

Sectional Orthographic Projections:

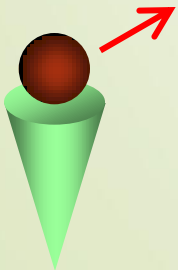
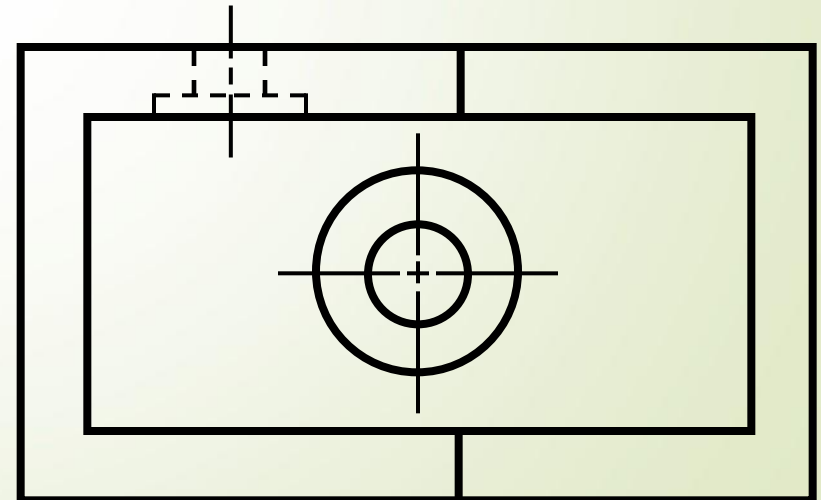
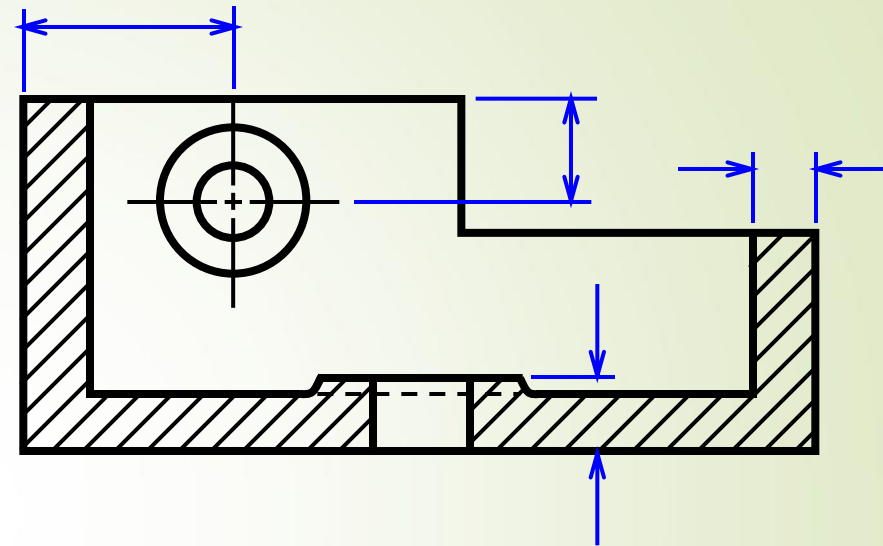
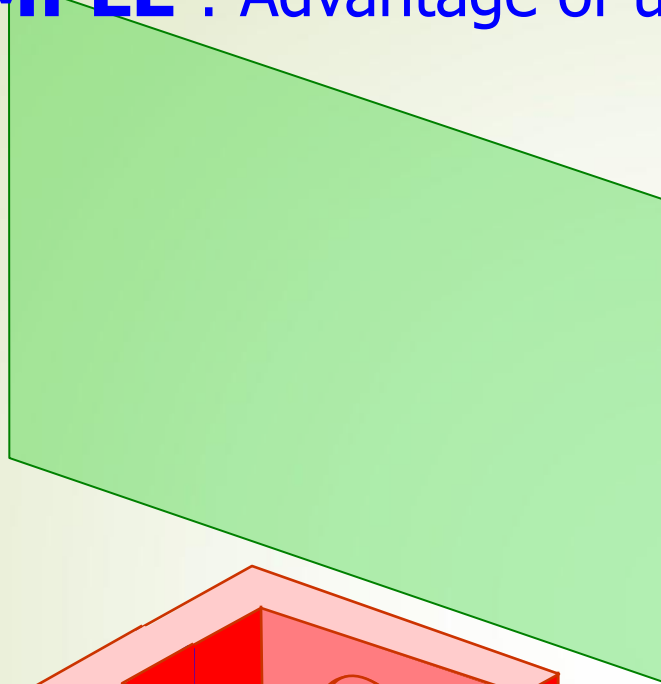
The projections in which the internal shape of an object is shown.

PURPOSES OF SECTION VIEWS

Clarify the views by:

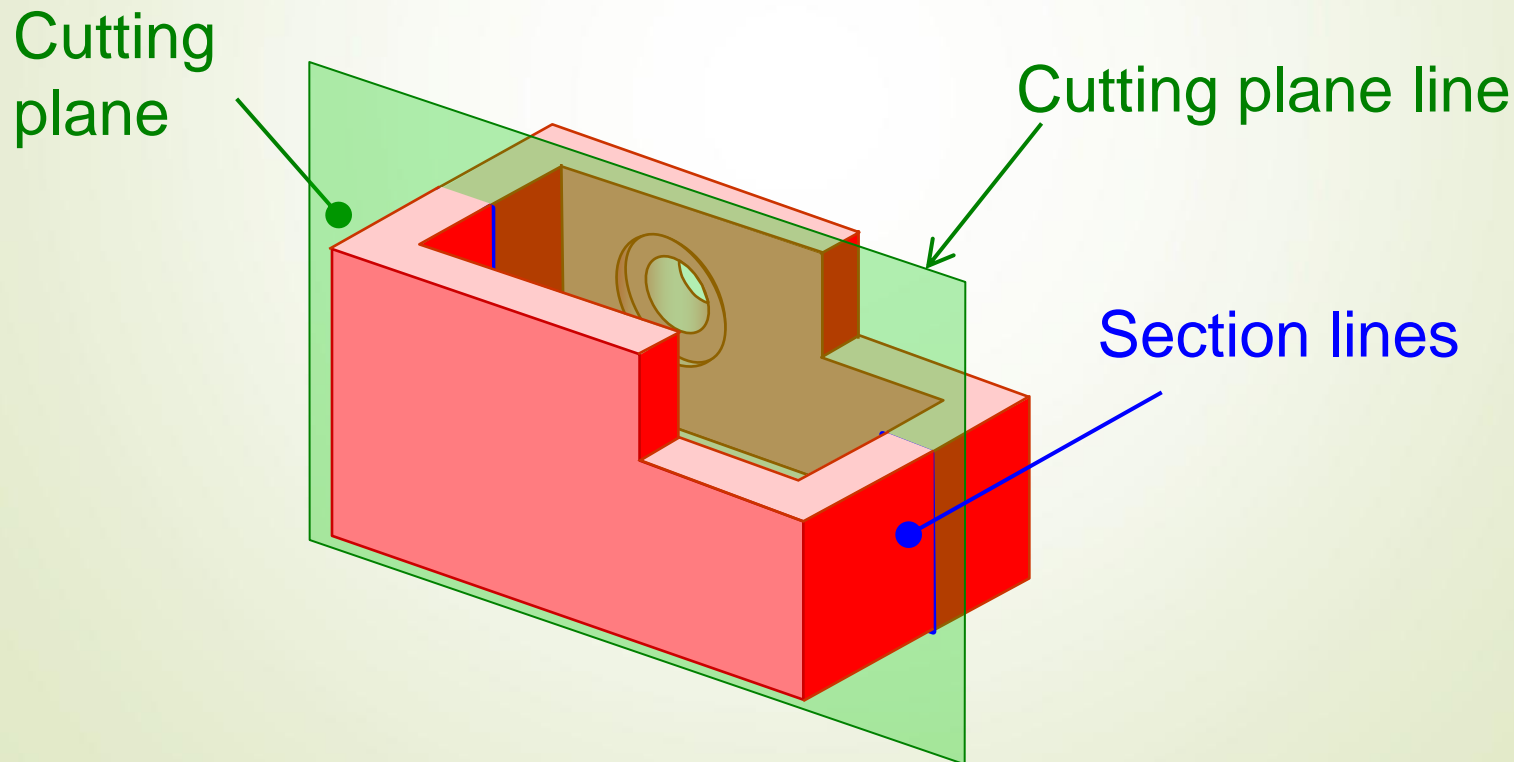
- ❖ Reducing or eliminating the hidden lines.
- ❖ Revealing the cross sectional's shape.

EXAMPLE : Advantage of using a section view.



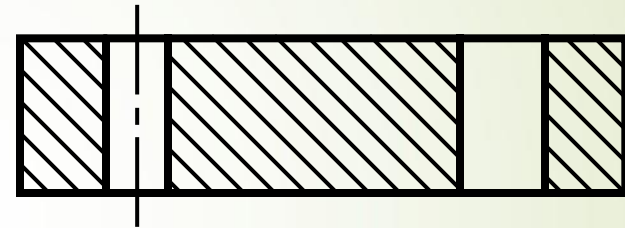
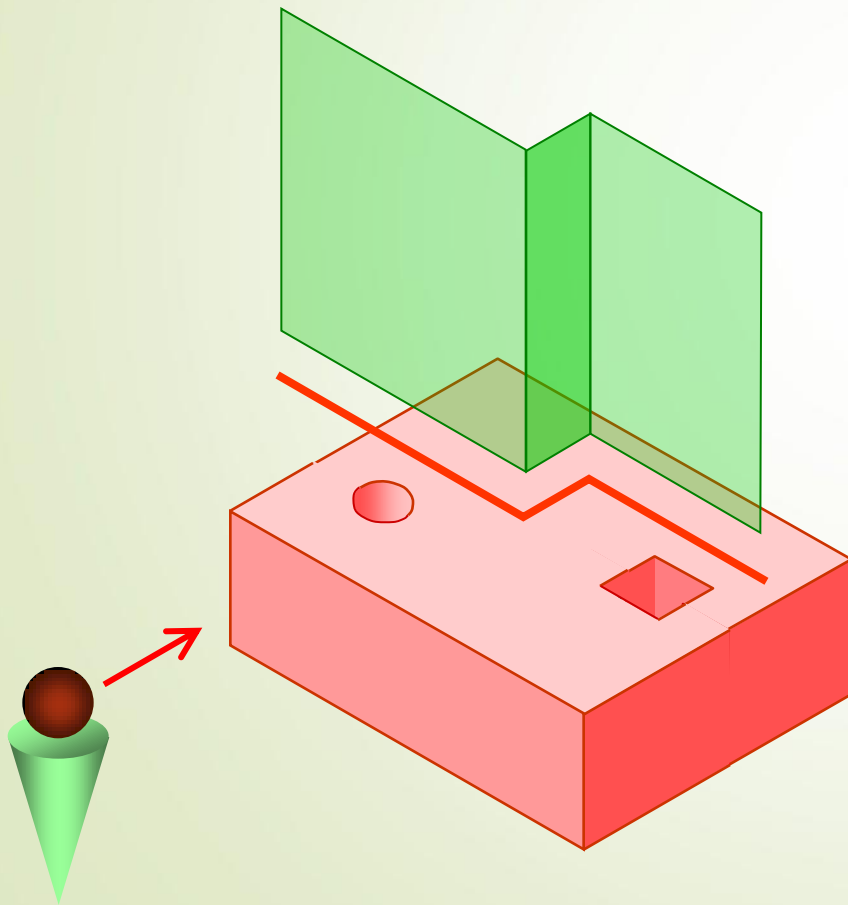
CUTTING PLANE

Cutting plane is a plane that ***imaginarily cuts*** the object to reveal the internal features.

