

Sectional Orthographic Projections:

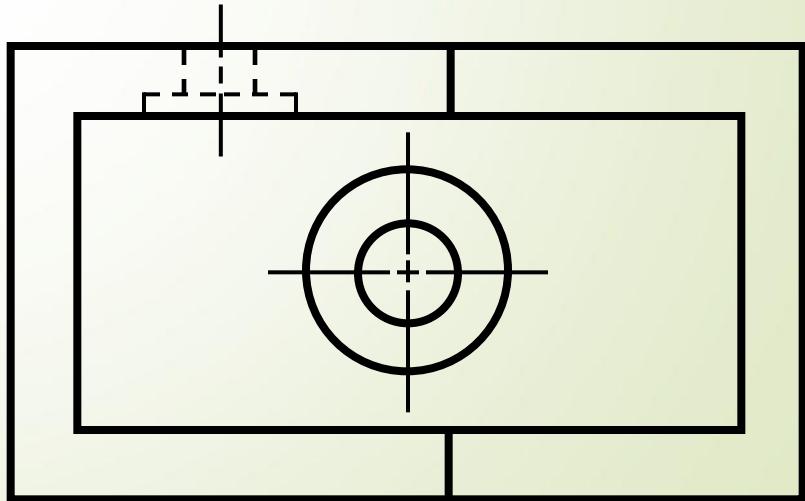
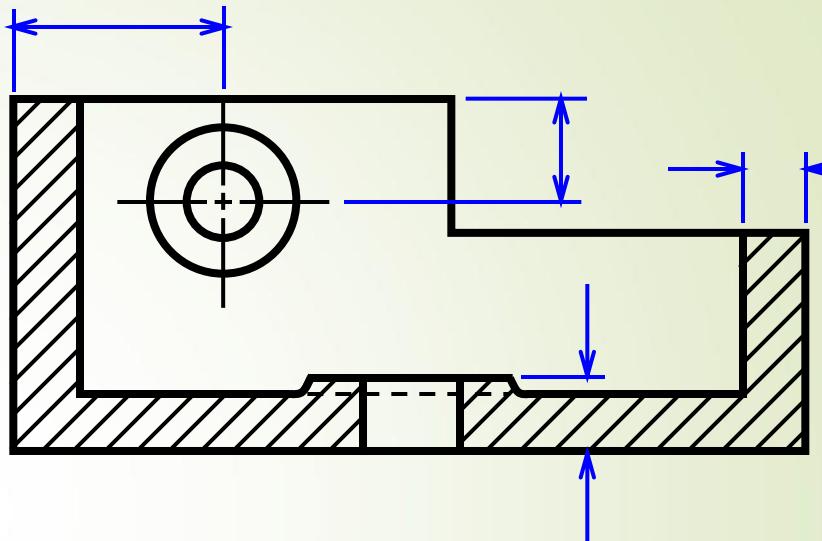
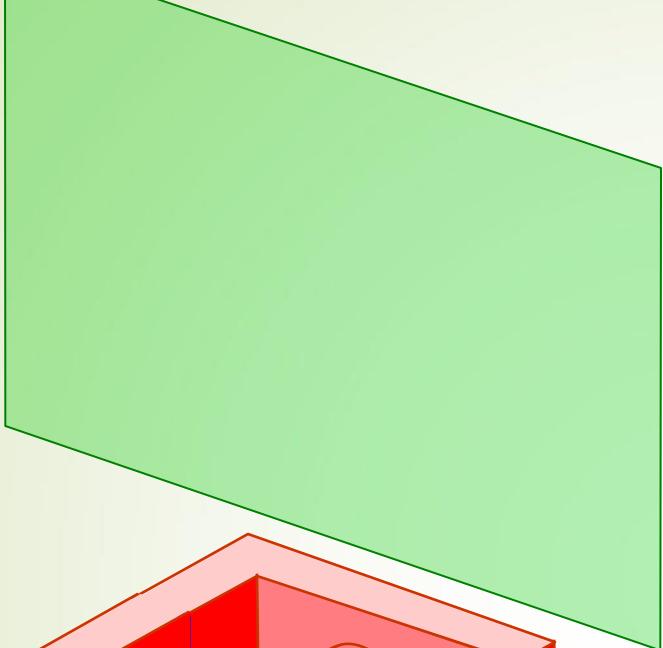
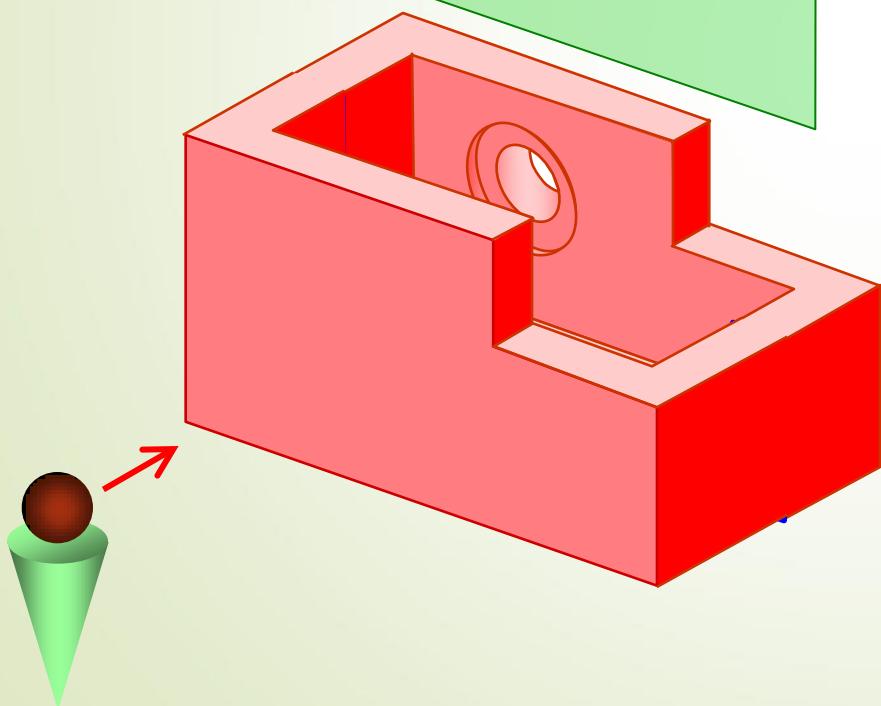
The projections in which the internal shape of an object is shown.

PURPOSES OF SECTION VIEWS

Clarify the views by:

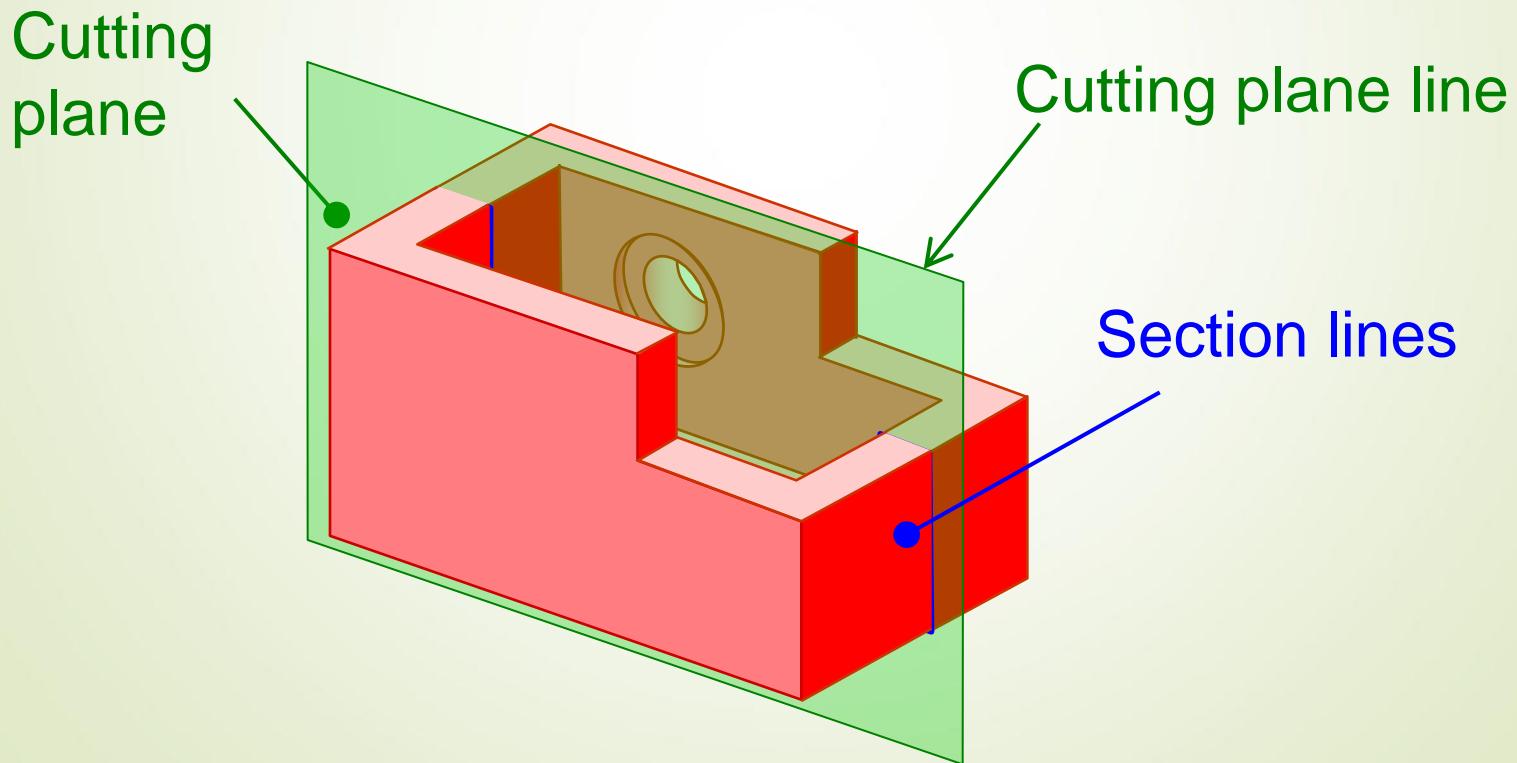
- ❖ Reducing or eliminating the hidden lines.
- ❖ Revealing the cross sectional's shape.

EXAMPLE : Advantage of using a section view.



