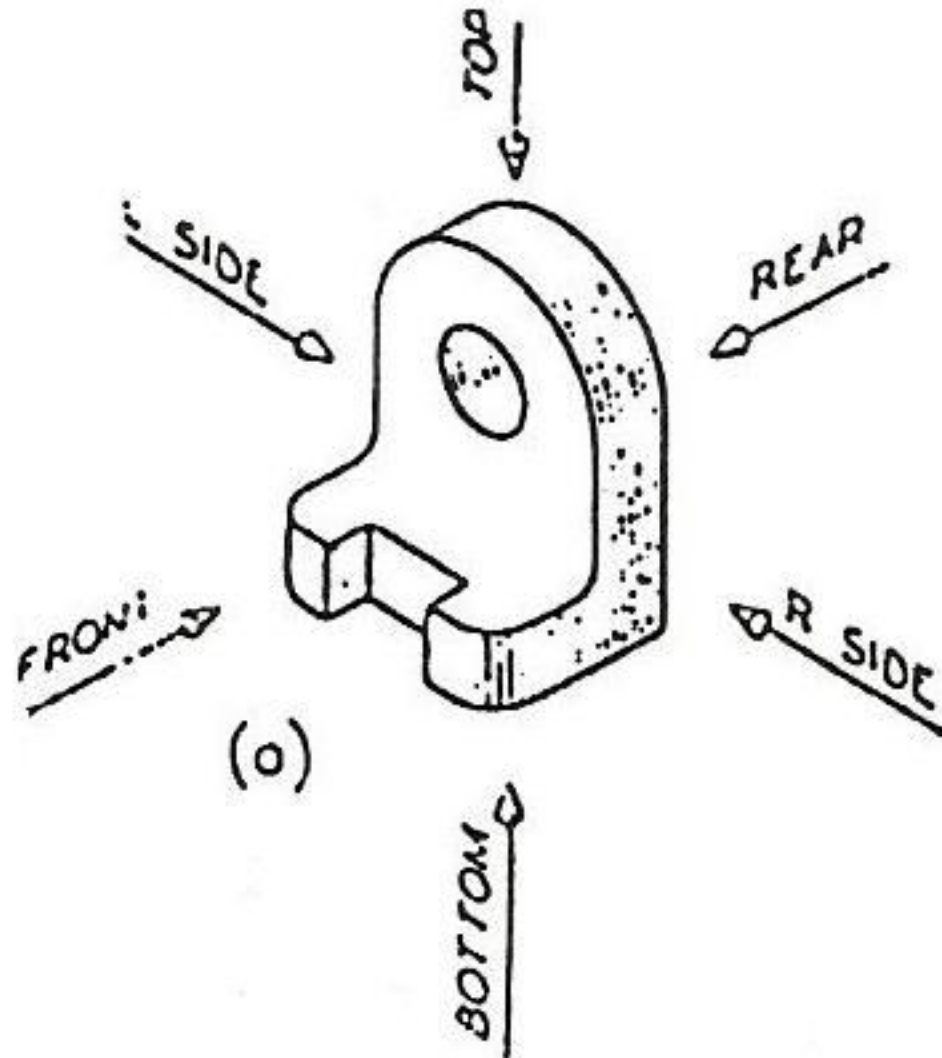


REAR

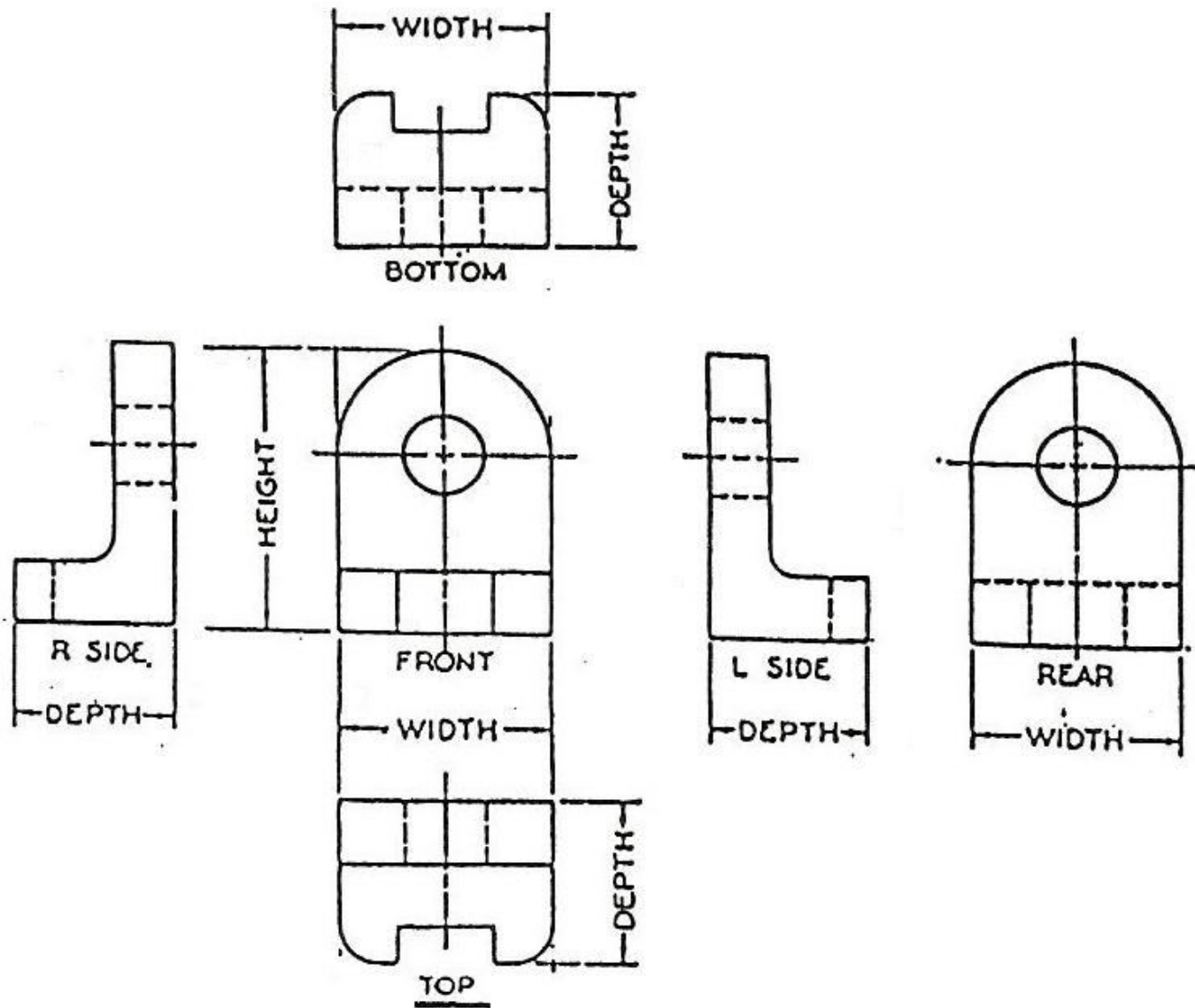


TOP

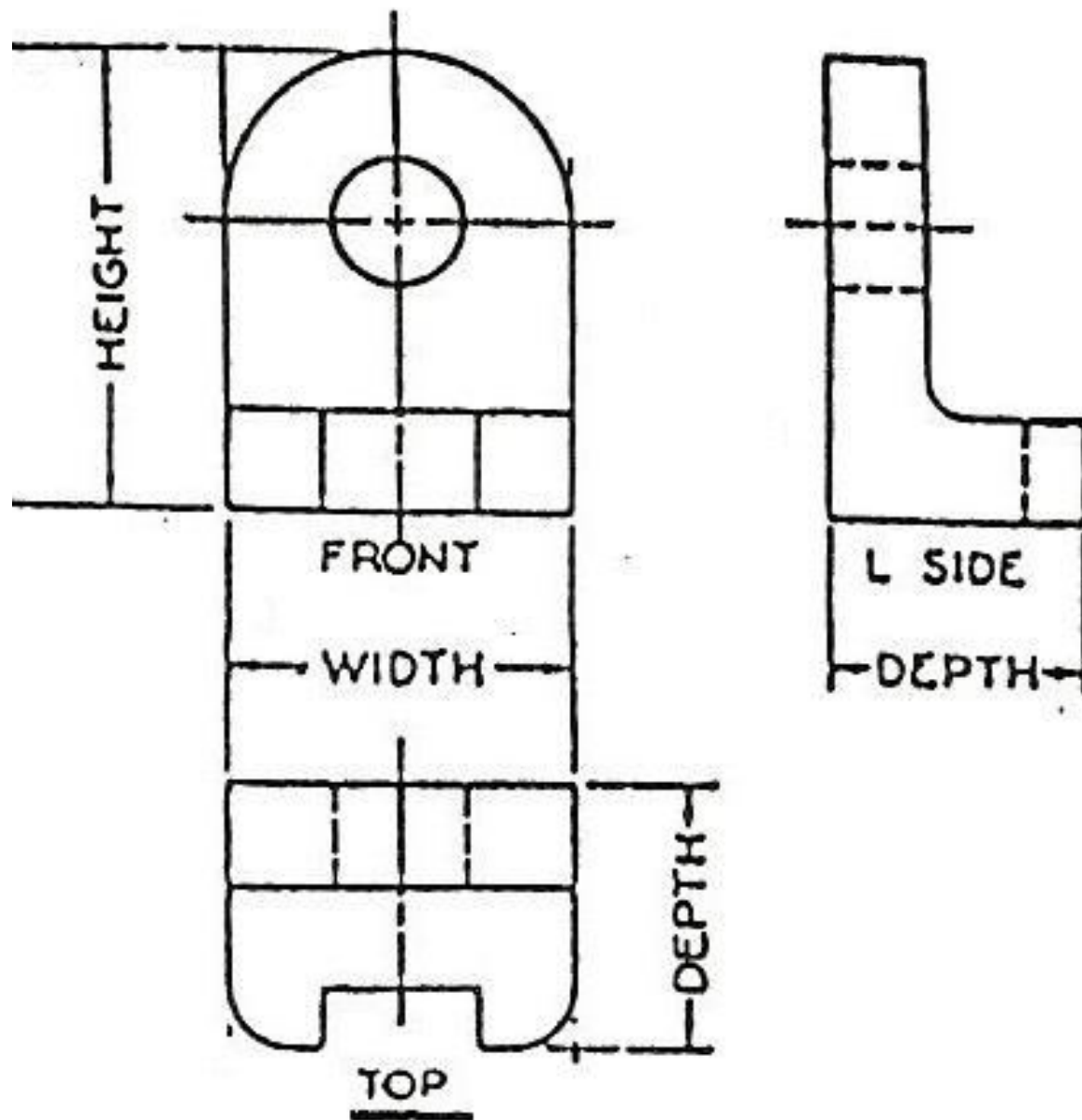
Choice of Views



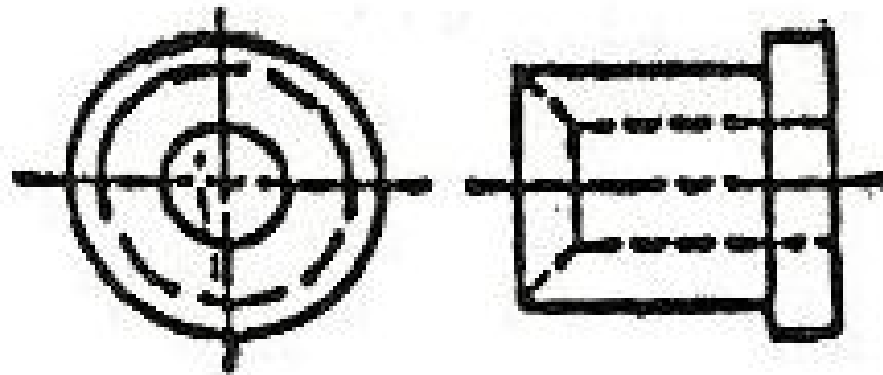
Isometric



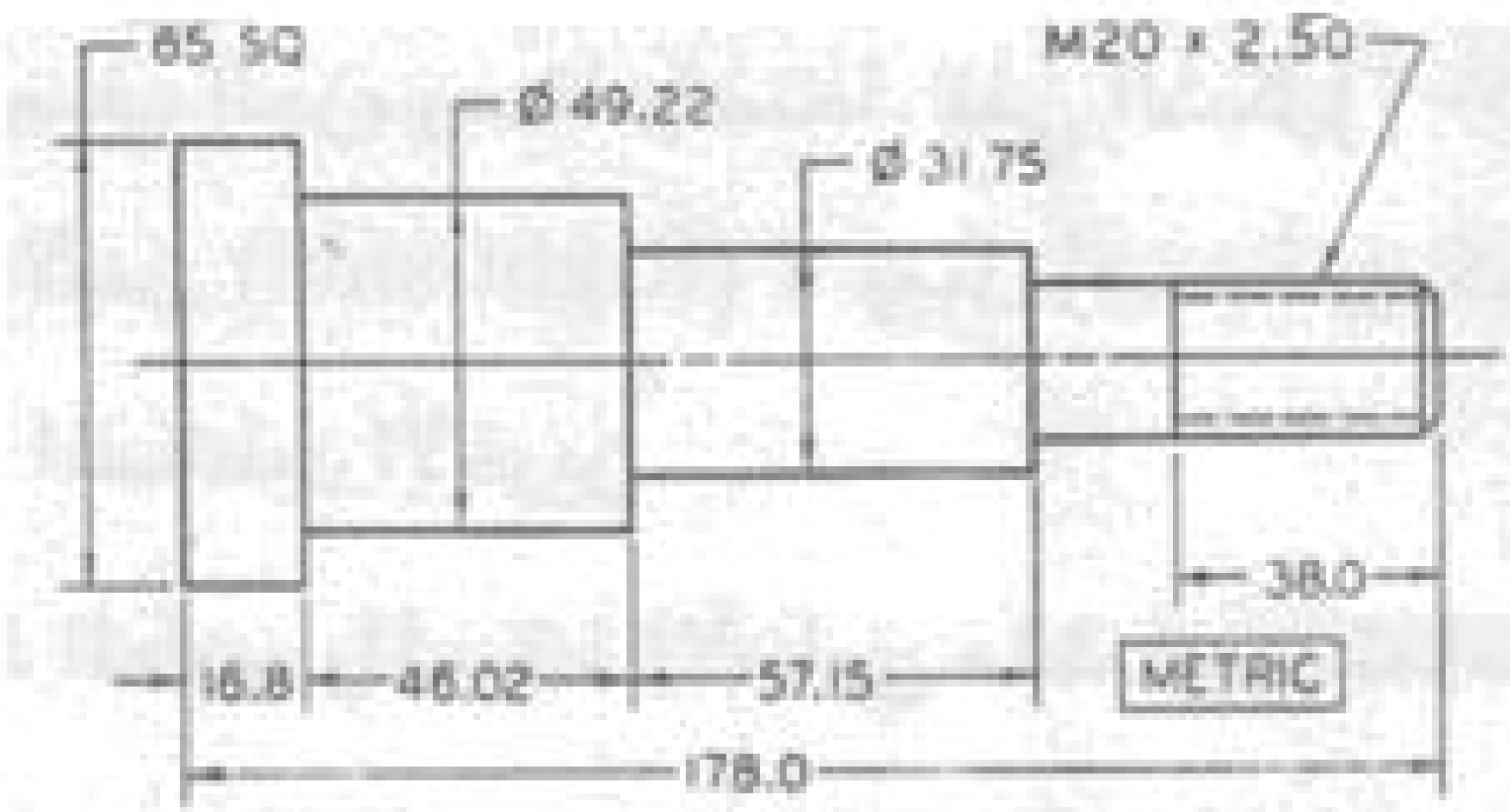
6- Views Projection