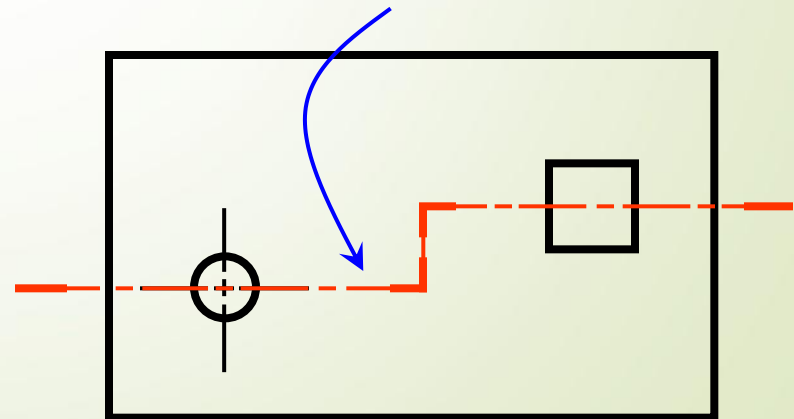


CUTTING PLANE LINE

Cutting plane line is an ***edge view*** of the cutting plane.



Indicate the ***path*** of cutting plane.



CUTTING PLANE LINESTYLES



LOVELY
PROFESSIONAL
UNIVERSITY



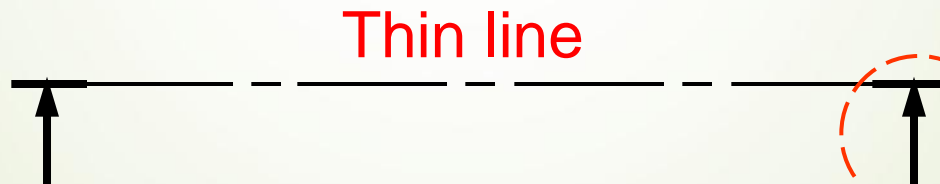
Thick line

**Viewing
direction**



Thick line

**Viewing
direction**

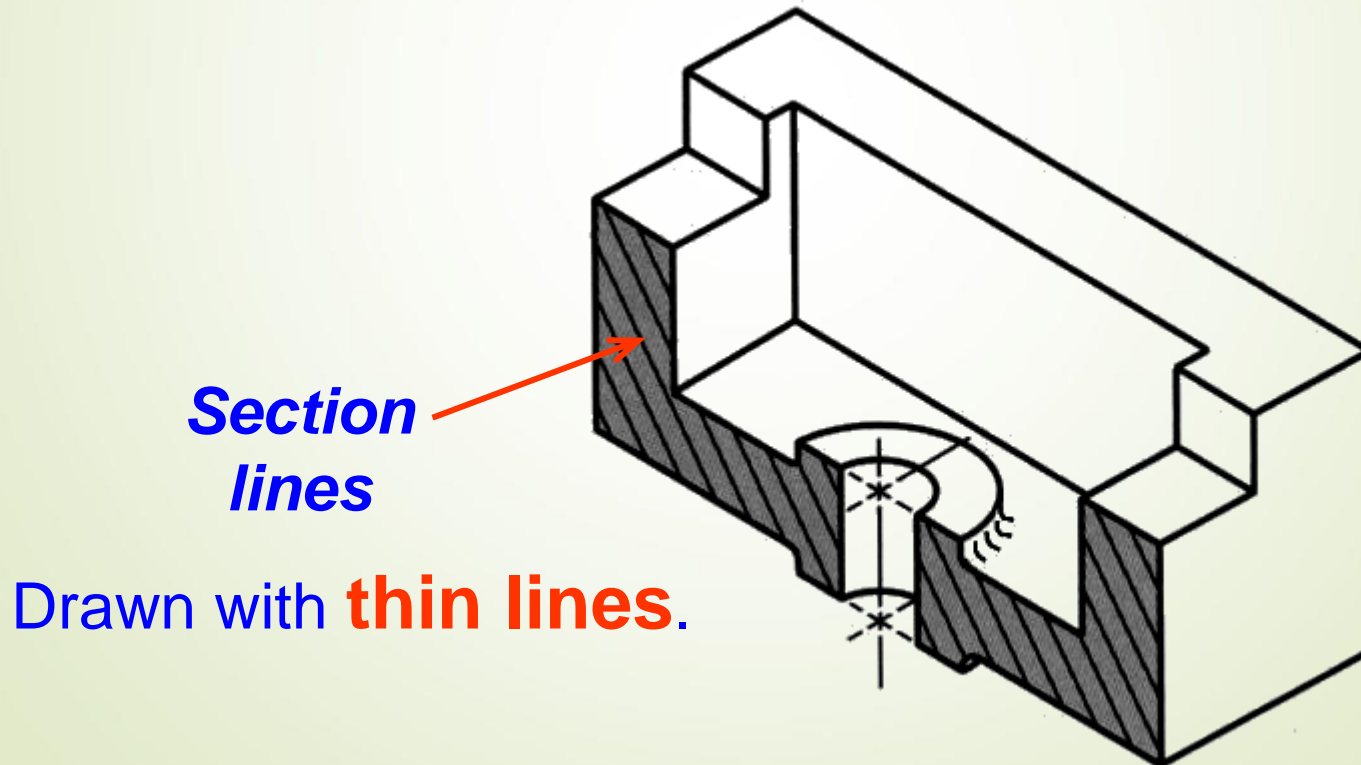


Thin line

**Viewing
direction**

SECTION LINING

Section lines or **cross-hatch lines** are used to *indicate the surfaces that are cut by the cutting plane.*



SECTION LINES SYMBOLS

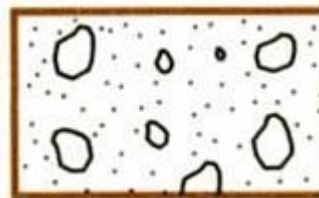
- The section lines are different for each of material's type.
- For practical purpose, the cast iron symbol is used most often for any materials.



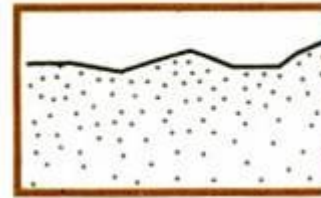
Cast iron,
Malleable iron



Steel



Concrete



Sand

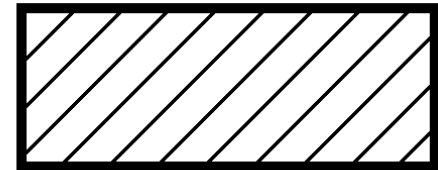


Wood

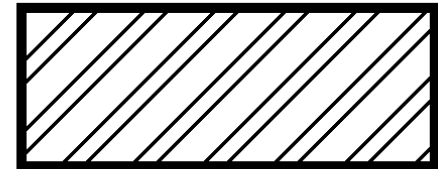
SECTION LINES SYMBOLS

- Materials – Common materials
- The symbol for cast iron can be used for most section views.
- Refer to any common drafting text for additional symbols

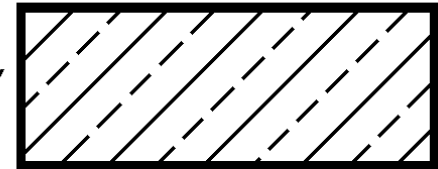
CAST
IRON



STEEL



BRONZE,
BRASS



ALUM.



SECTION LINING

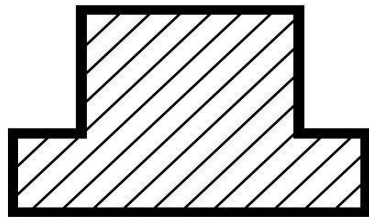
- 45 degree angle lines should be used.
- 2 to 5mm gap between lines.
- All lines should be uniformly spaced
- Thin sections may be blackened in completely



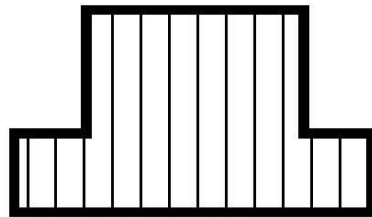
Section Lining – Line Placement

- Lines should never be parallel or perpendicular to the object lines.
- If the outline of the object has 45 degree lines, 30 or 60 degree lines should be used.
- Assemblies with several parts should be lined with varying angle section lines.

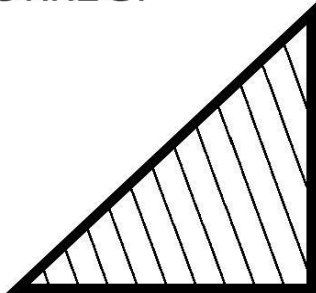
Section Lining – Line Placement



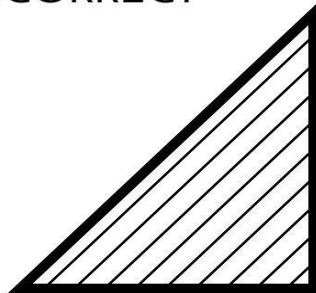
CORRECT



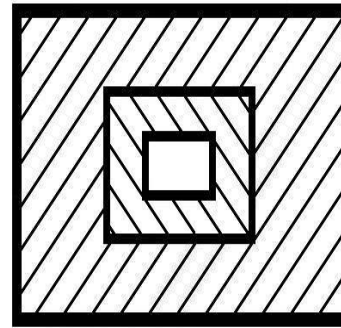
INCORRECT



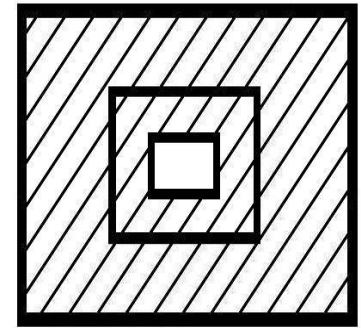
CORRECT



INCORRECT



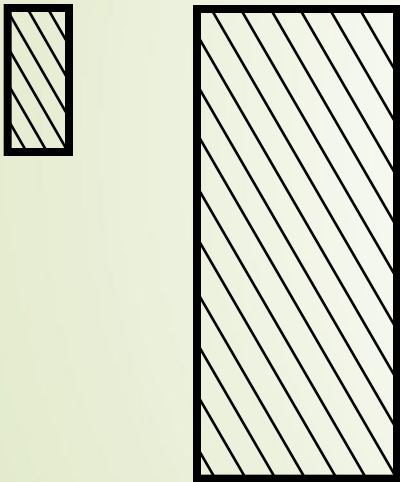
CORRECT



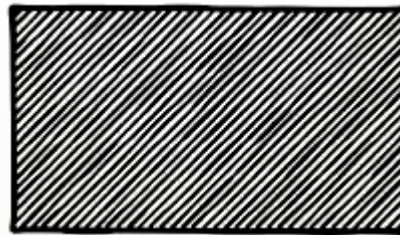
INCORRECT

SECTION LINING PRACTICE

- The spaces between lines may vary from 2 mm for small sections to 5 mm for large sections.