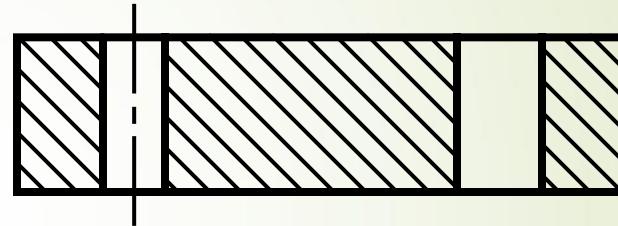
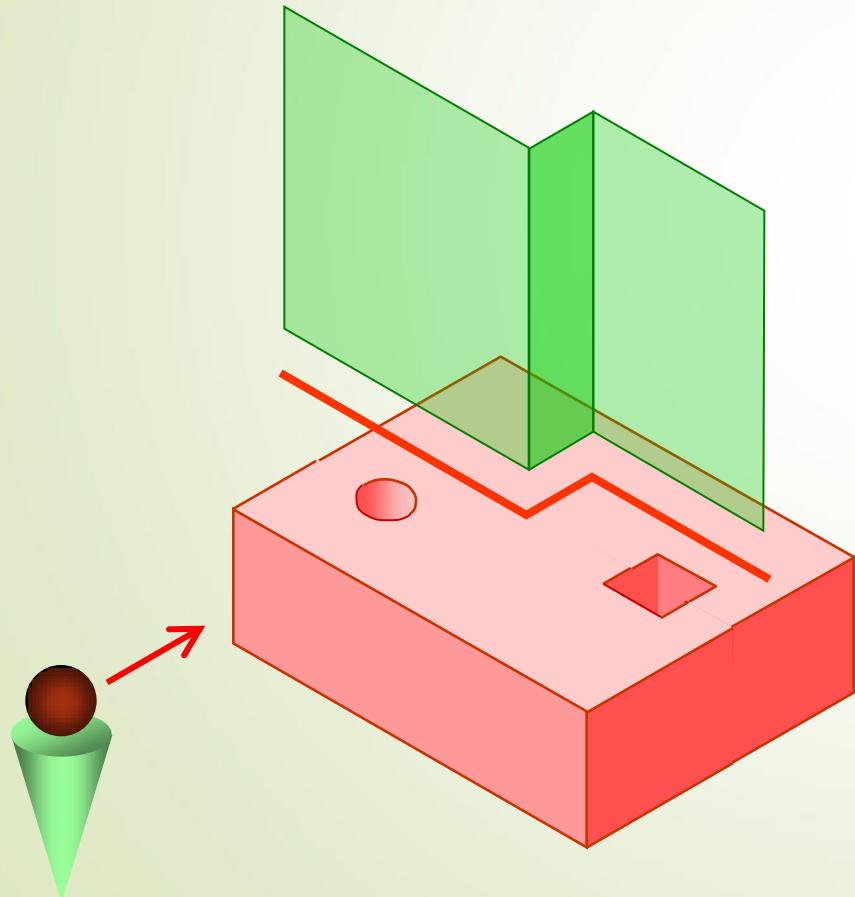
CUTTING PLANE

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

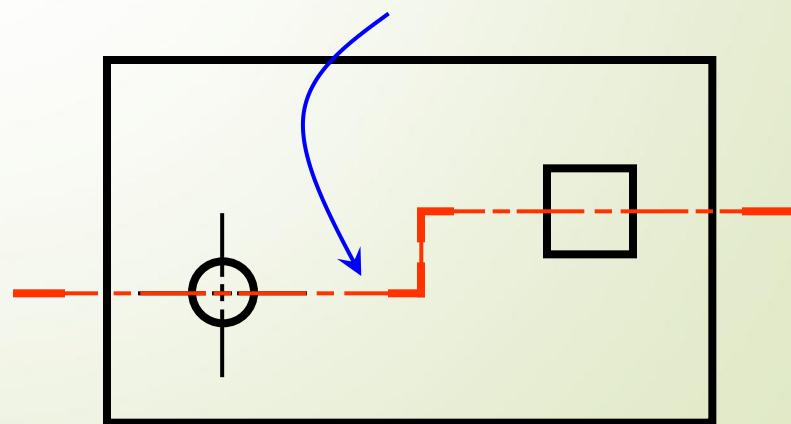


CUTTING PLANE LINE

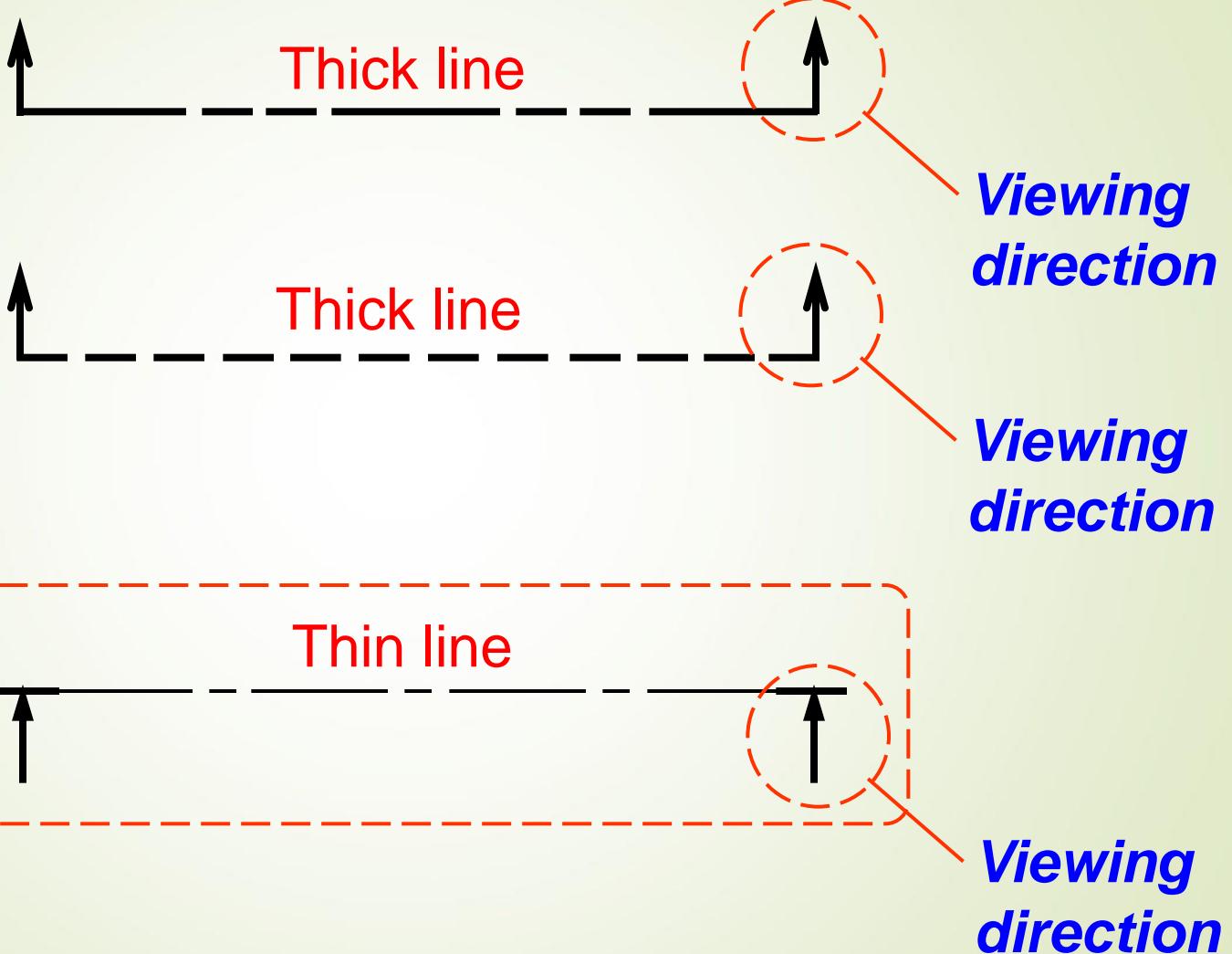
Cutting plane line is an ***edge view*** of the cutting plane.



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

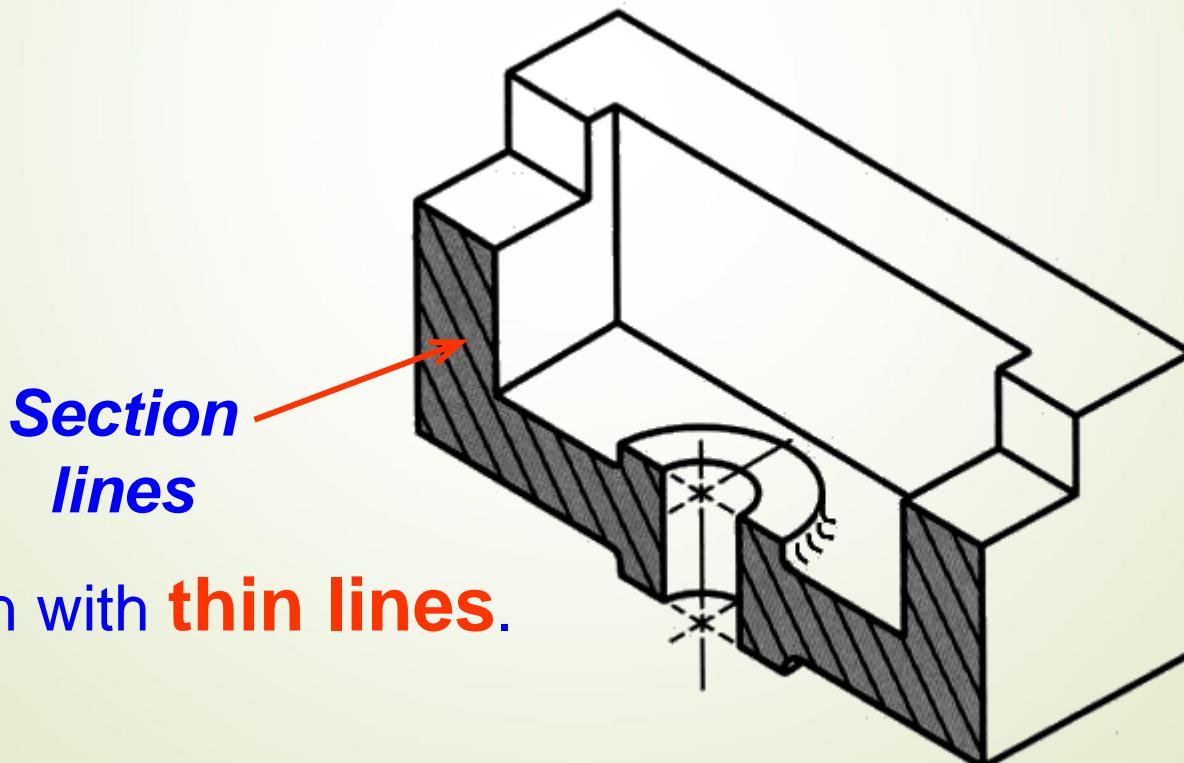


CUTTING PLANE LINESTYLES



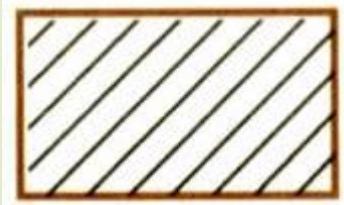
SECTION LINING

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

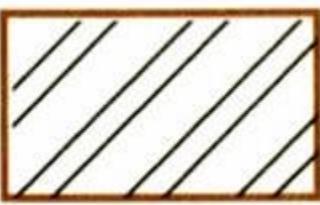


SECTION LINES SYMBOLS

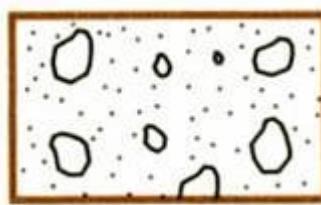
- The section lines are different for each of material's type.
- For practical purpose, the cast iron symbol is used most often for any materials.