3- Views Projection



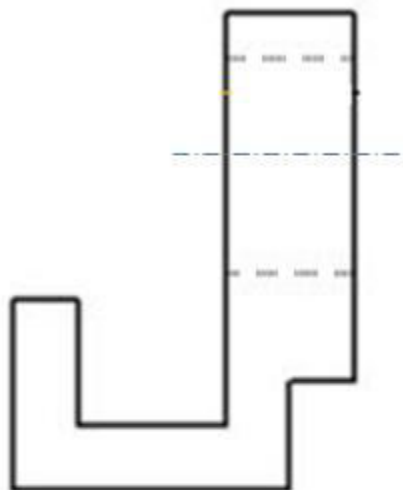
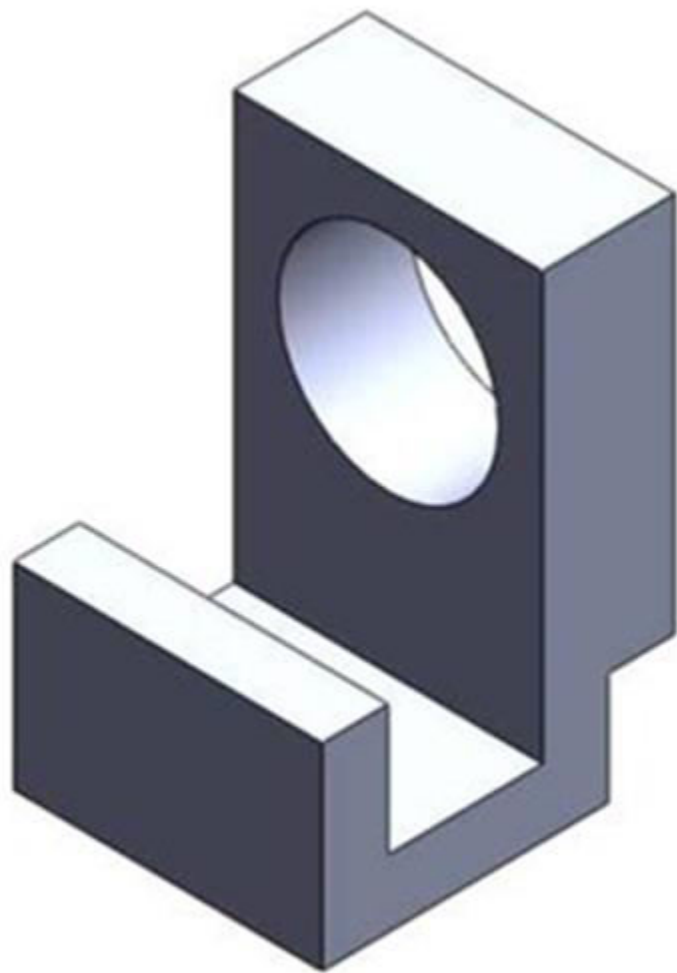
2- Views Projection



1- View Projection

Example (1)

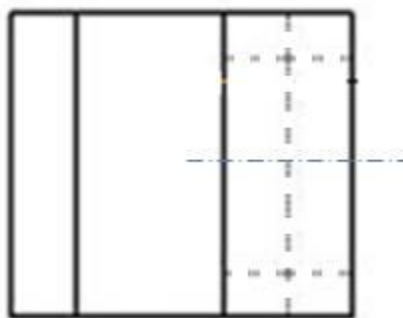
SOLVED EXAMPLES



FRONT VIEW

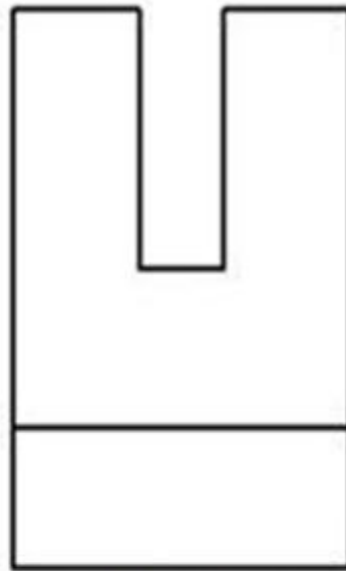