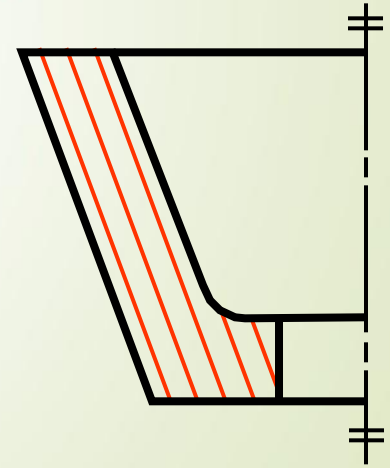
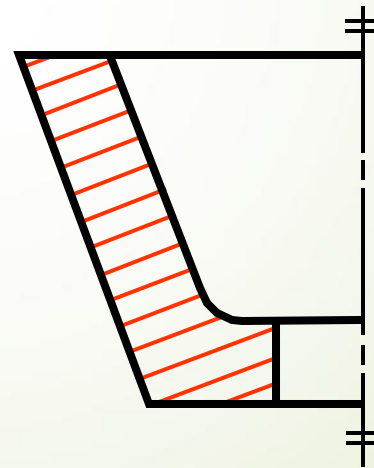
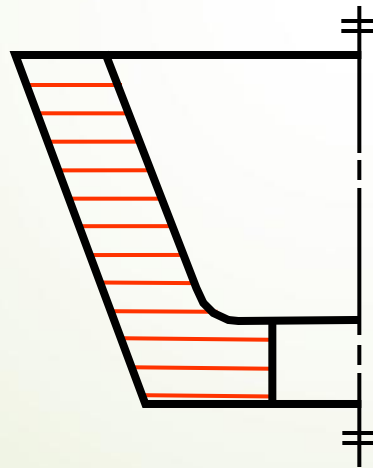
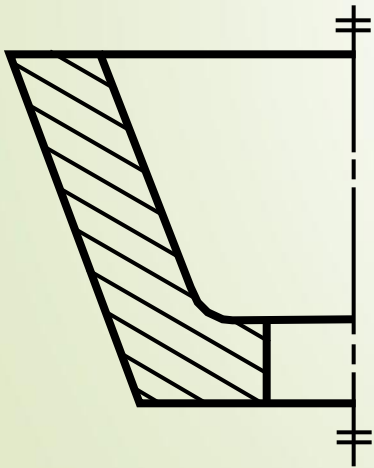
COMMON MISTAKE



SECTION LINING PRACTICE

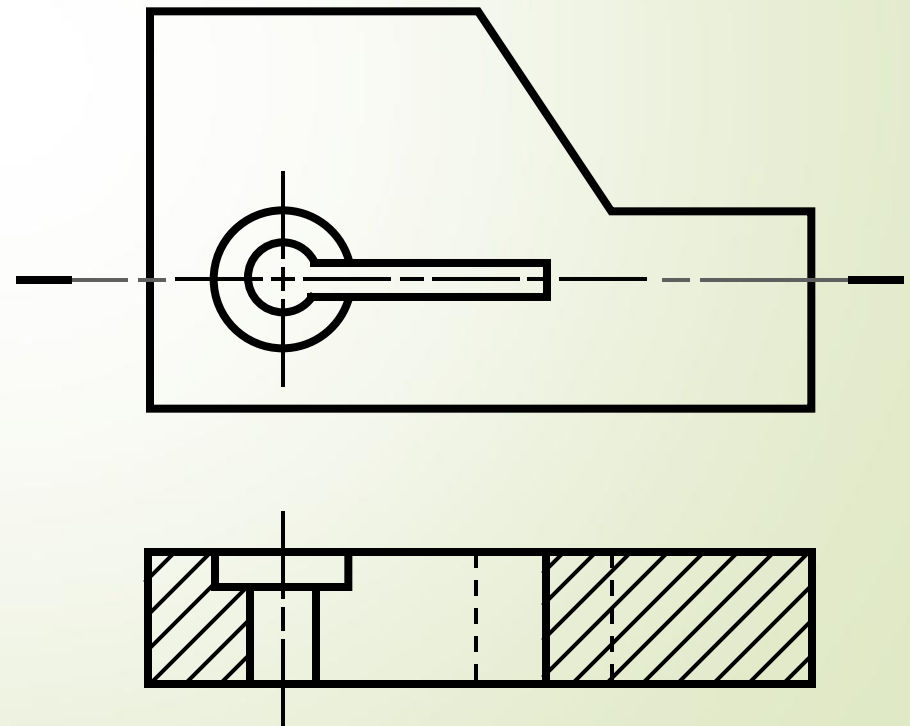
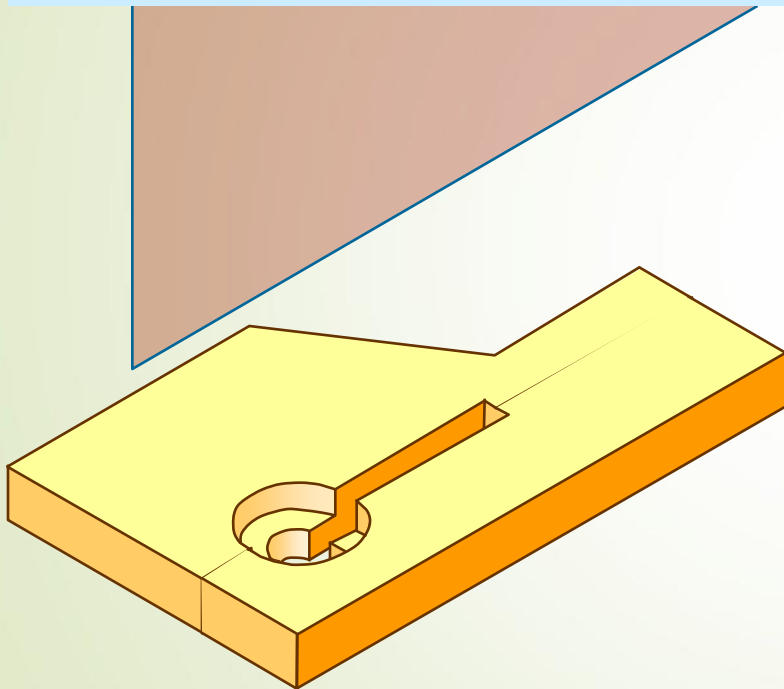
- It ***should not*** be drawn *parallel* or *perpendicular* to contour of the view.

COMMON MISTAKE



TREATMENT OF HIDDEN LINES

- Hidden lines are *normally omitted* from section views.

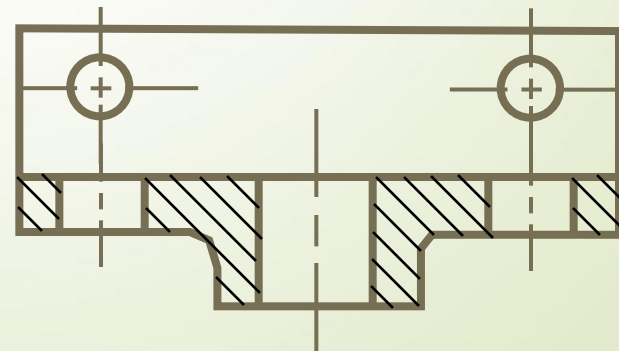
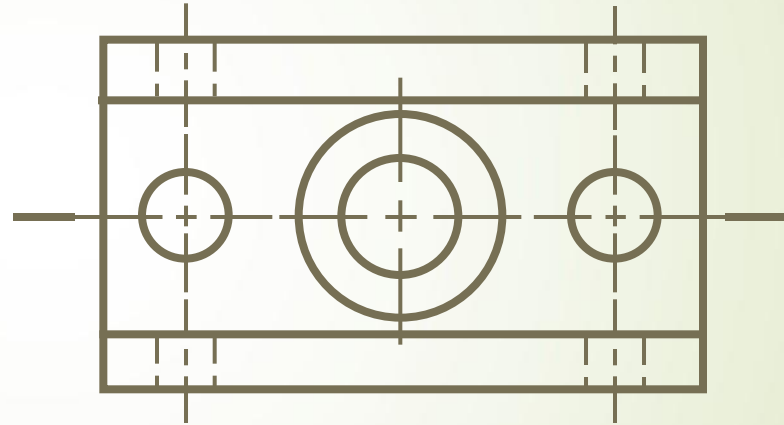
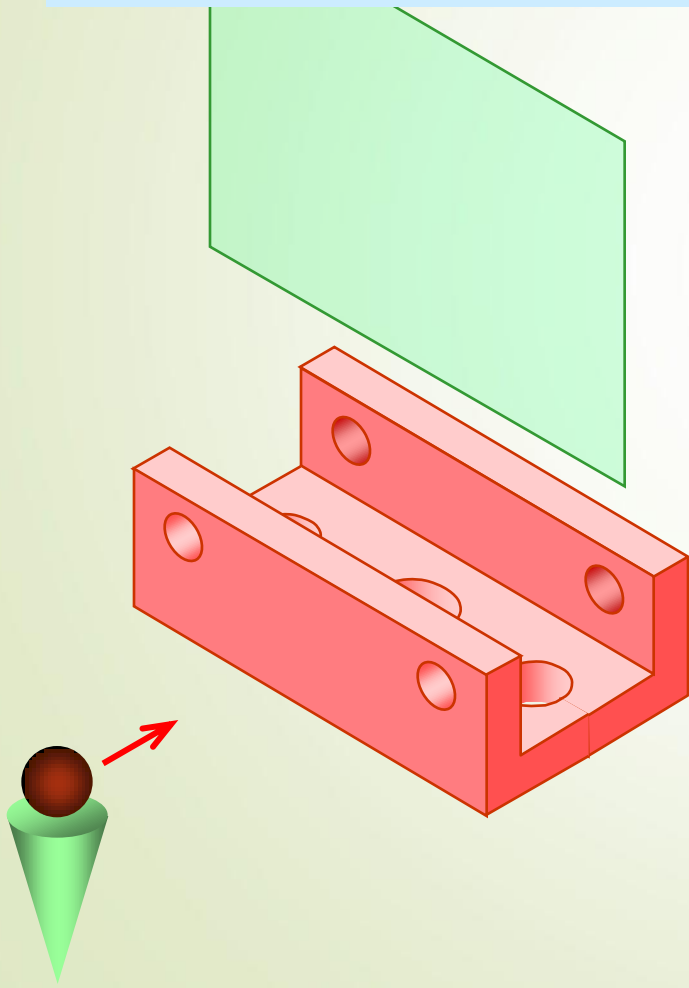


Types of Sectioning

1. Full section
2. Half section
3. Offset section

FULL SECTION VIEW

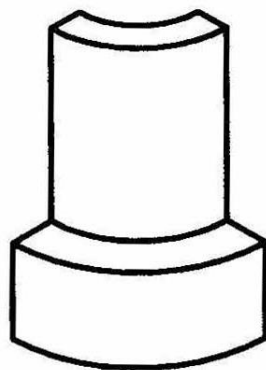
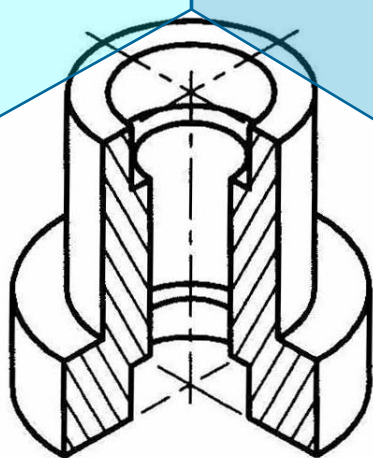
The view is made by passing the *straight* cutting plane *completely through* the part.