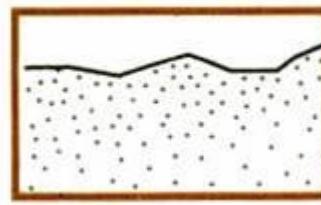
Cast iron,
Malleable iron



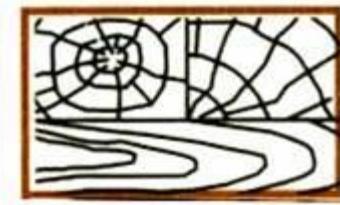
Steel



Concrete



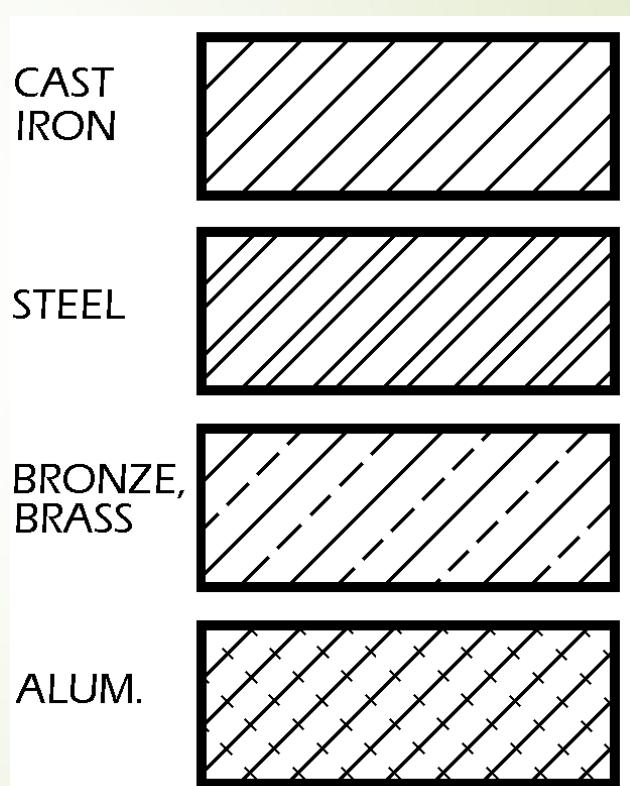
Sand



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



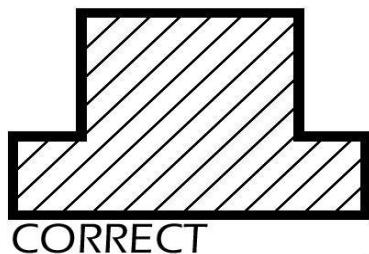
SECTION LINING

- ▶ 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

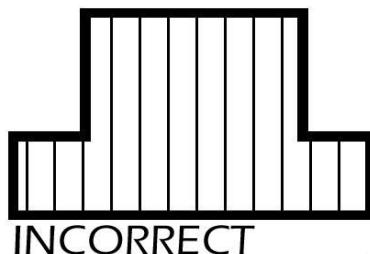
Section Lining – Line Placement

- ▶ 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.

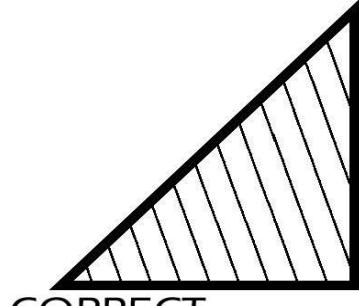
Section Lining – Line Placement



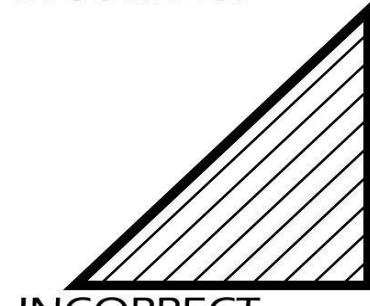
CORRECT



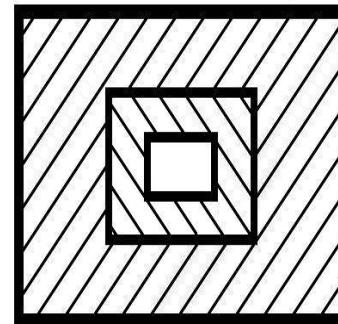
INCORRECT



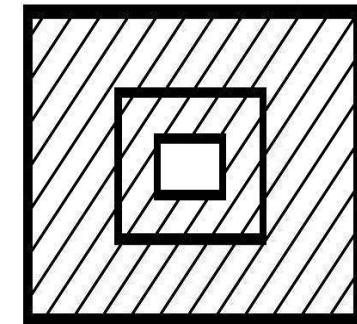
CORRECT



INCORRECT



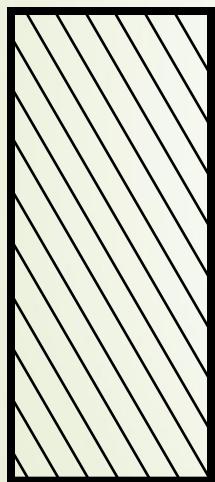
CORRECT



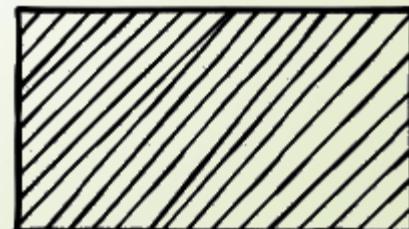
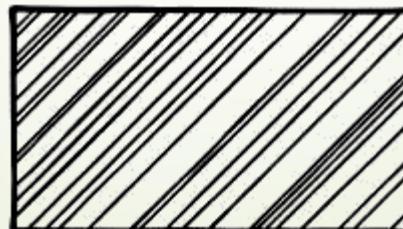
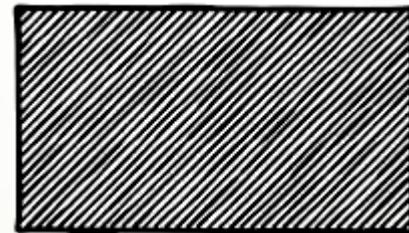
INCORRECT

SECTION LINING PRACTICE

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



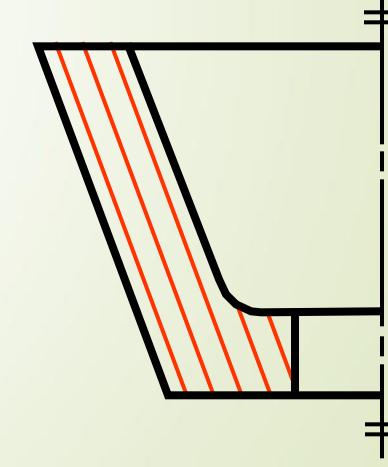
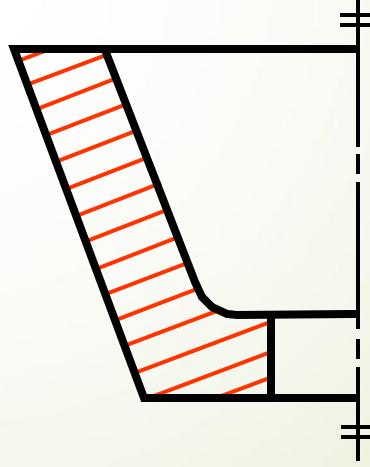
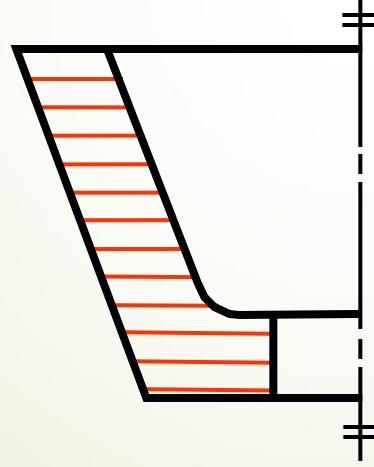
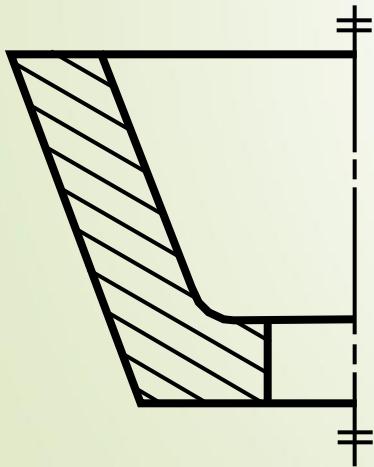
COMMON MISTAKE



SECTION LINING PRACTICE

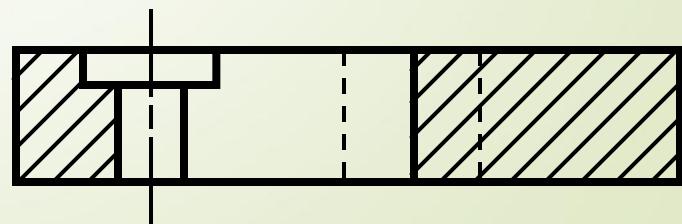
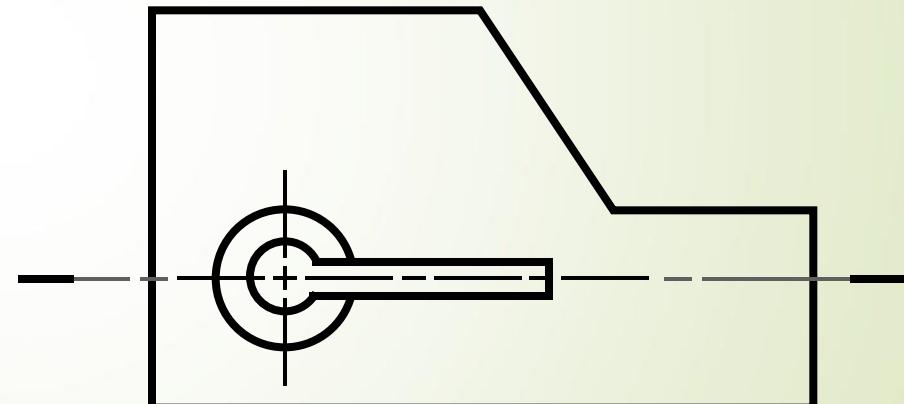
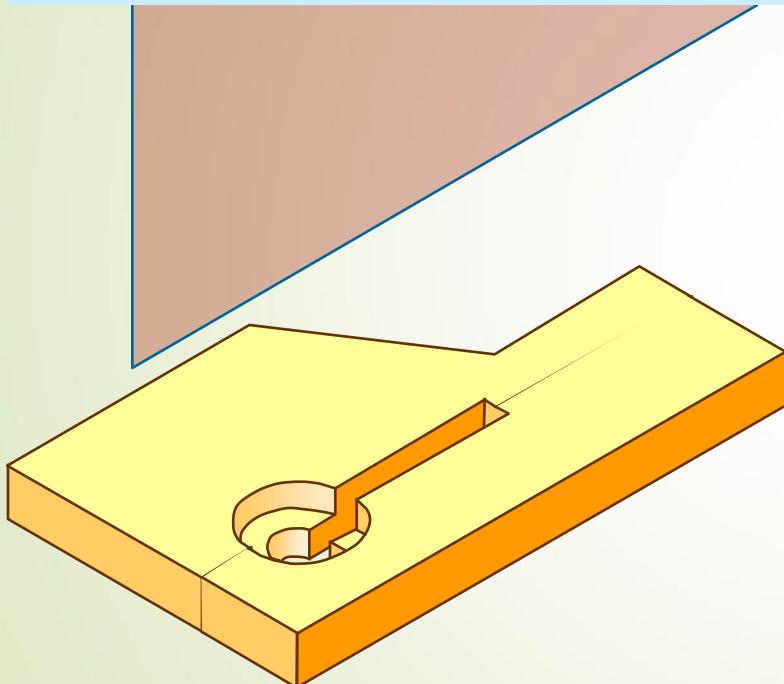
- It ***should not*** be drawn parallel or perpendicular to contour of the view.