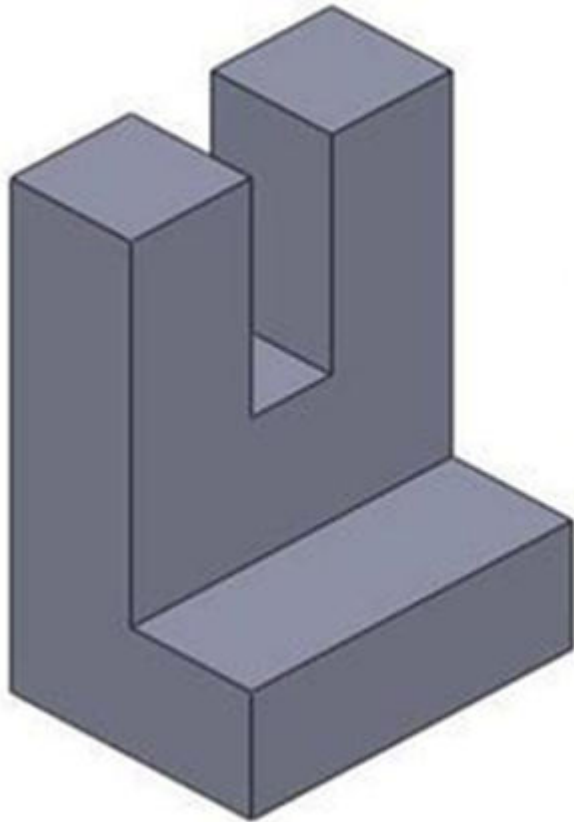


SIDE VIEW



TOP VIEW

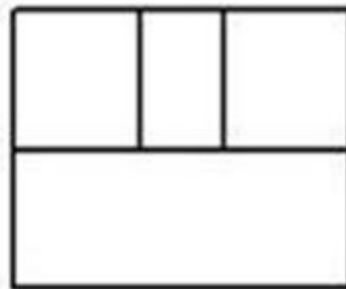
Example (2)



FRONT VIEW

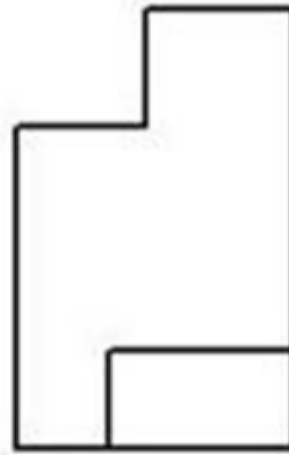
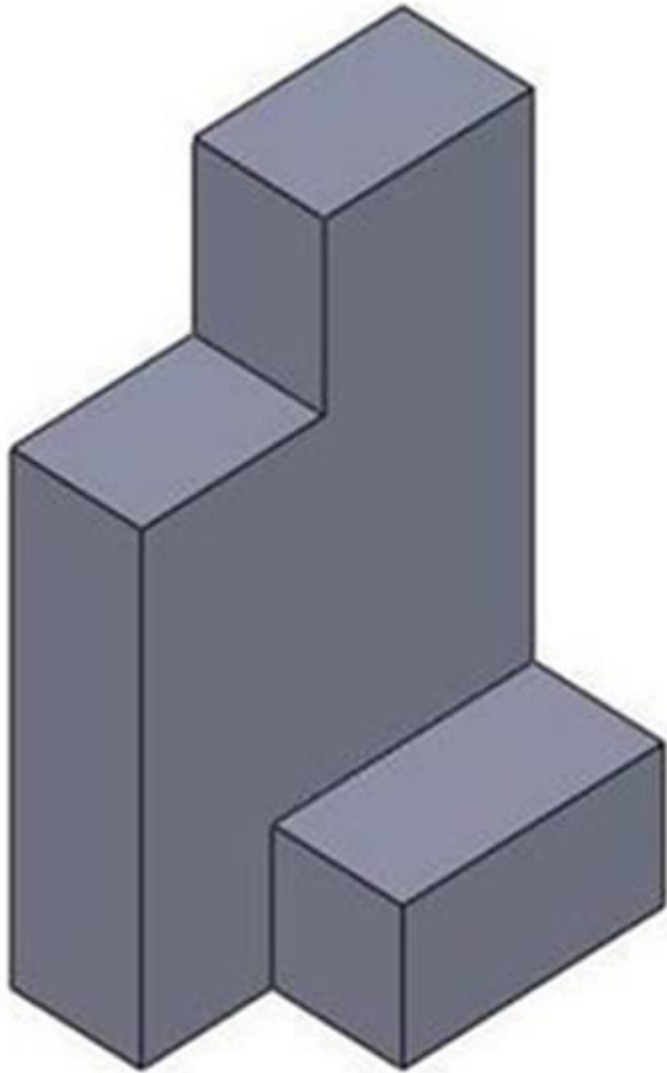


SIDE VIEW



TOP VIEW

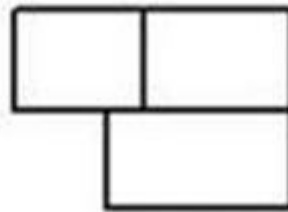
Example (3)