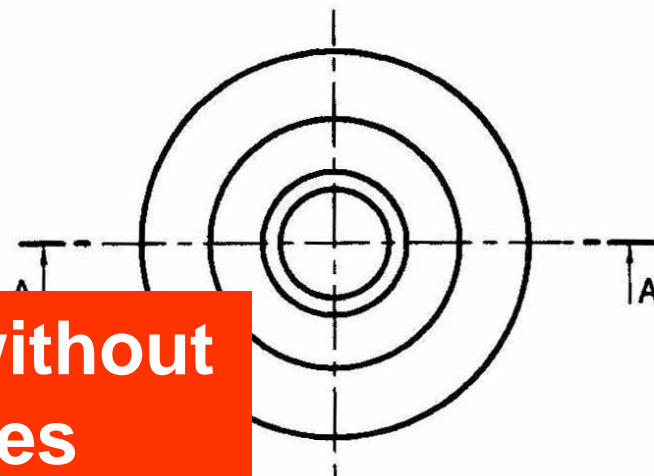
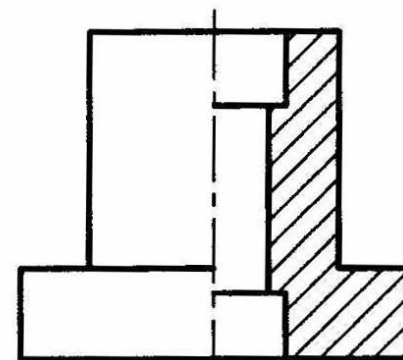
HALF SECTION VIEW

A half-section is a view of an object showing *one-half* of the view in section.

Symmetrical parts can be shown in half sections.

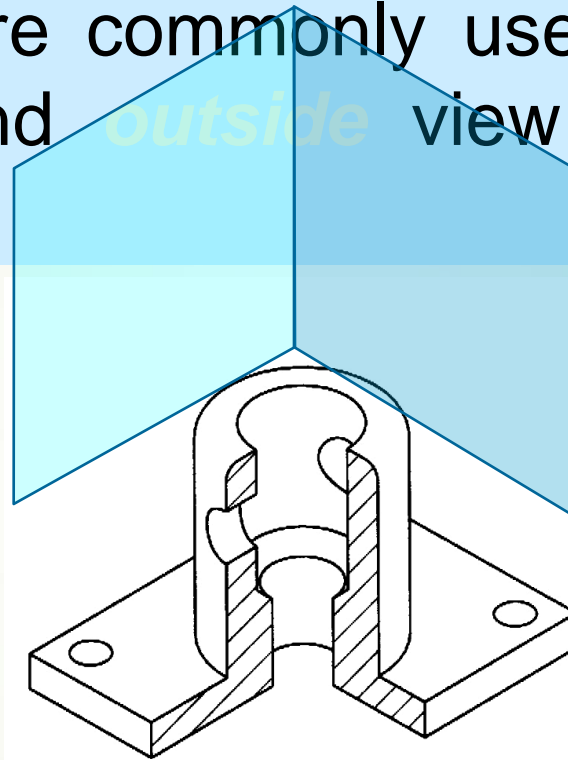


**Half section without
hidden lines**

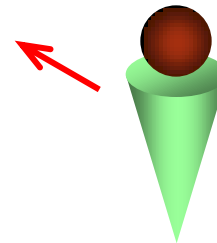
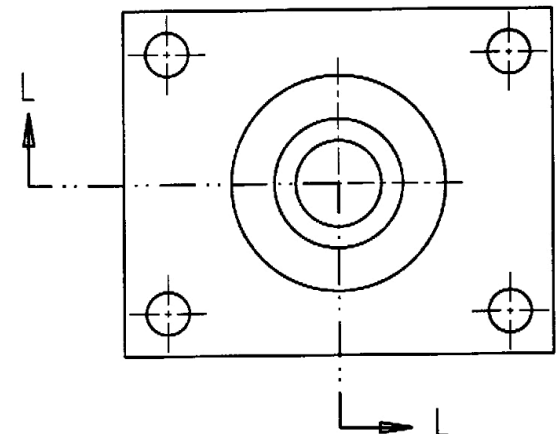
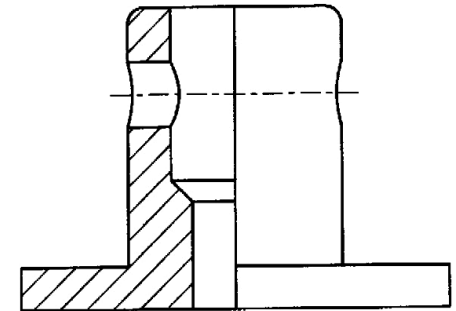


HALF SECTION VIEW

Half sections are commonly used to show both the *internal* and *outside* view of symmetrical objects.

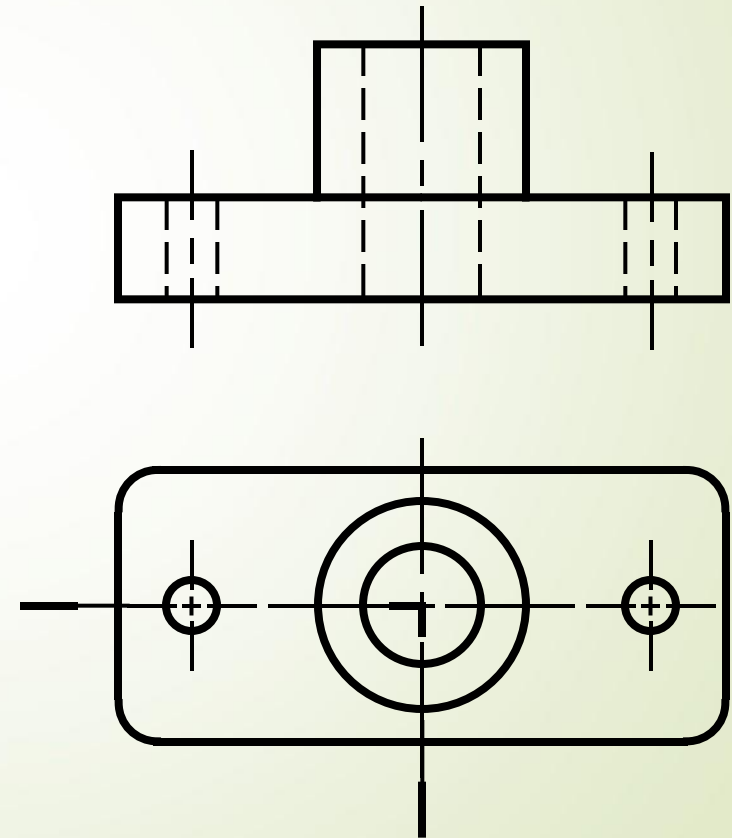
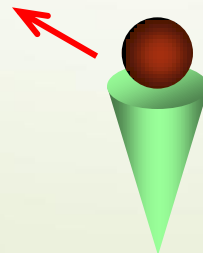
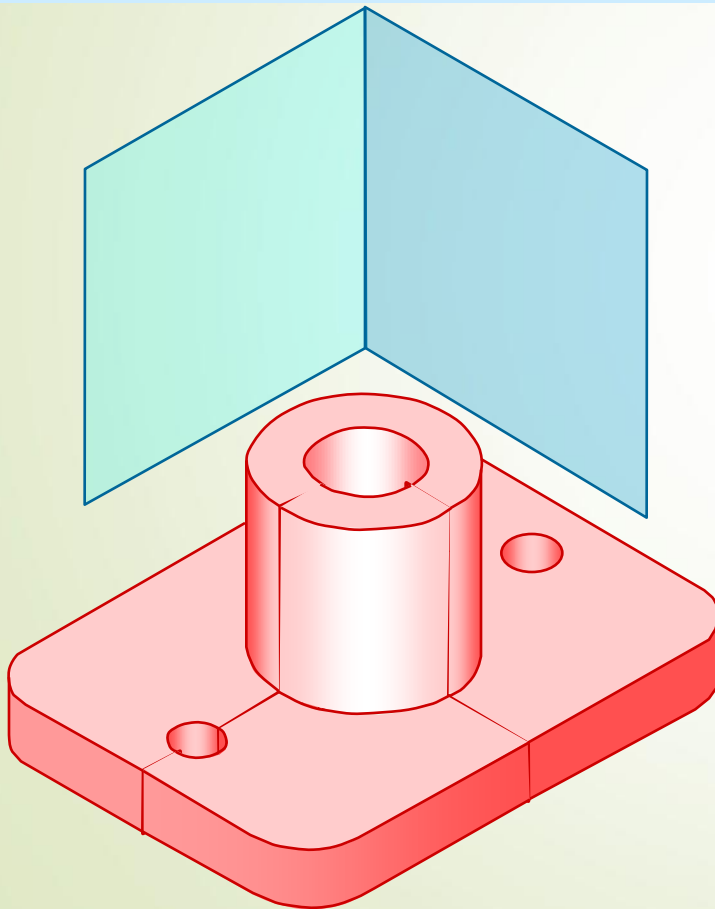


SECTION L-L



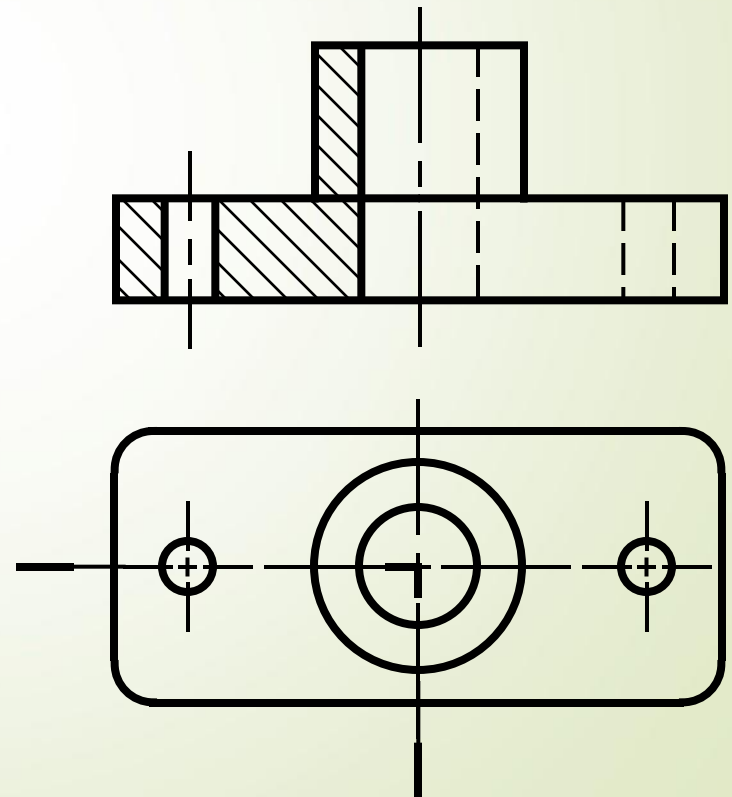
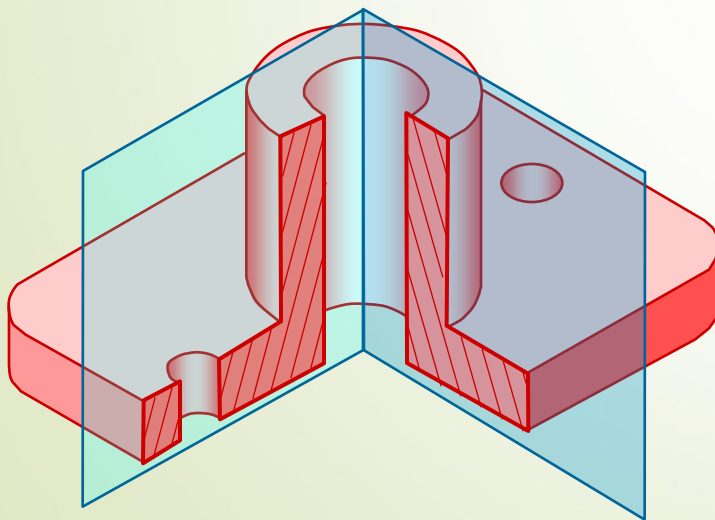
HALF SECTION VIEW

The view is made by passing the cutting plane *halfway* through an object and remove a *quarter* of it.