COMMON MISTAKE



TREATMENT OF HIDDEN LINES

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

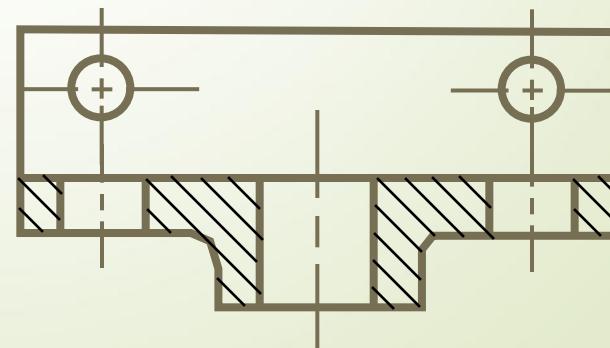
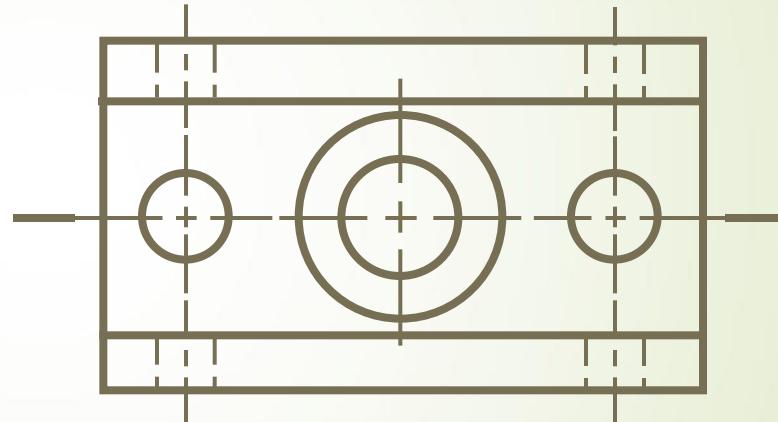
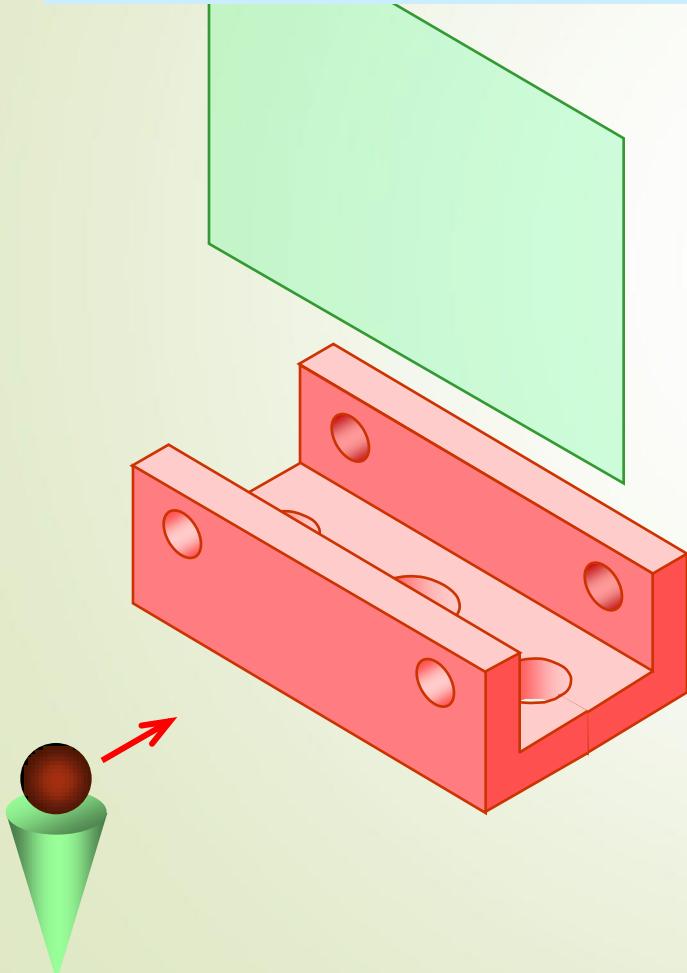


Types of Sectioning

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

FULL SECTION VIEW

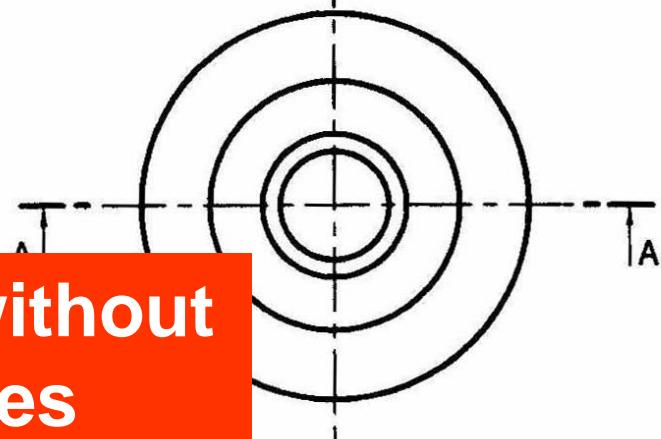
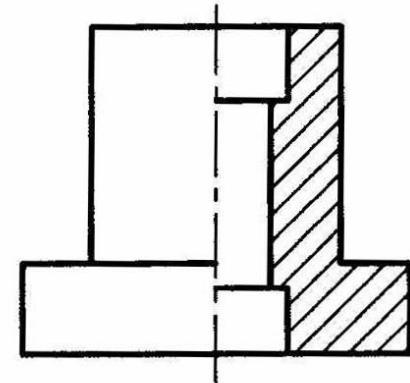
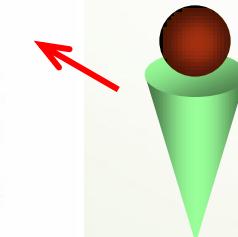
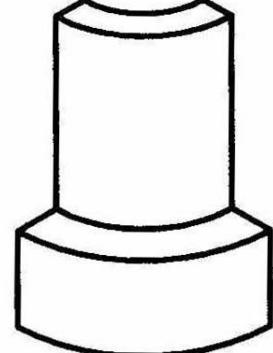
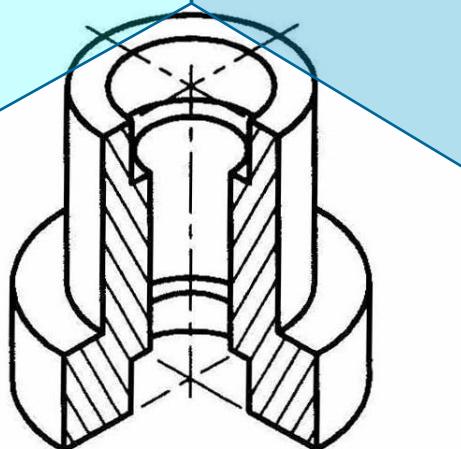
The view is made by passing the ***straight*** cutting plane ***completely through*** the part.



HALF SECTION VIEW

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

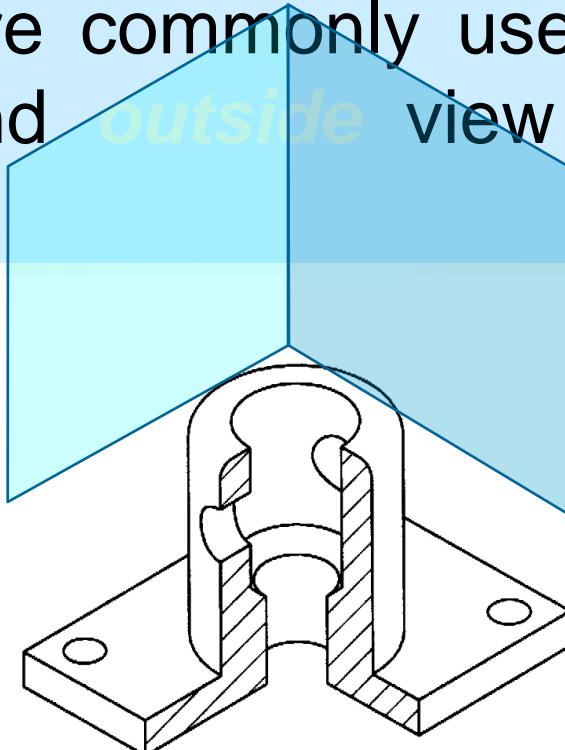
Symmetrical parts can be shown in half sections.



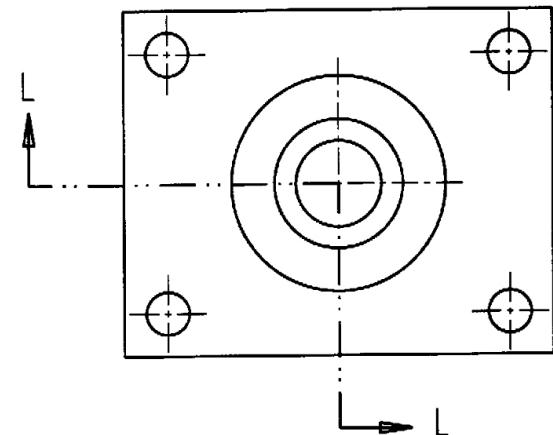
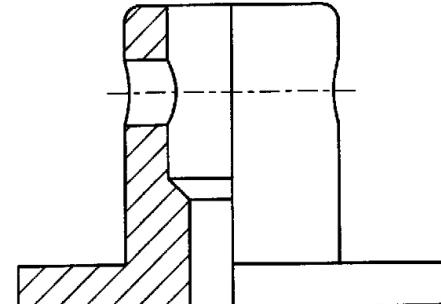
Half section without
hidden lines