FRONT VIEW

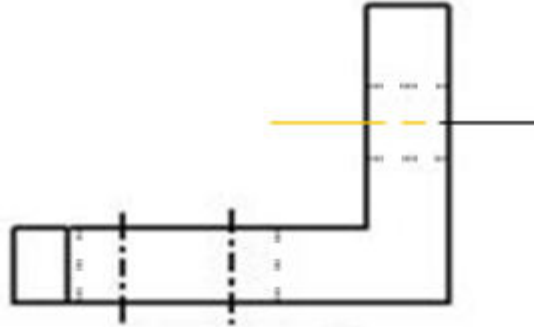
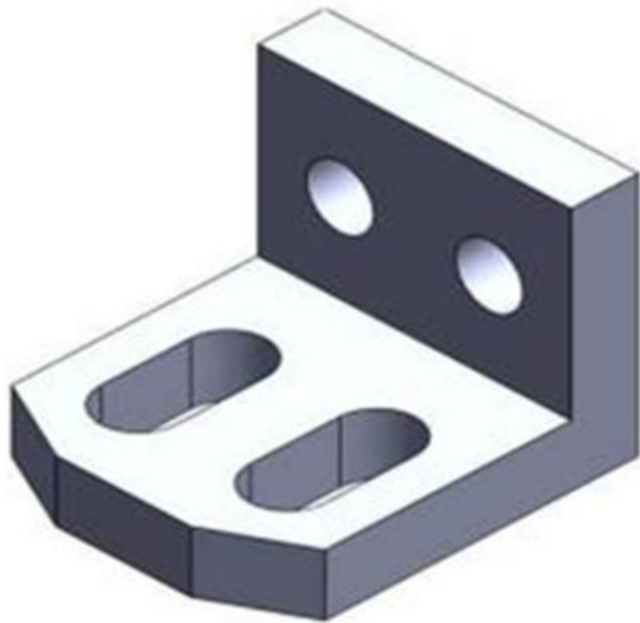


SIDE VIEW

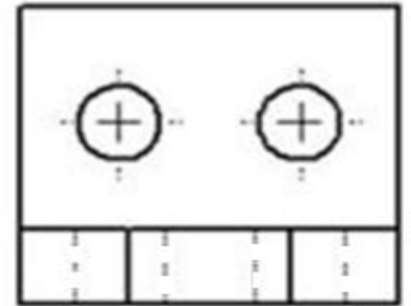


TOP VIEW

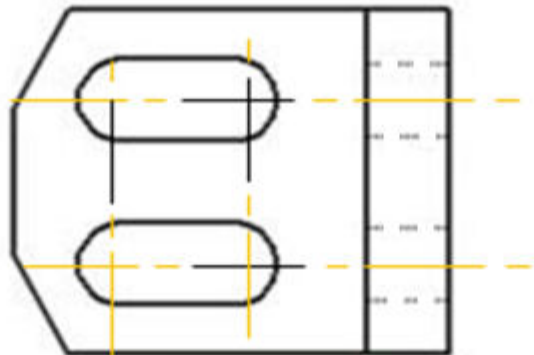
Example (4)



FRONT VIEW

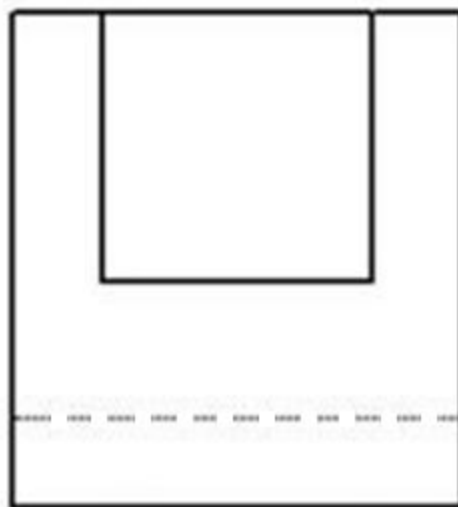
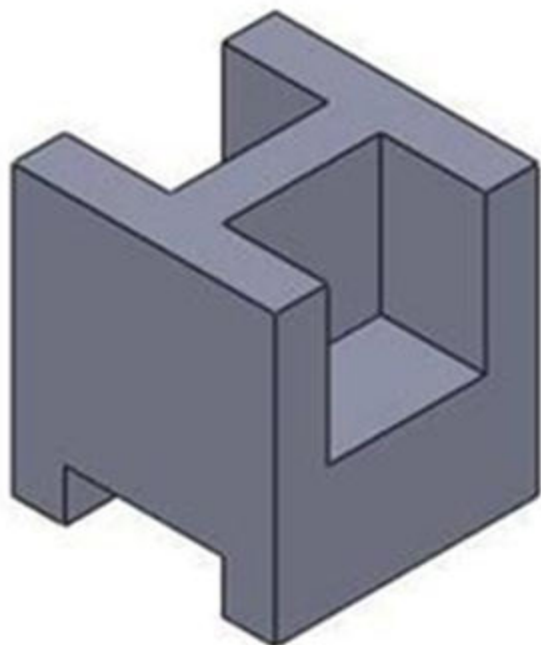


SIDE VIEW

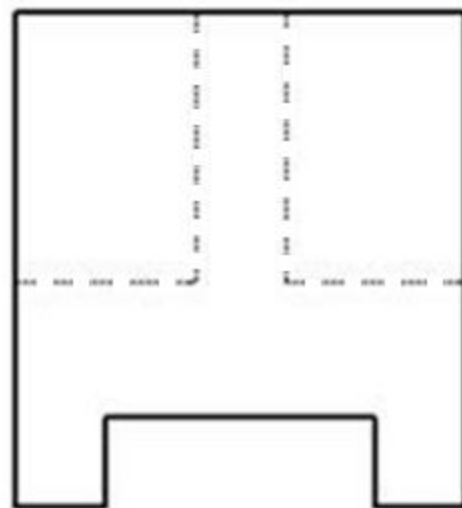


TOP VIEW

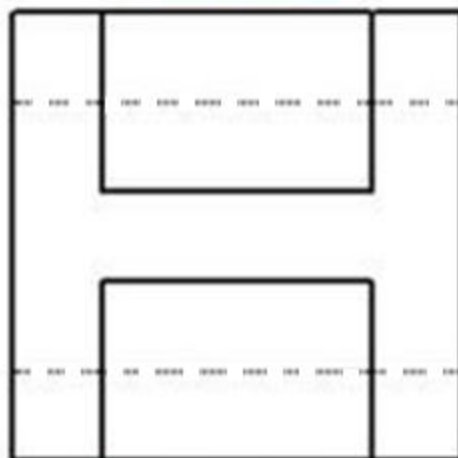
Example (5)