HALF SECTION VIEW

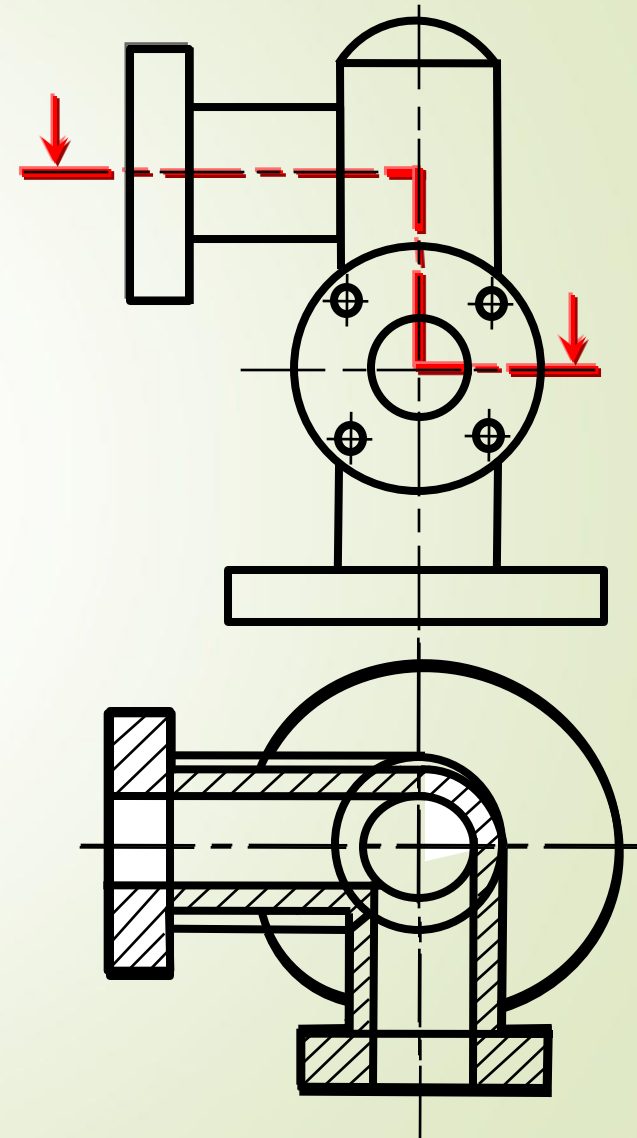
- A **center line** is used to separate the sectioned half from the unsectioned half of the view.
- **Hidden line** is omitted in unsection half of the view.



OFFSET SECTION VIEW

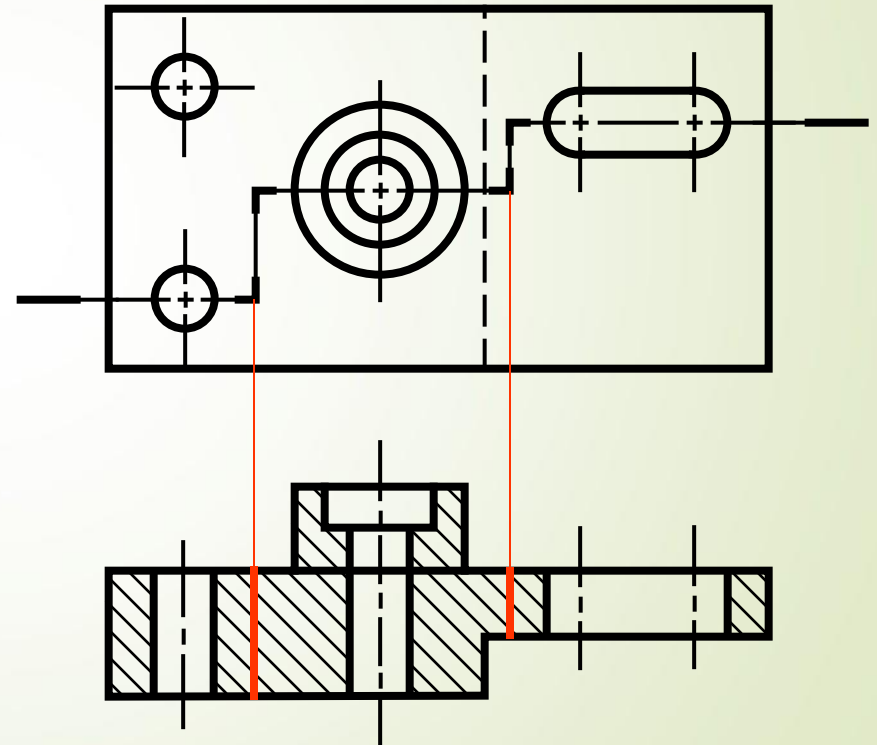
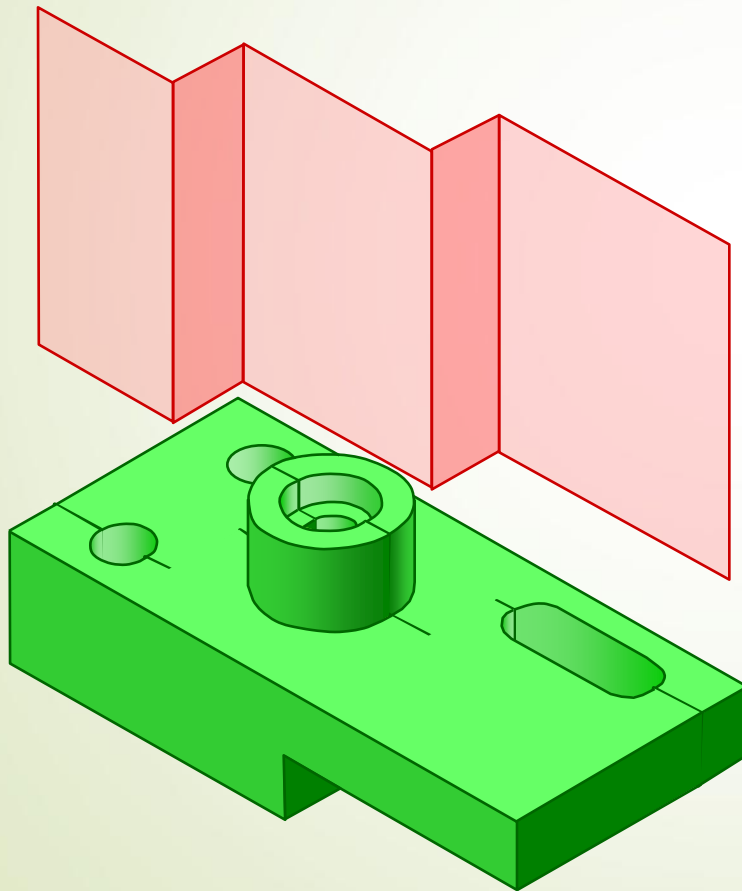
The cutting plane is *off-set* to include features that are not in a straight line.

It is possible for the cutting plane to *change directions*, to *minimise on the number* of sectional views required to capture the necessary details.



OFFSET SECTION VIEW

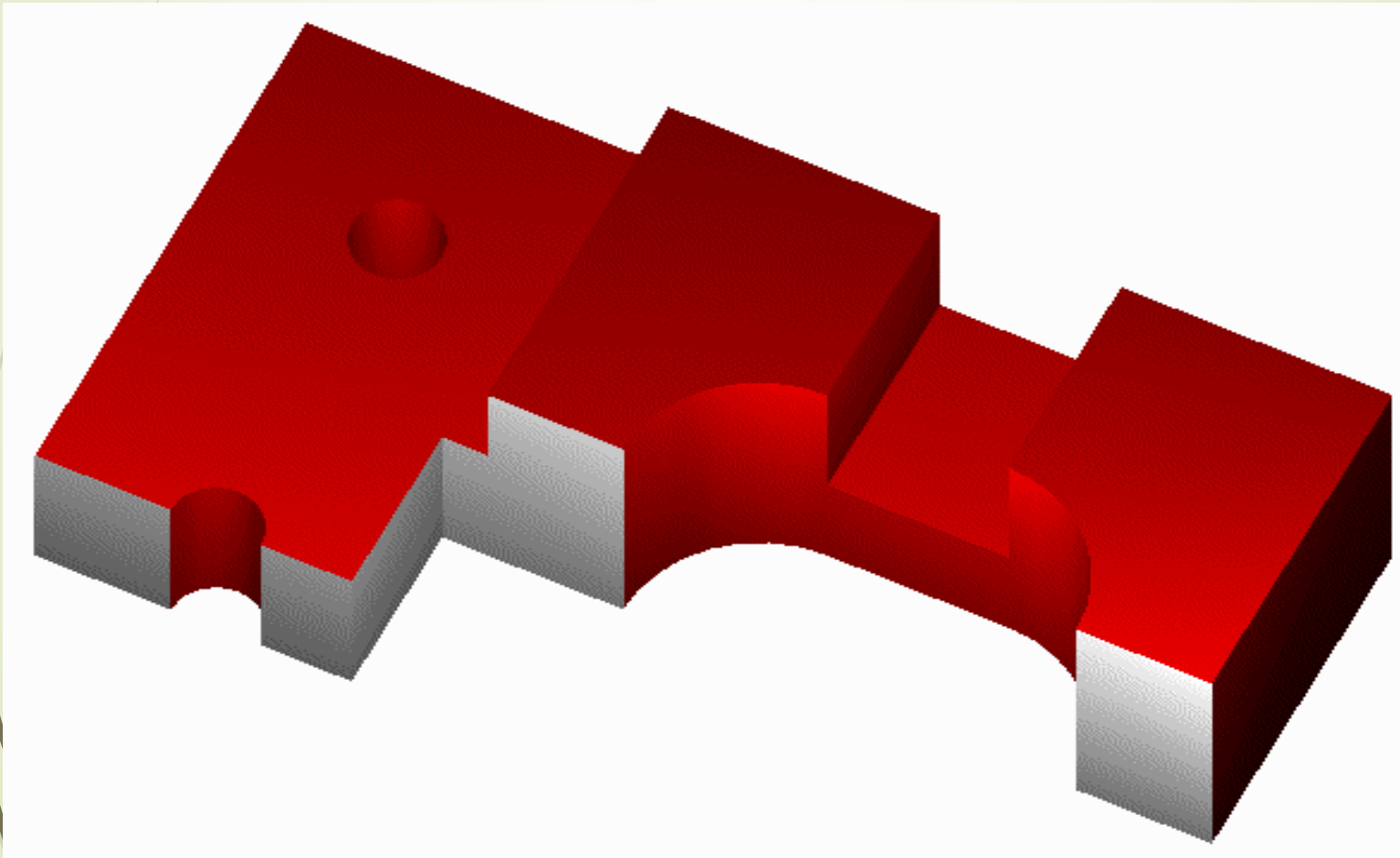
The view is made by passing the *bended* cutting plane *completely through* the part.