HALF SECTION VIEW

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

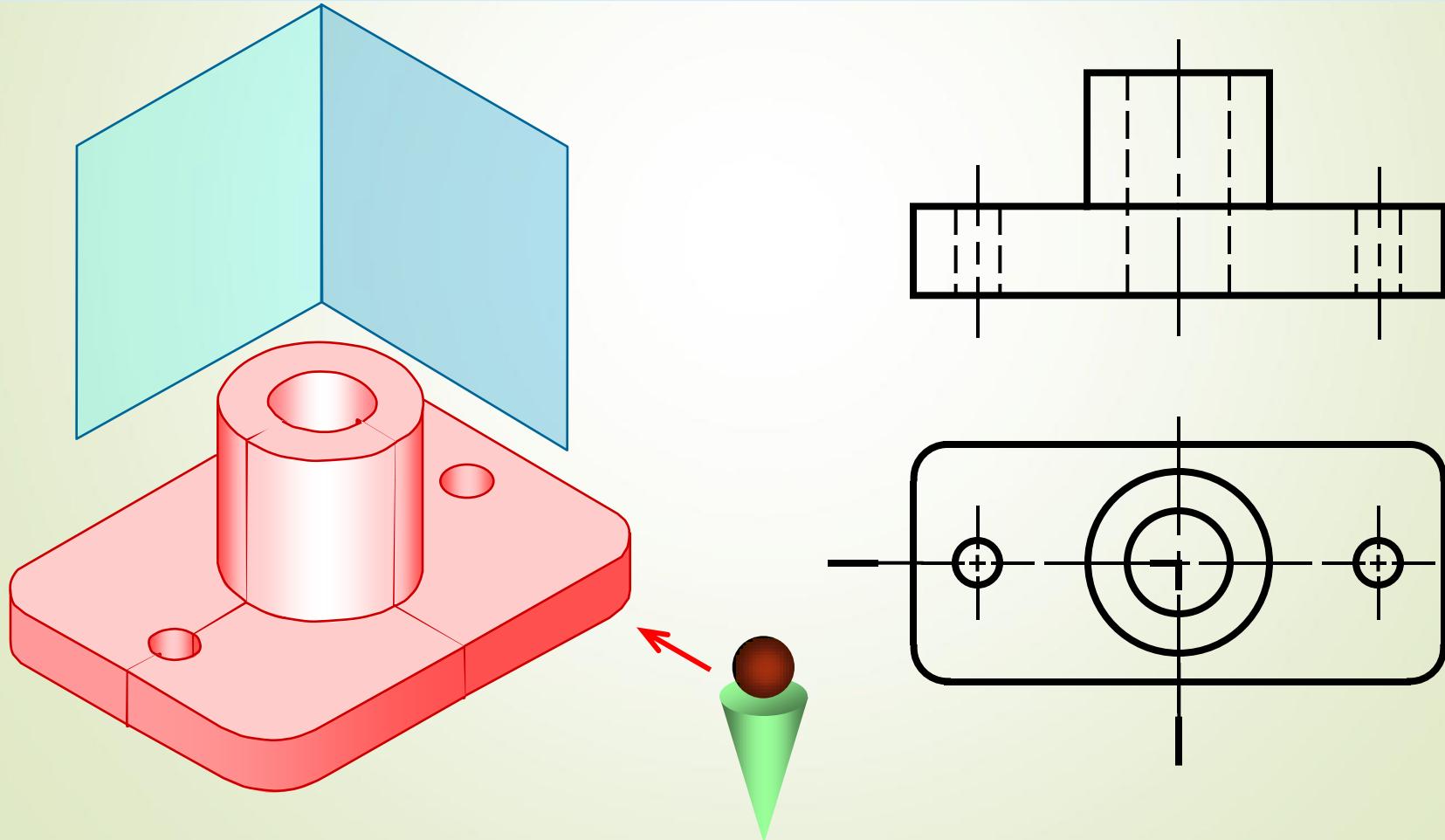


SECTION L-L



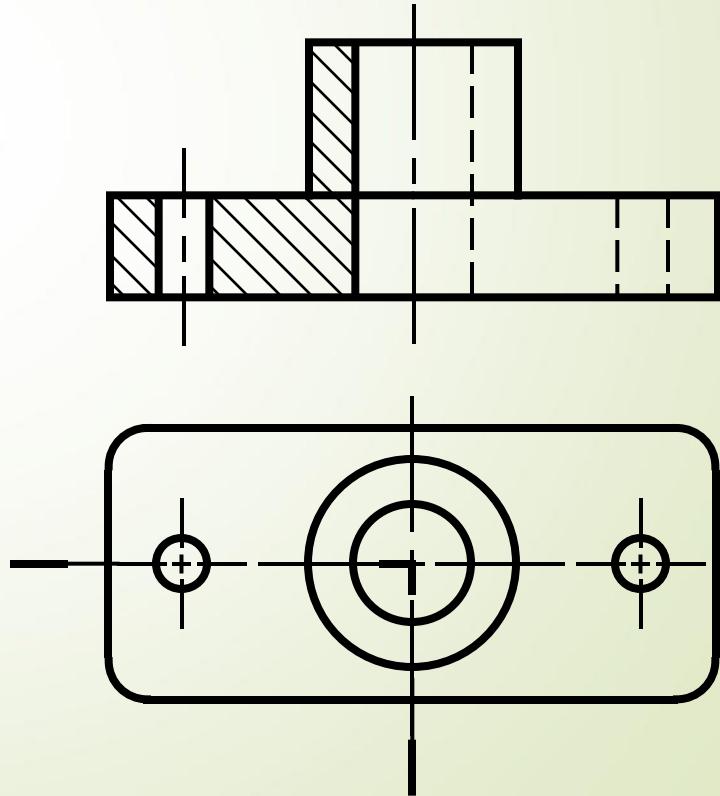
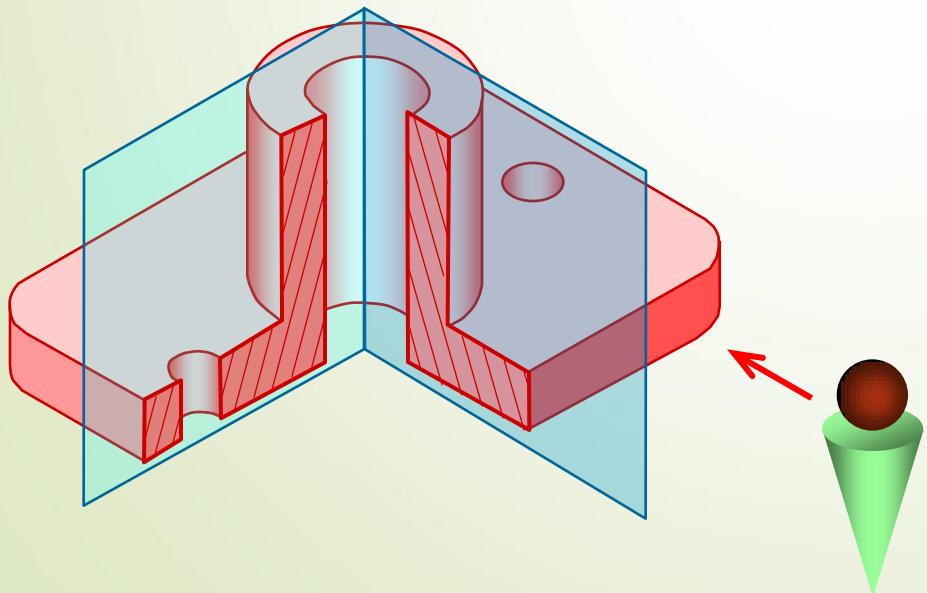
HALF SECTION VIEW

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



HALF SECTION VIEW

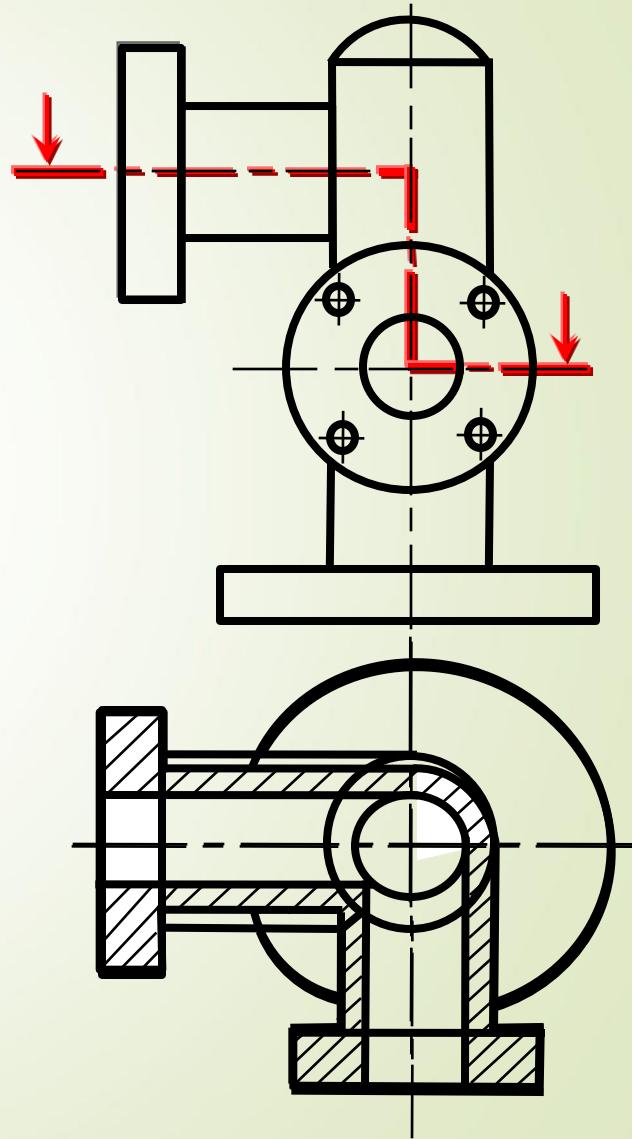
- A **center line** is used to separate the sectioned half from the unsectioned half of the view.
- **Hidden line** is omitted in unsection half of the view.