FRONT VIEW



SIDE VIEW



TOP VIEW

تمارين المحاضرة الخامسة

تَمارين الصَّالة

تقسيم لوحة صالة المحاضرة الخامسة

$$1H = 40 + 30 = 70$$

$$2H = 70 + 30 = 100$$

$$3H = 60 + 34 = 94$$

$$\text{Total (H)} = 70 + 100 + 94 = 264$$

$$1H = (70/264) * 470 = 125 - 70 = 55 / 3 = 18$$

$$2H = (100/264) * 470 = 178 - 100 = 78 / 3 = 26$$

$$3H = (94/264) * 470 = 167 - 94 = 73 / 3 = 24$$

$$1V = 50 + 18 + 30 = 98$$

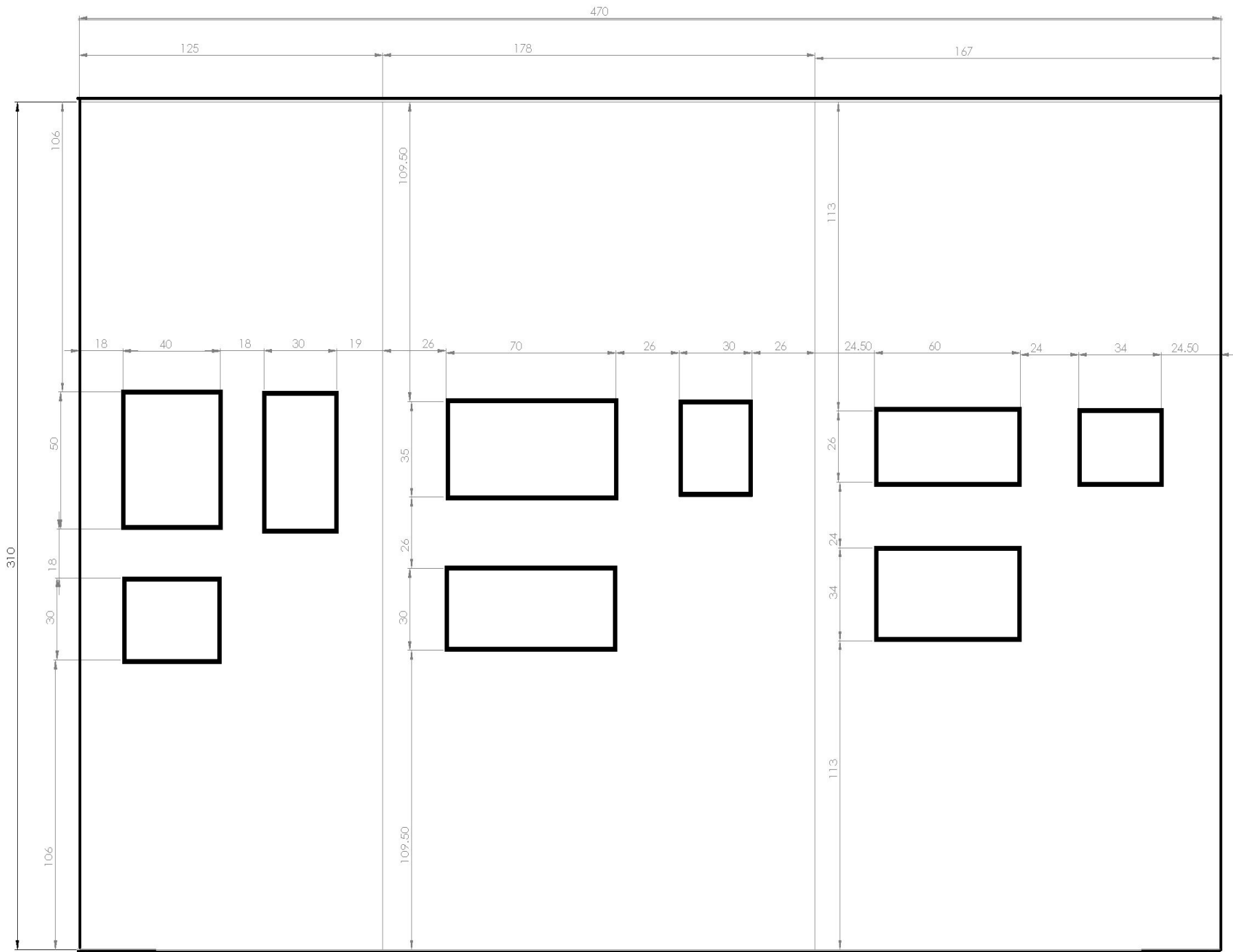
$$310 - 98 = 212 / 2 = 106$$

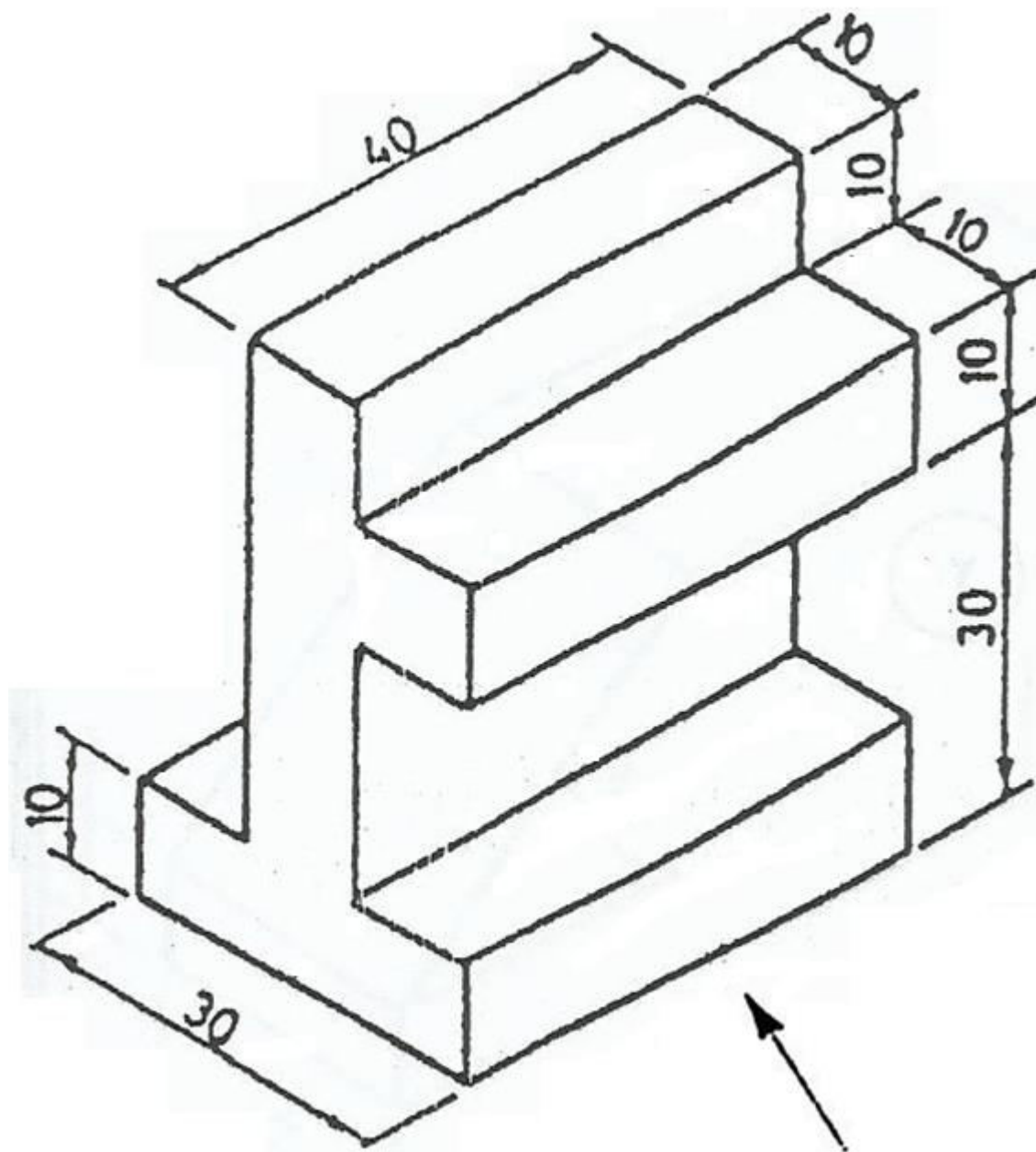
$$2V = 35 + 26 + 30 = 91$$

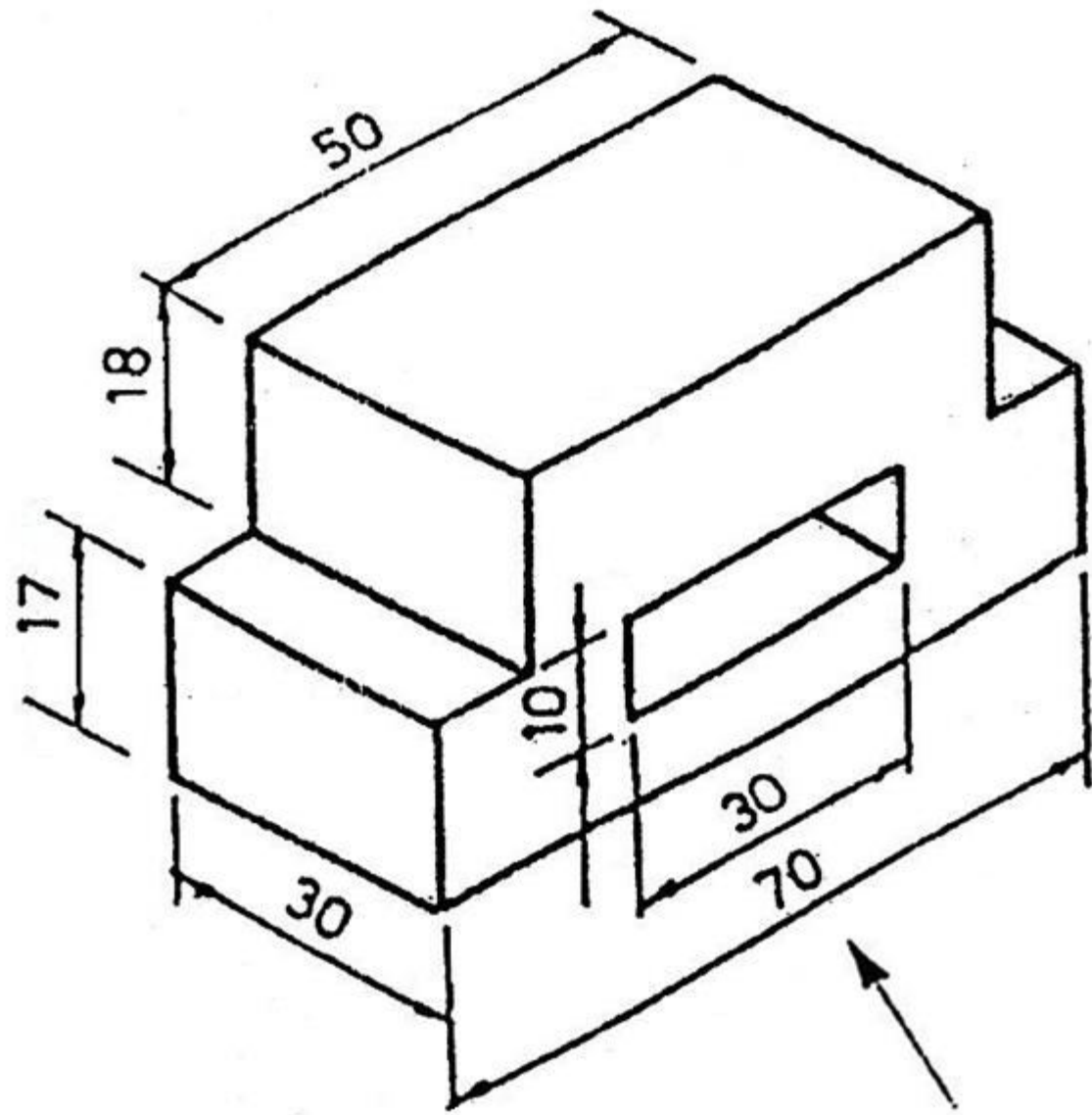
$$310 - 91 = 219 / 2 = 109.5$$

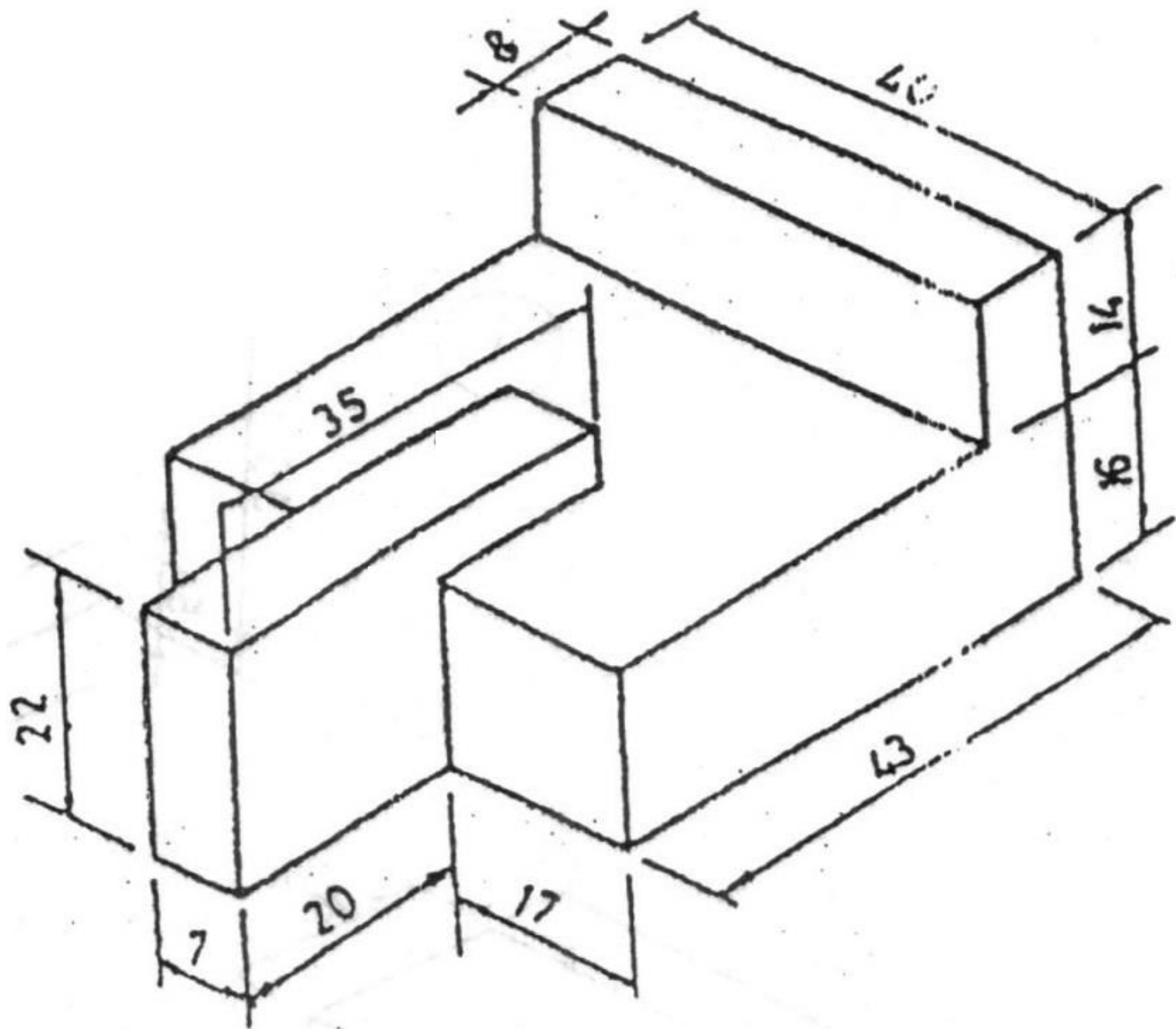
$$3V = 26 + 24 + 34 = 84$$

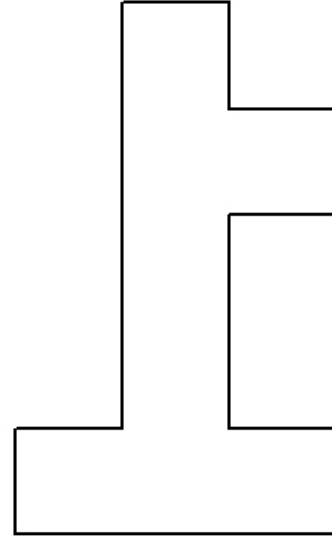
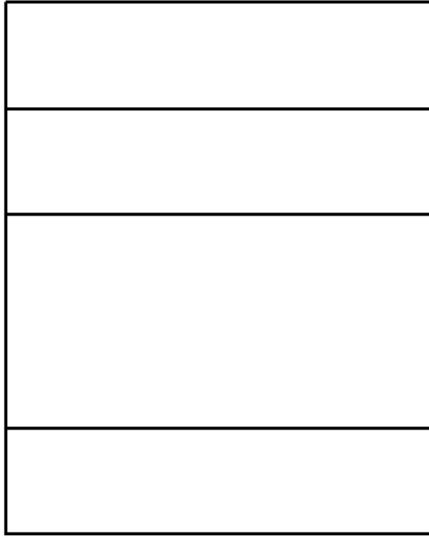
$$310 - 84 = 226 / 2 = 113$$