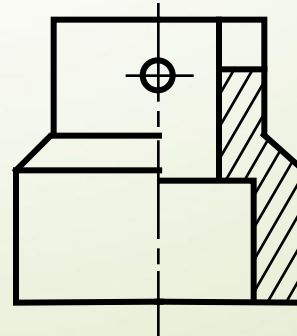
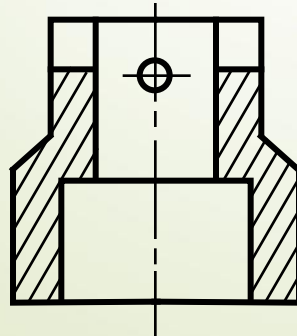
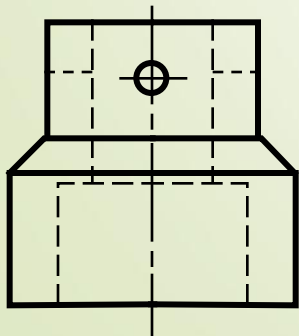
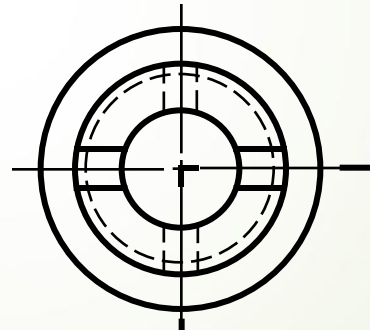
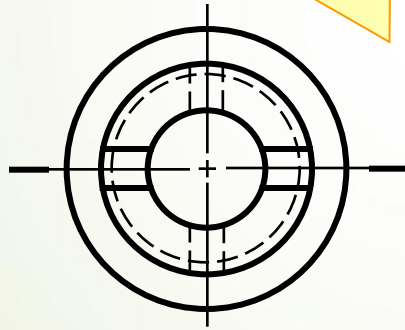
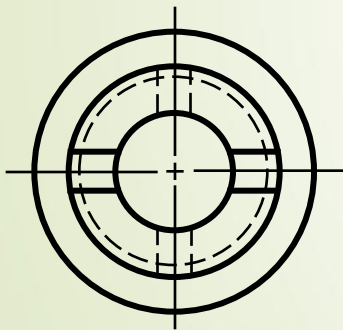
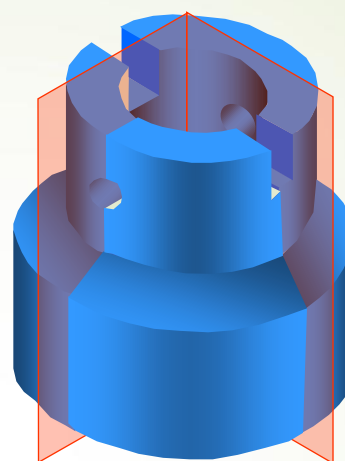
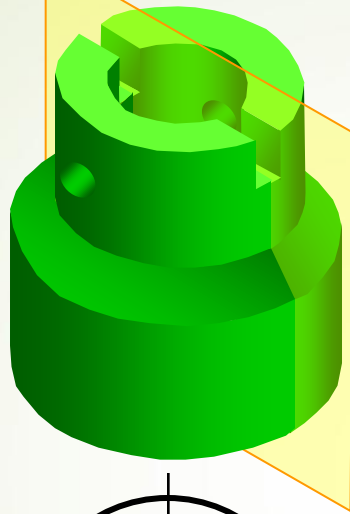
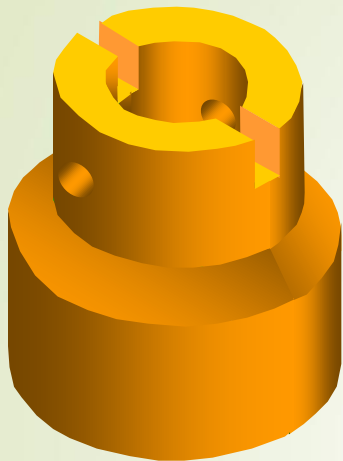
Do not show the edge views of the cutting plane.