OFFSET SECTION VIEW

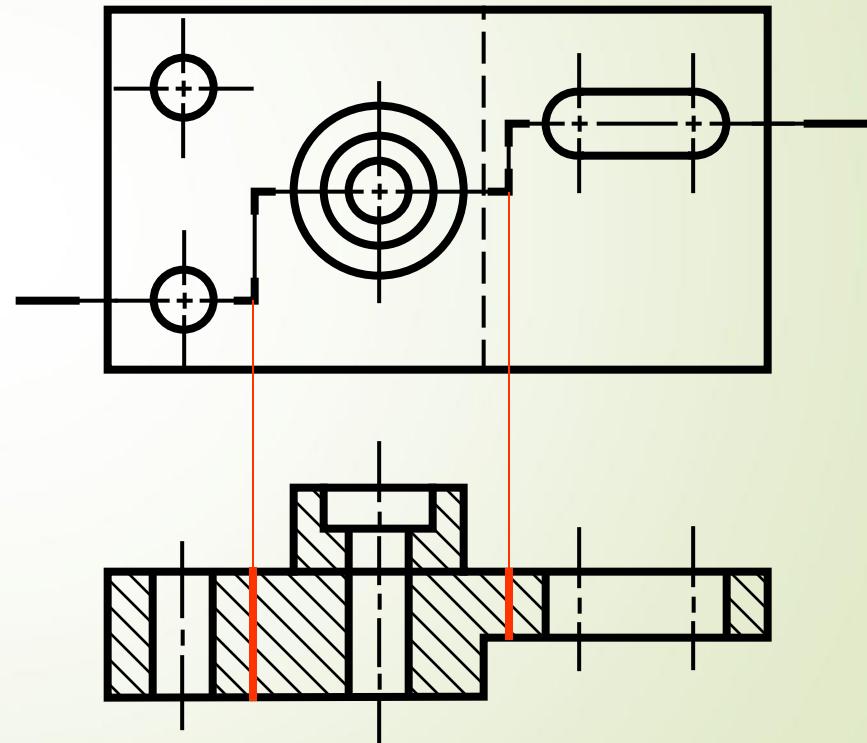
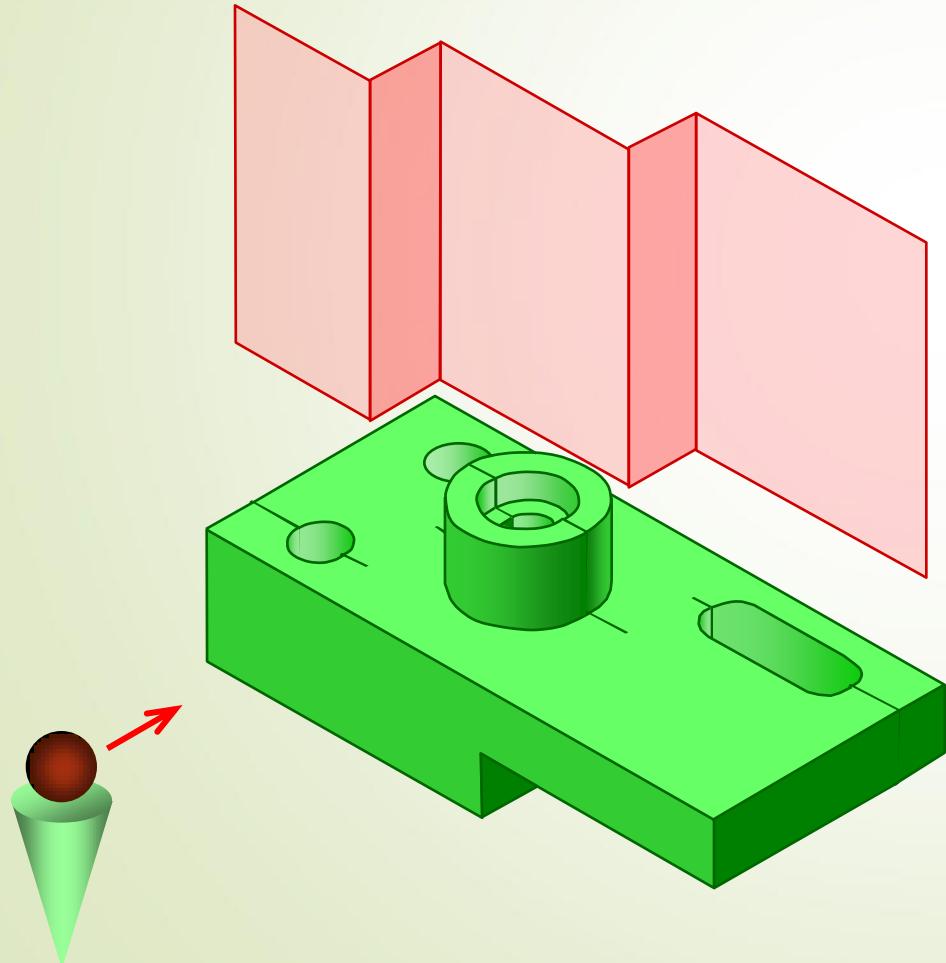
The cutting plane is *off-set* to include features that are not in a straight line.

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



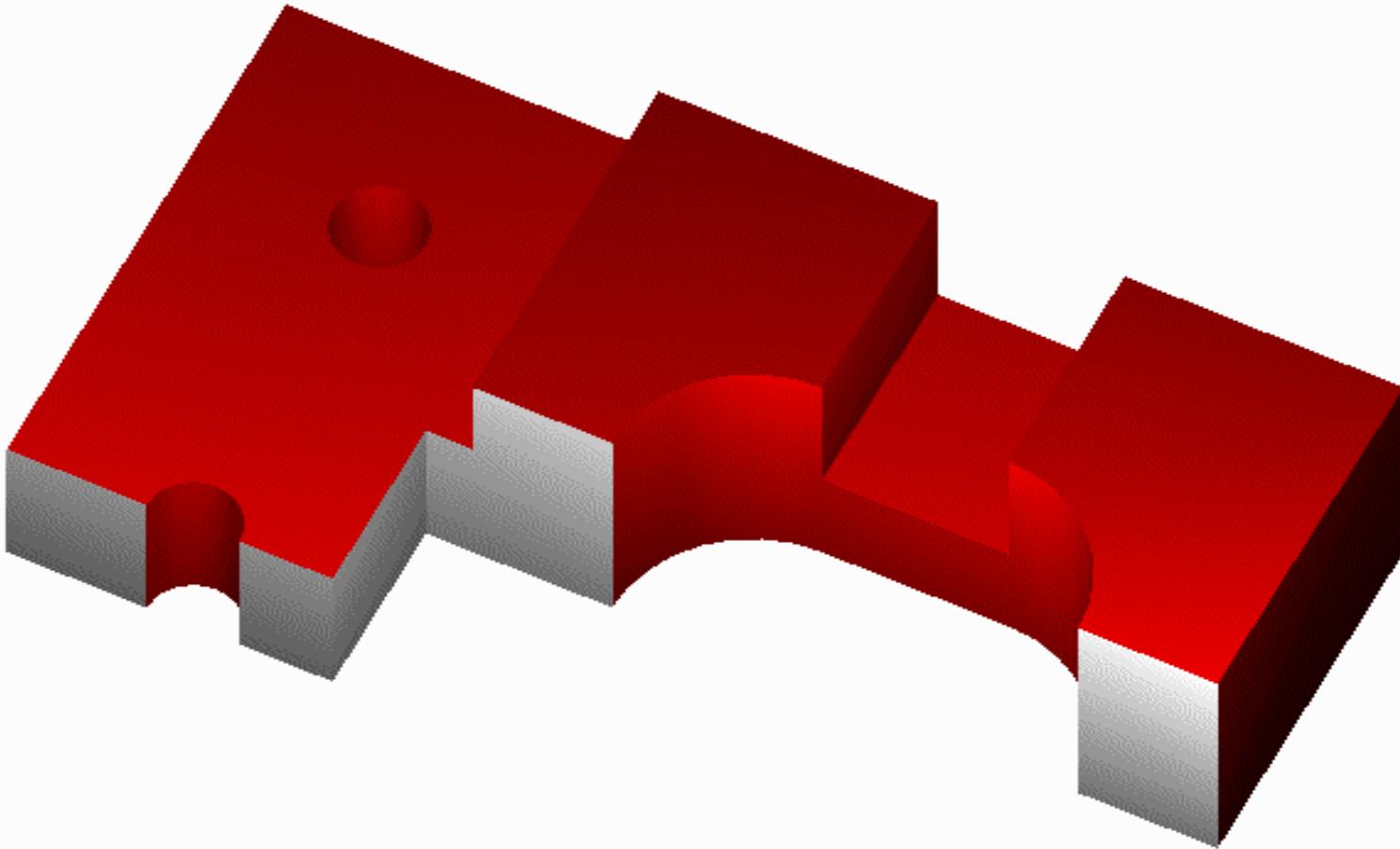
OFFSET SECTION VIEW

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

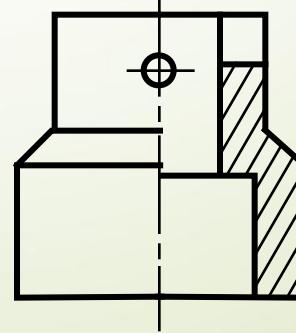
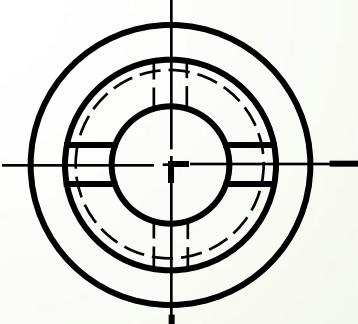
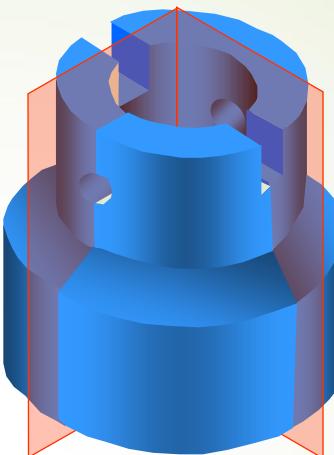
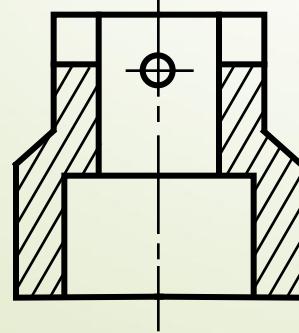
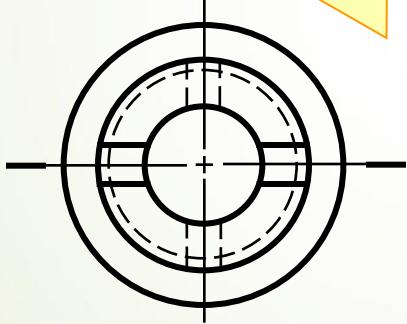
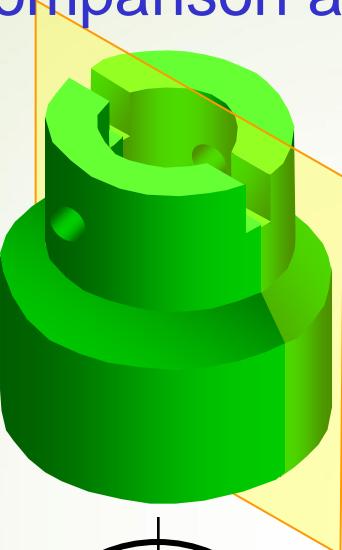
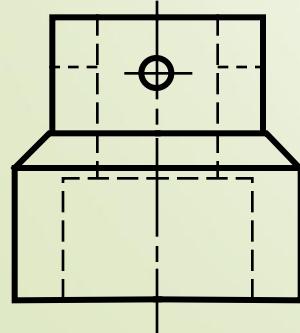
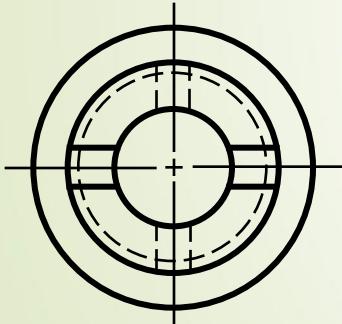
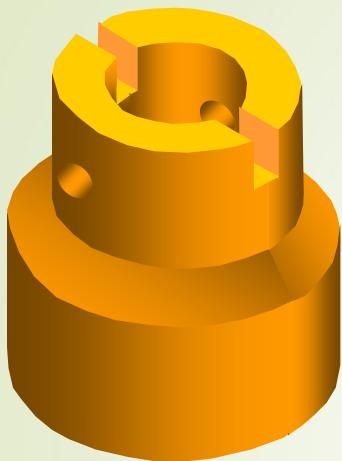


Do not show the edge views
of the cutting plane.