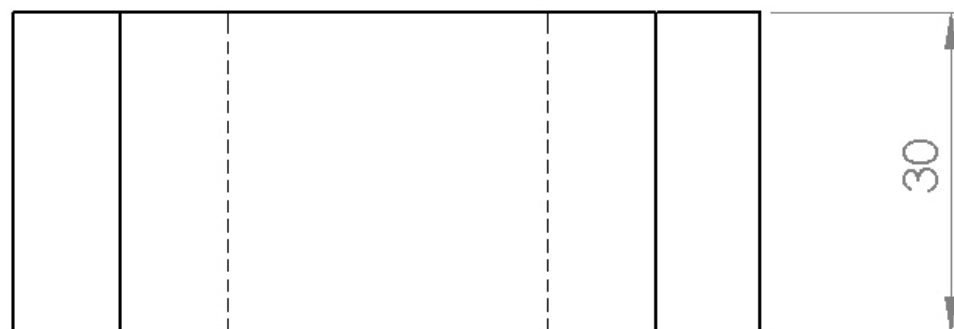
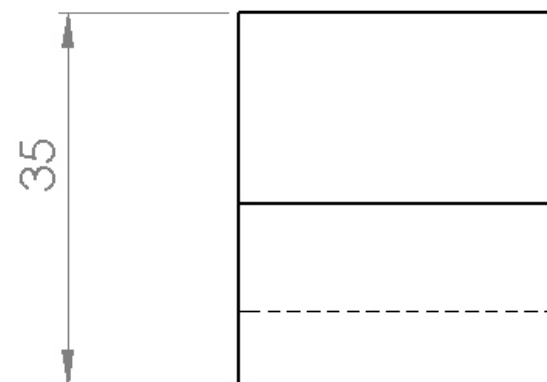
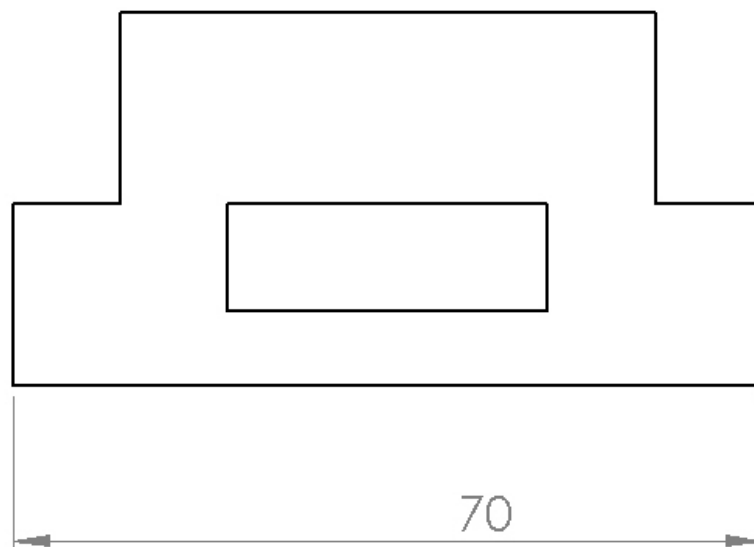


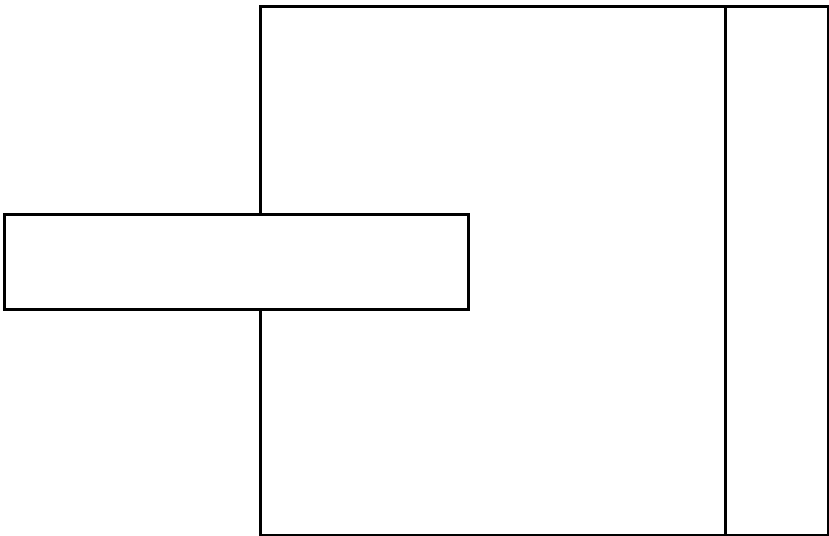
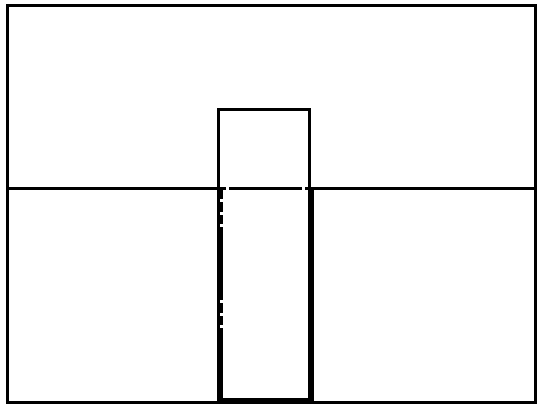
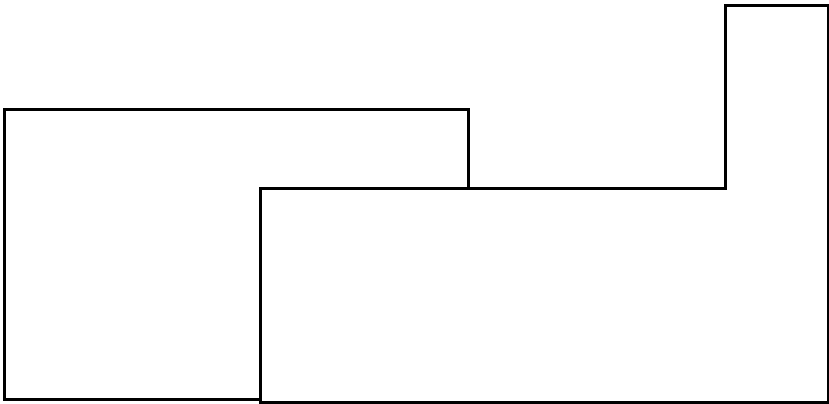