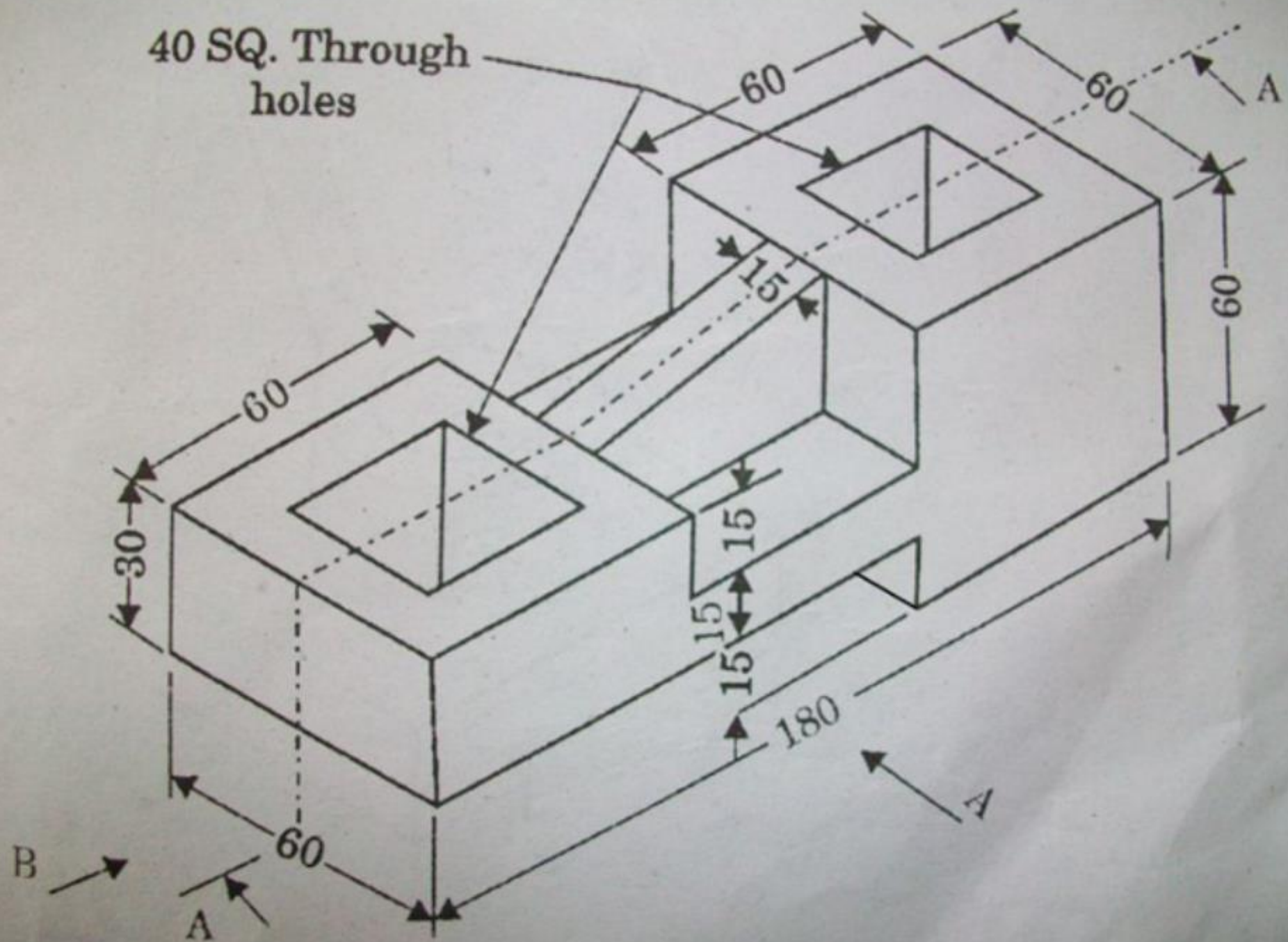
OFFSET SECTION VIEW

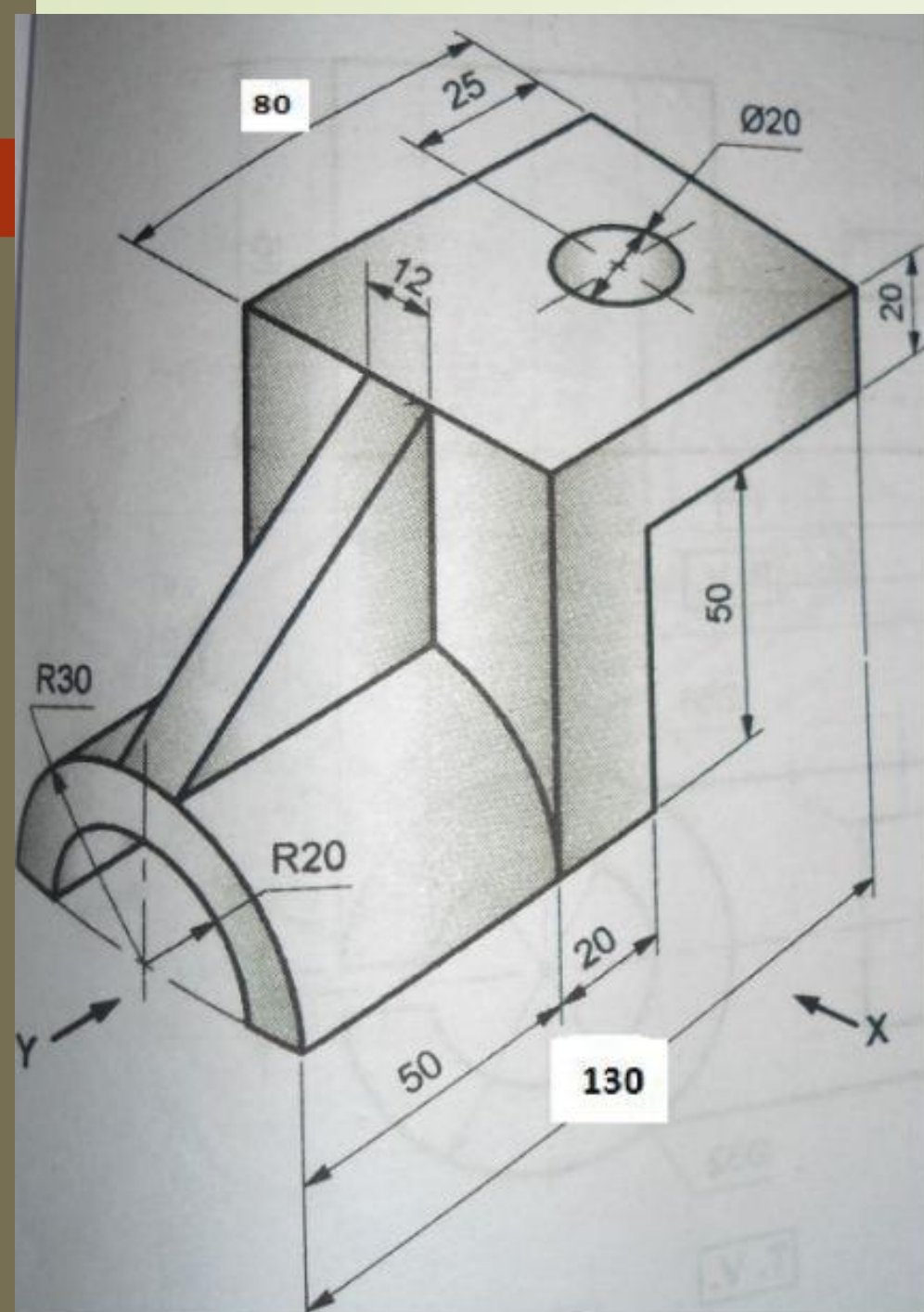


EXAMPLE : Comparison among several section techniques

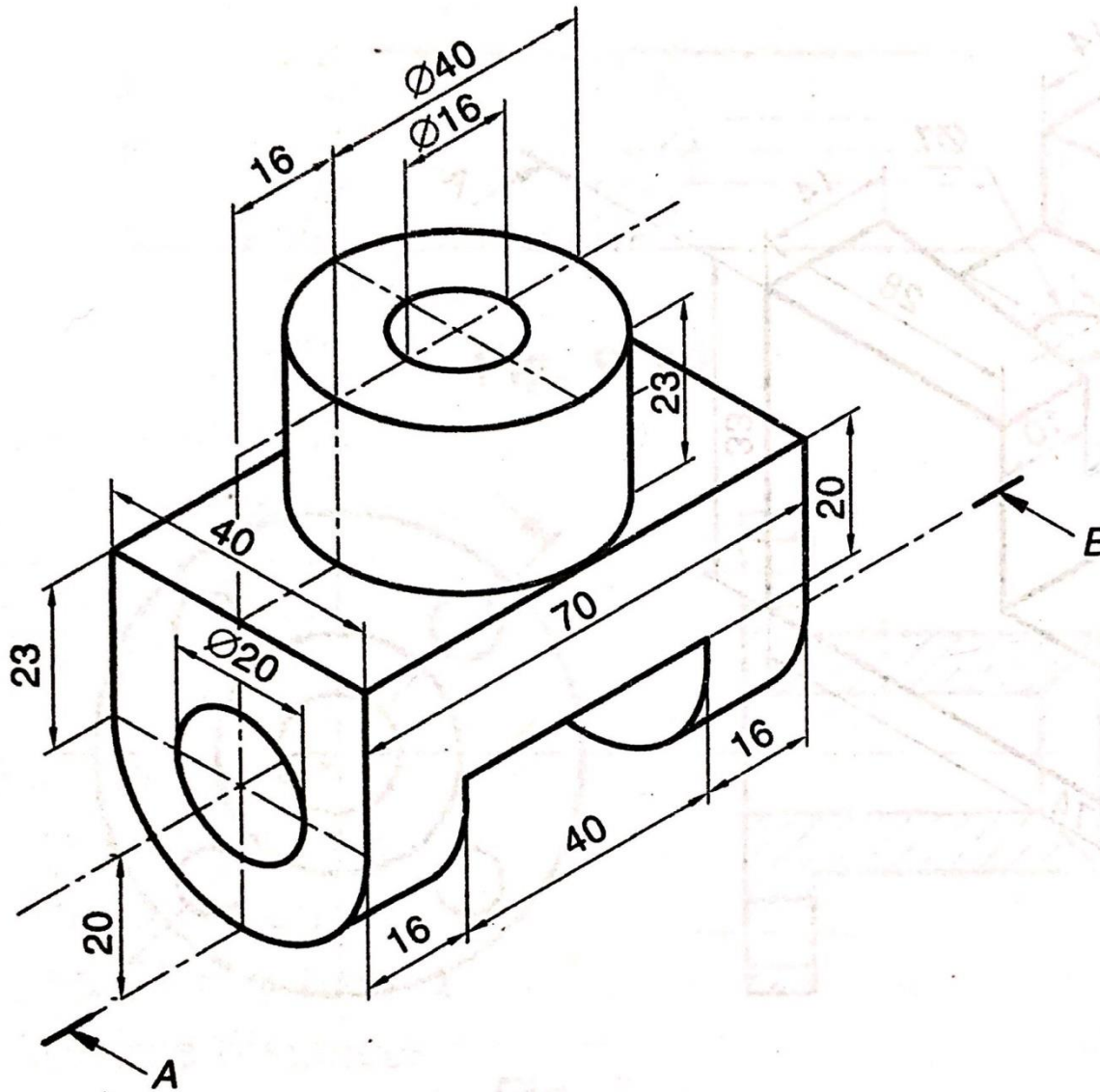


40 SQ. Through
holes

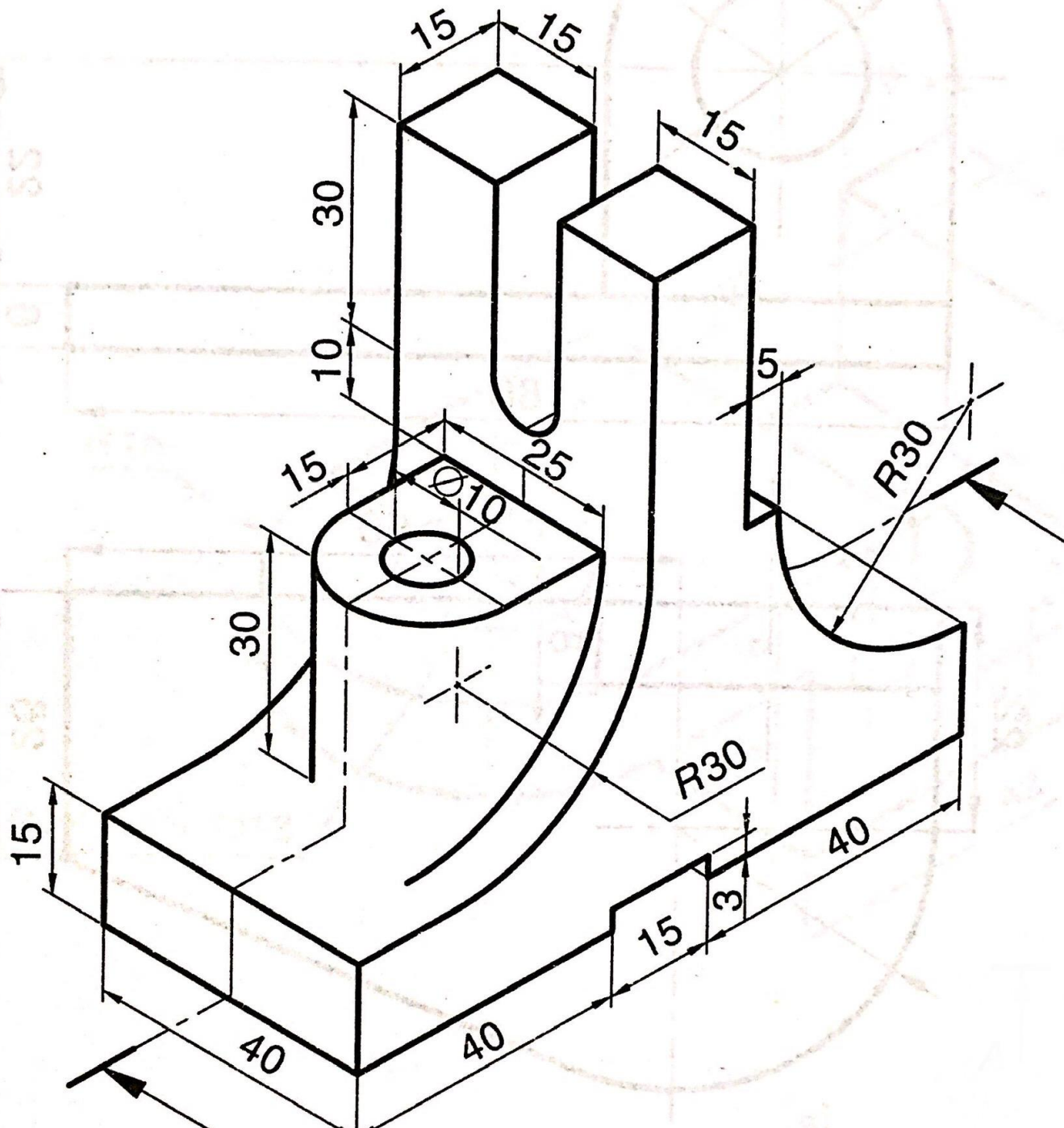




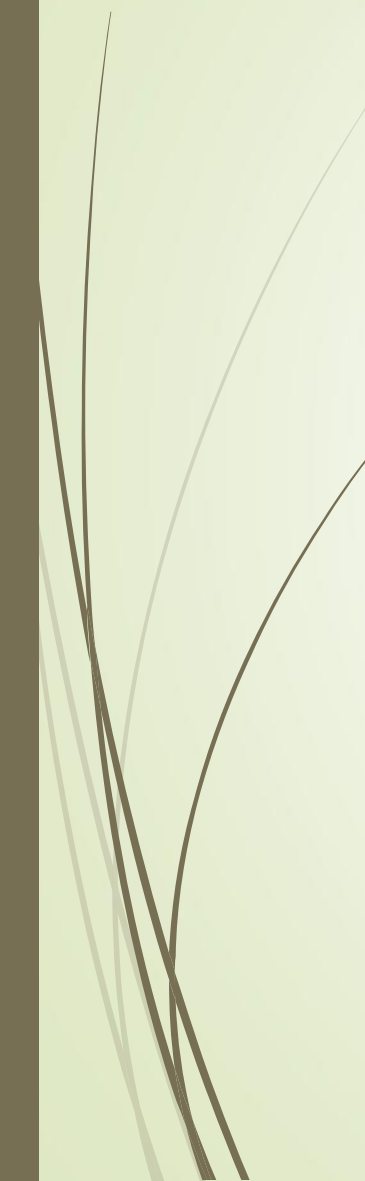
1. Full Sectional Front View
2. Top View