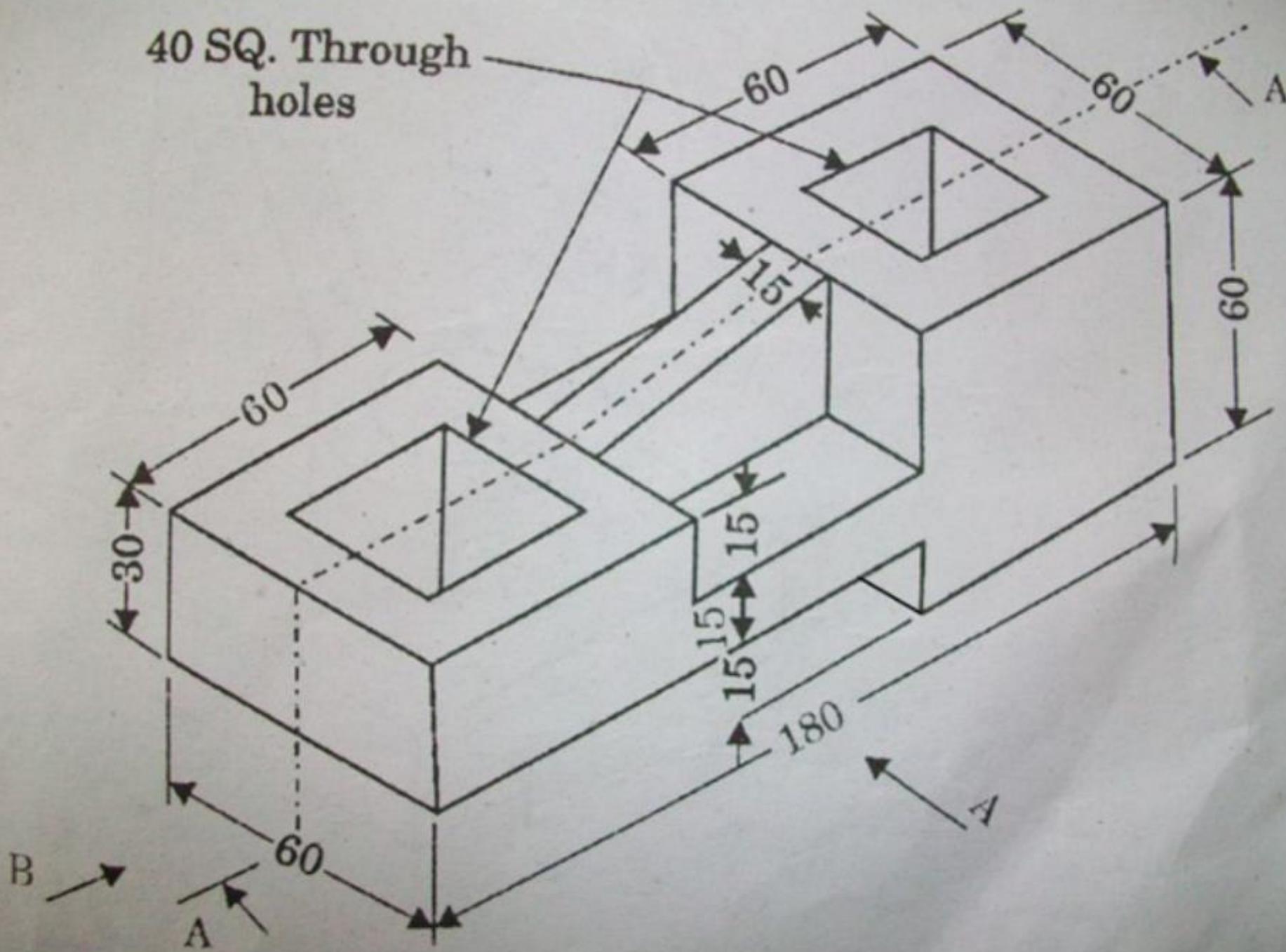
OFFSET SECTION VIEW

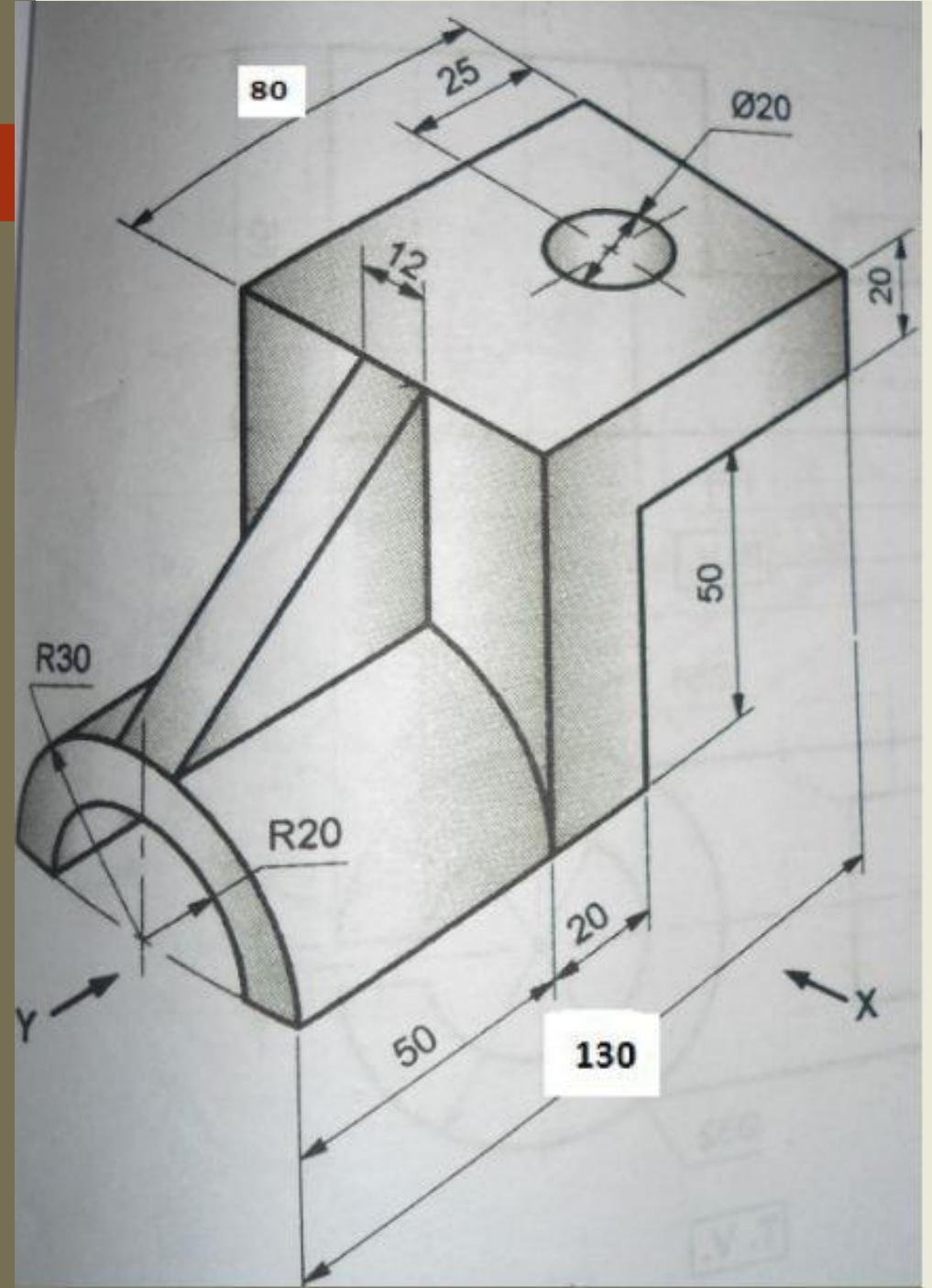


EXAMPLE : Comparison among several section techniques

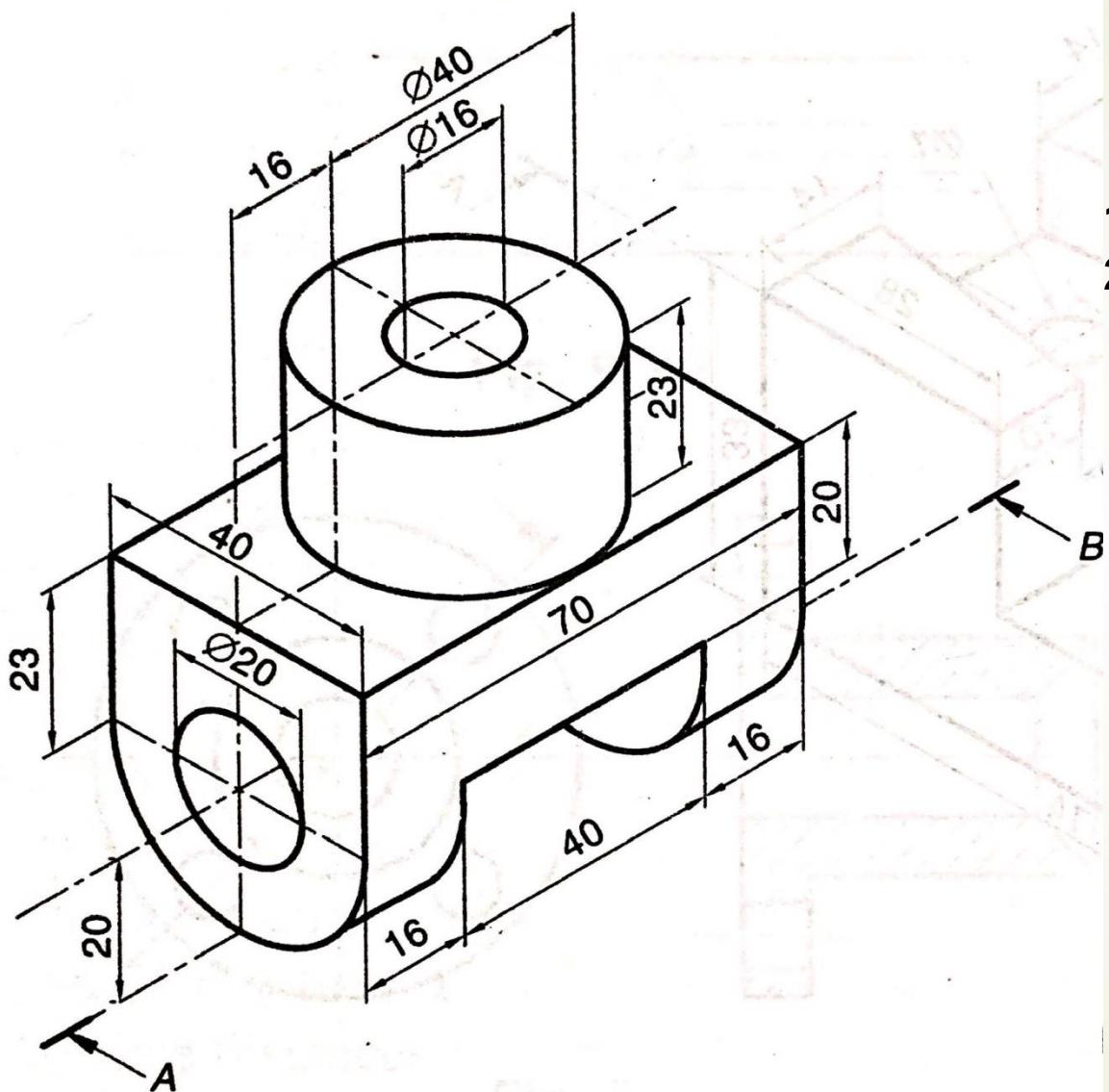


40 SQ. Through
holes