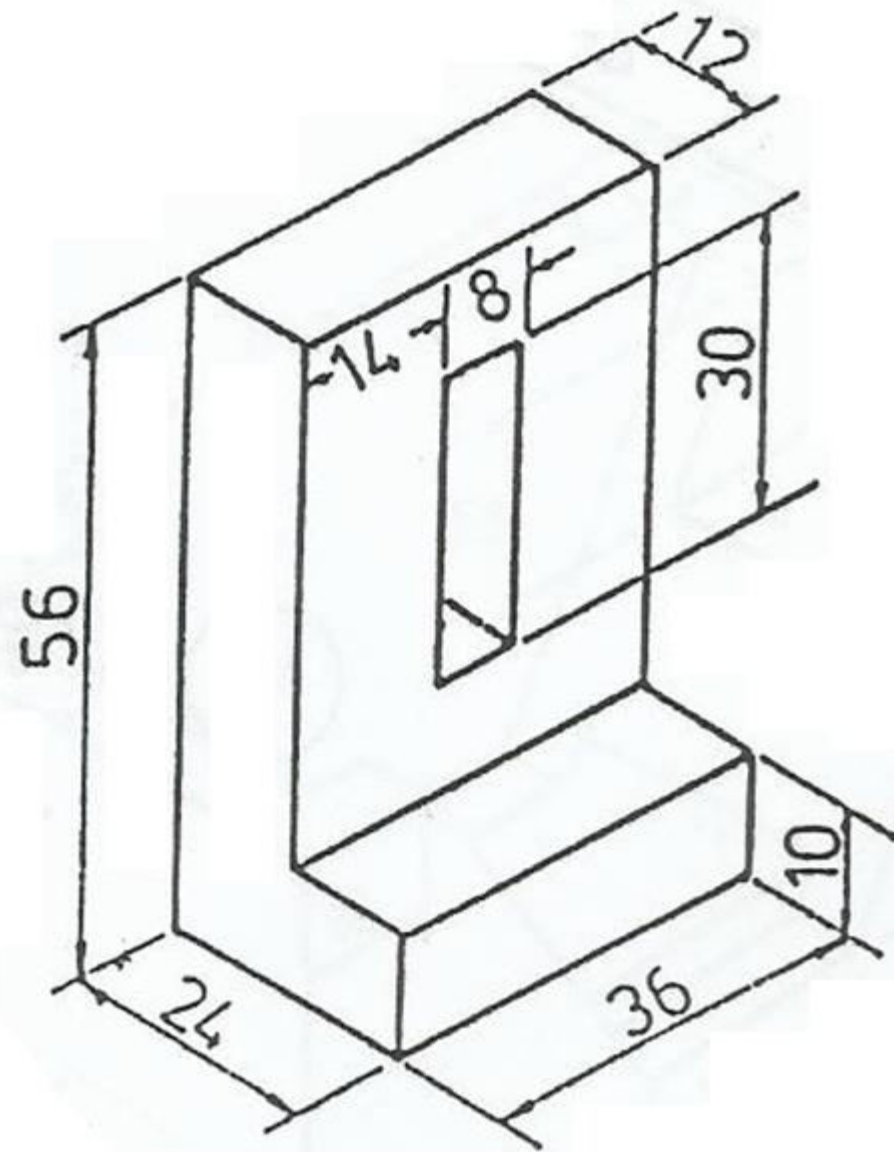


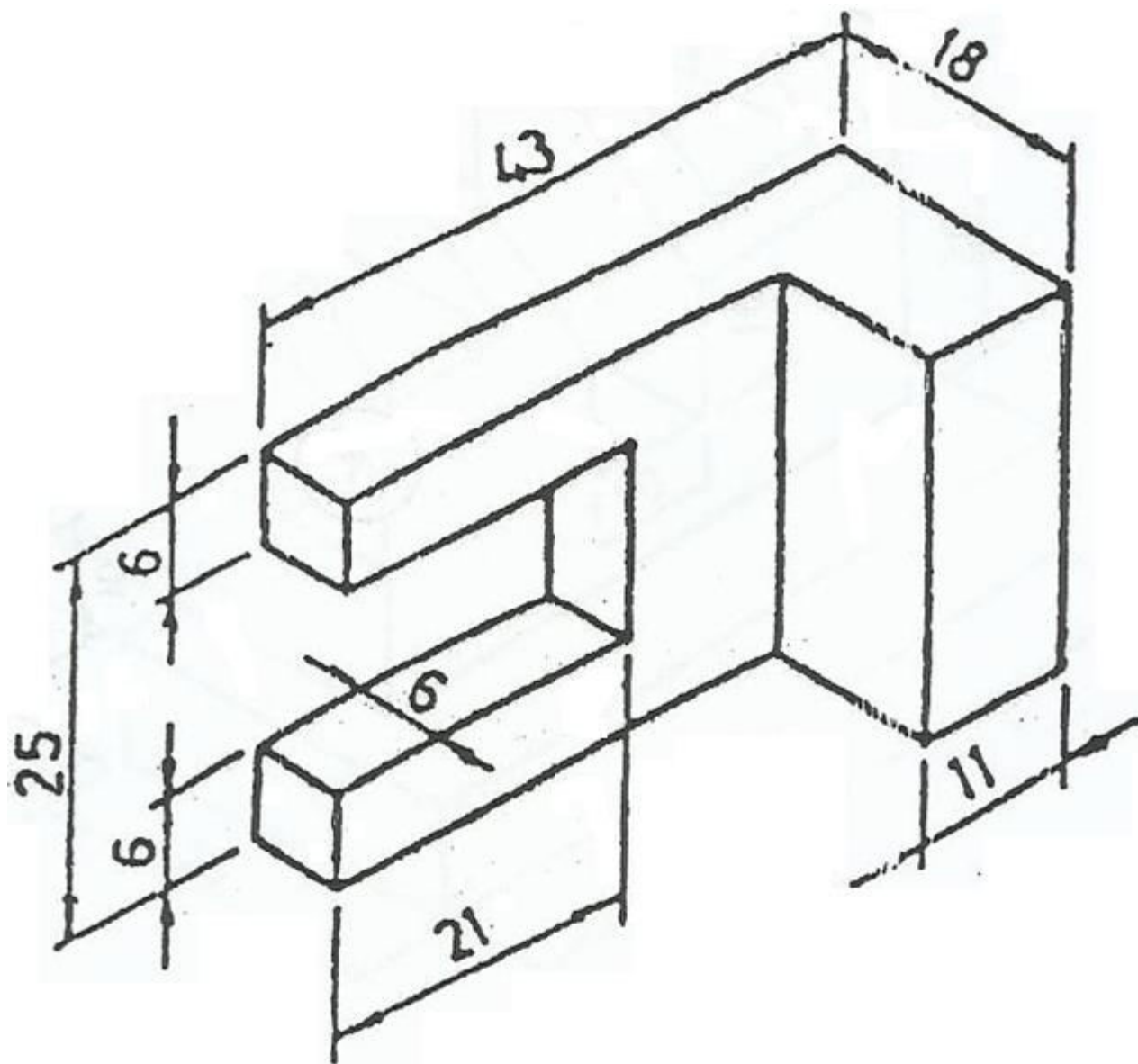


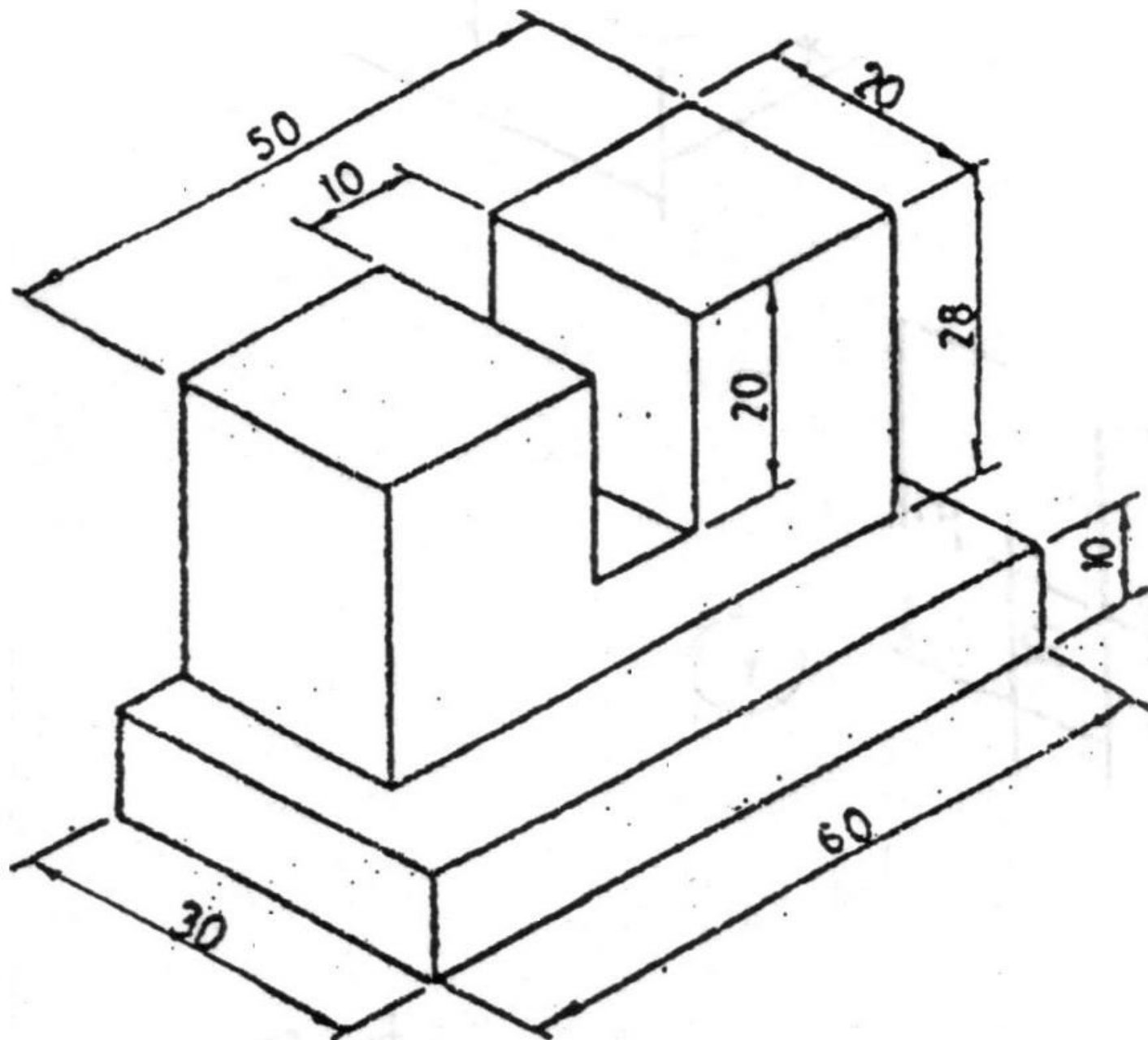




تمارين الواجب







**End of
Lecture 5**