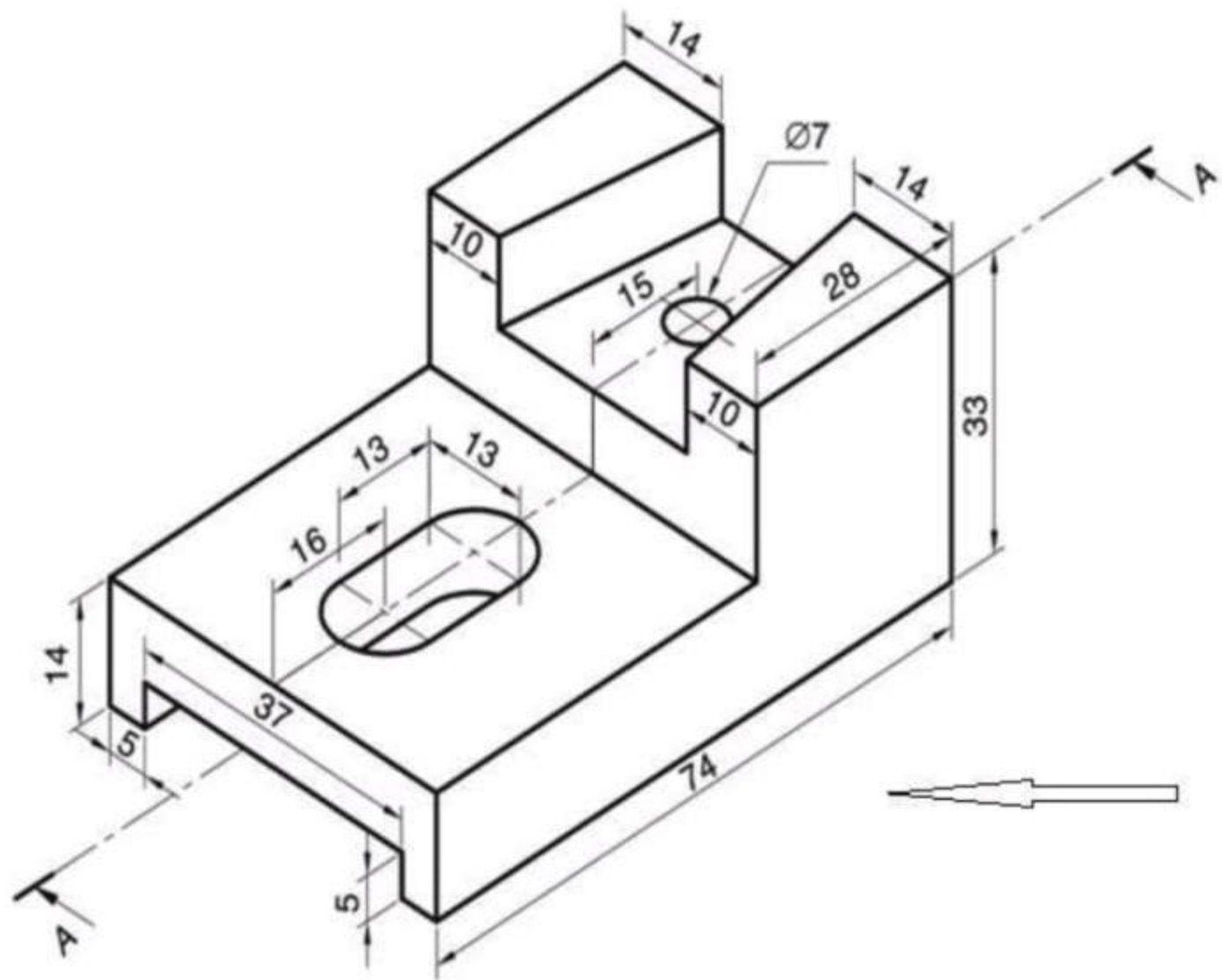


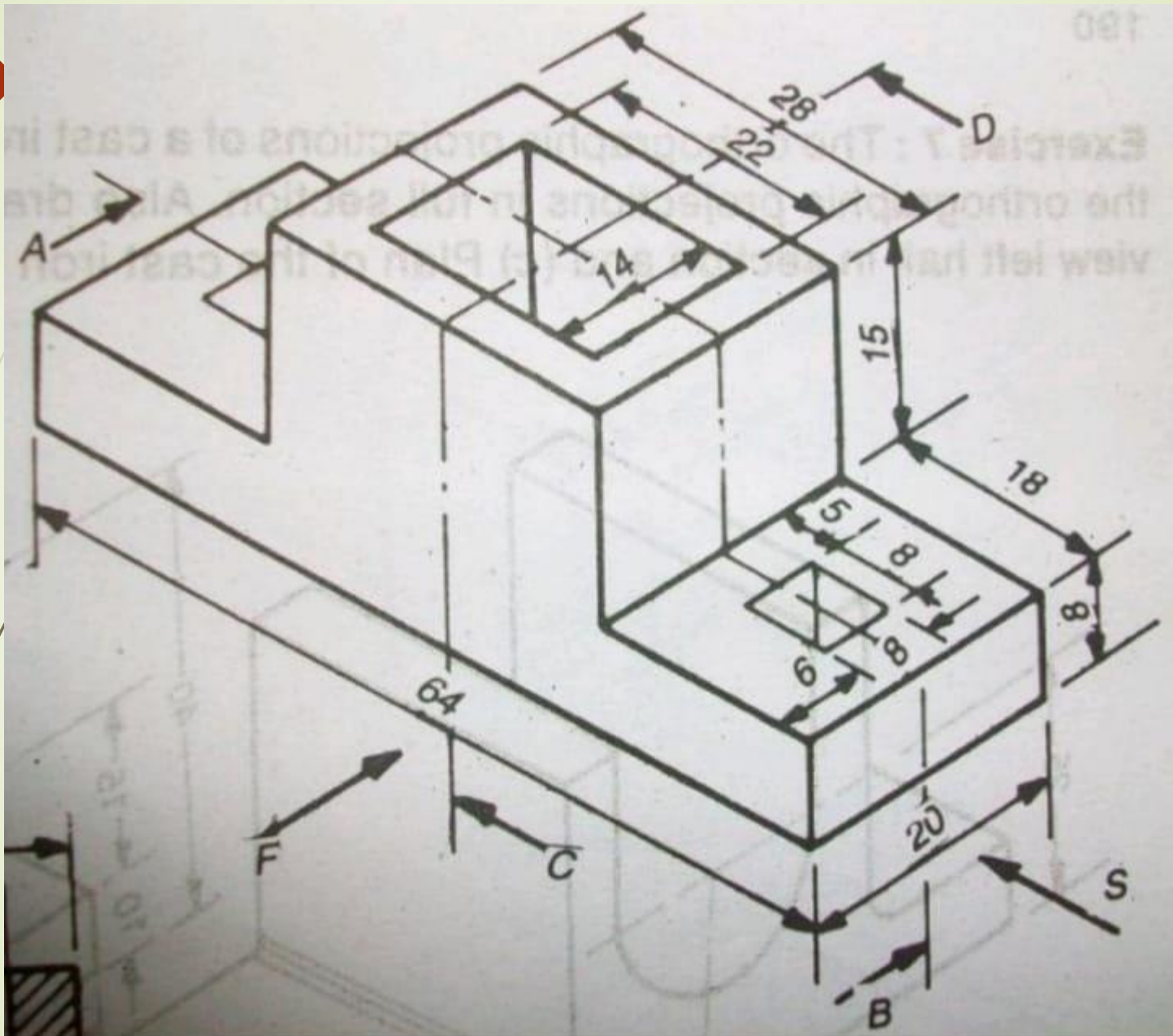
1. Full Sectional Front View
2. Top View

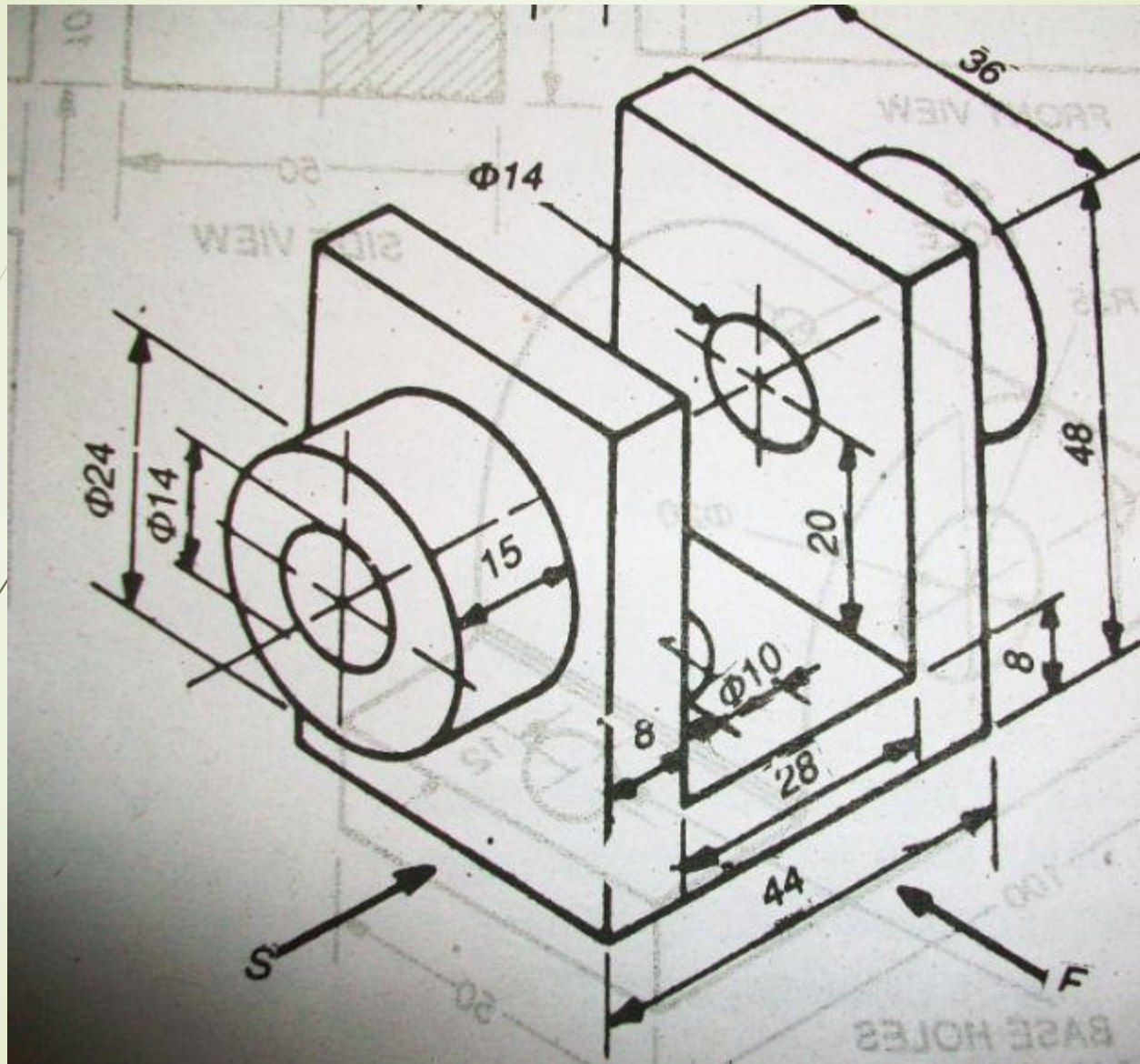


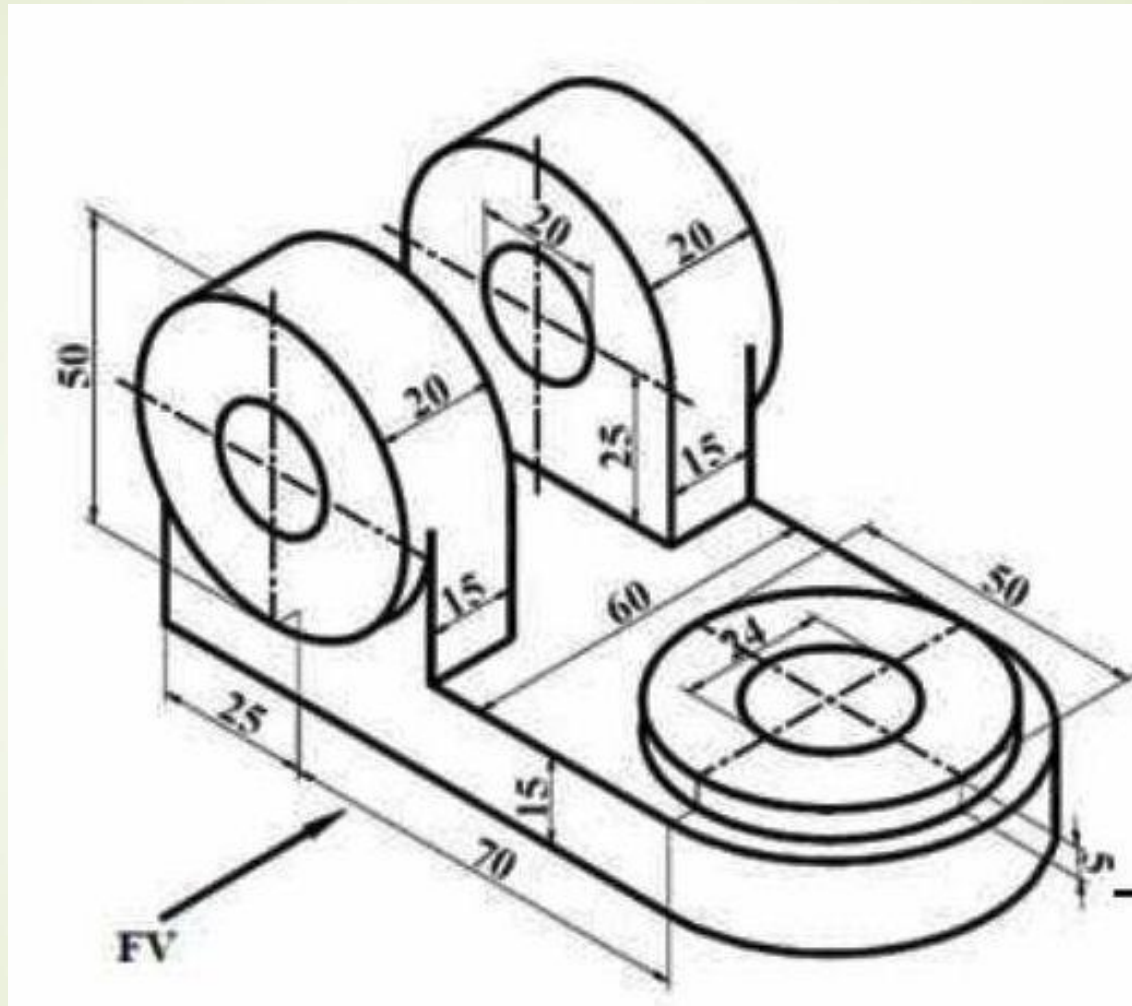
1. Full Sectional Front View
2. Top View













Thank You