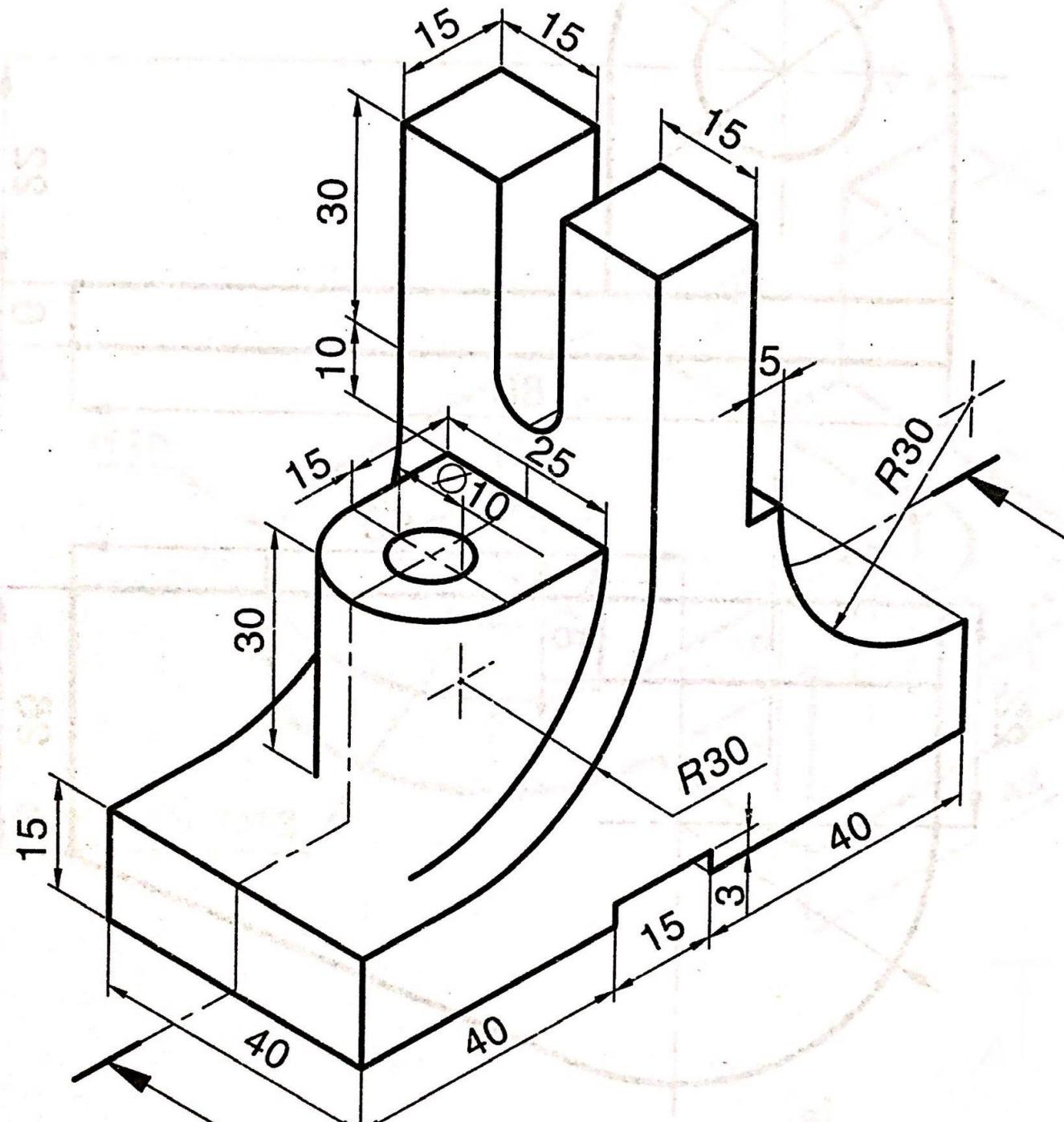


1. Full Sectional Front View
2. Top View

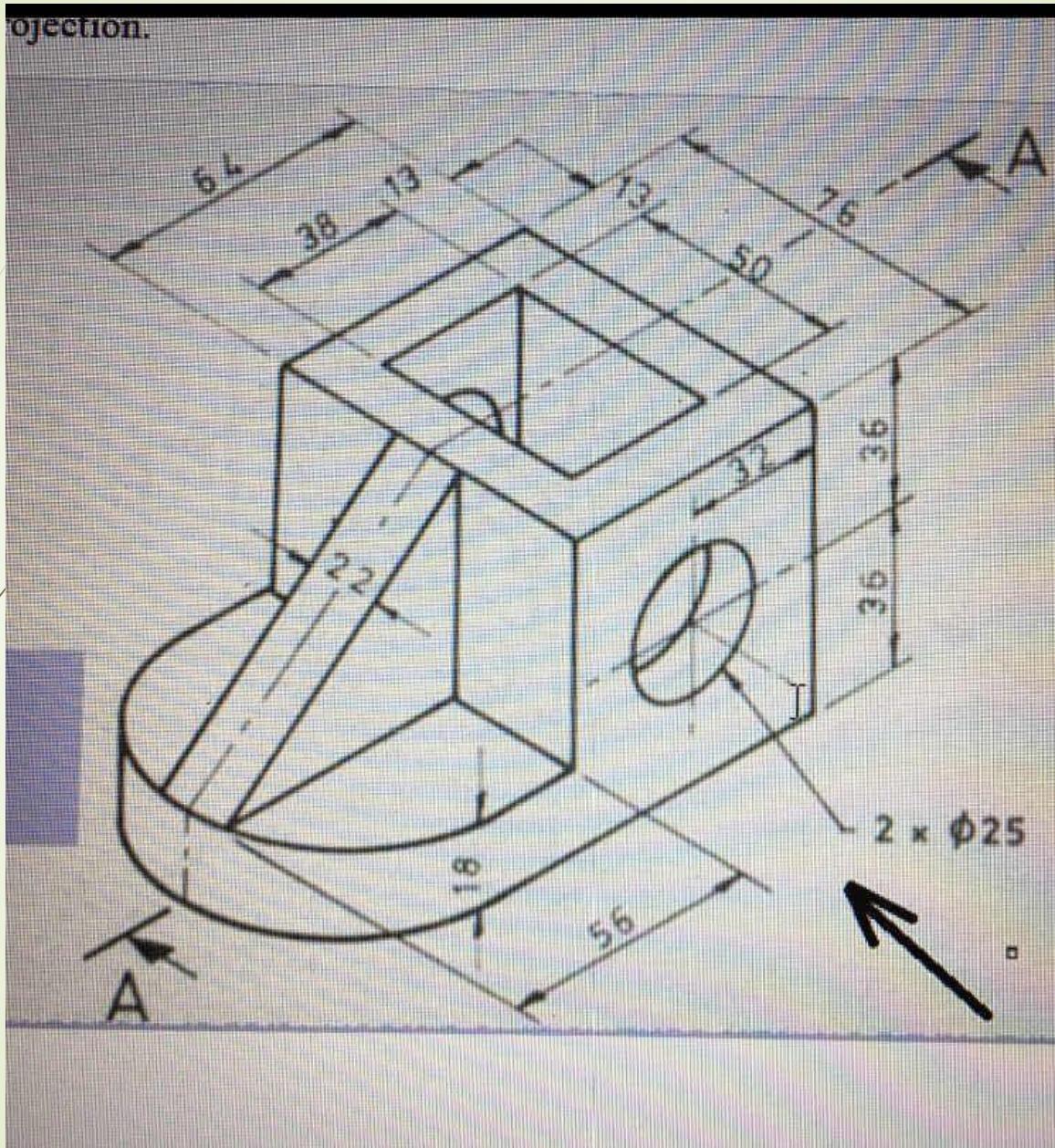


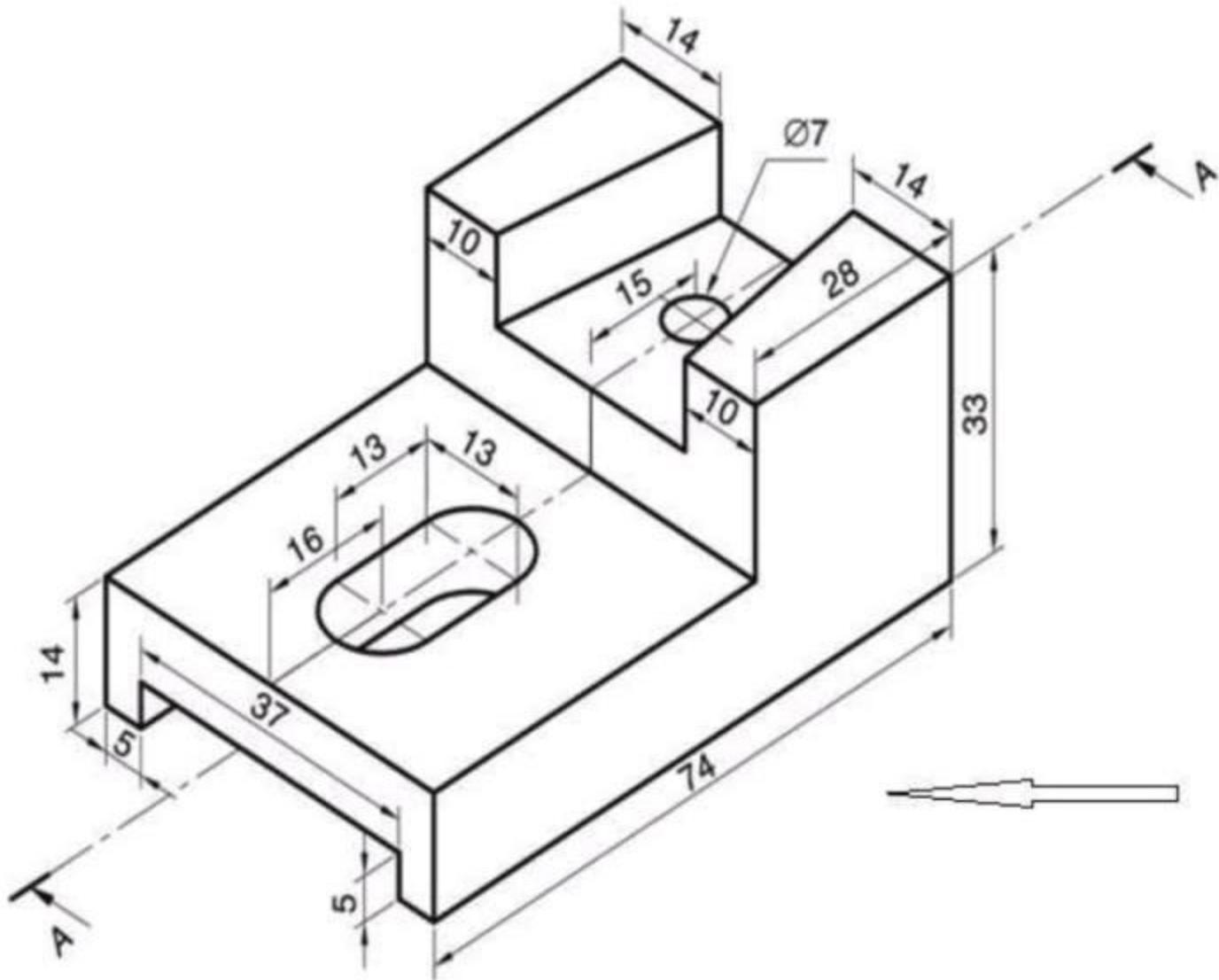
1. Full Sectional Front View
2. Top View

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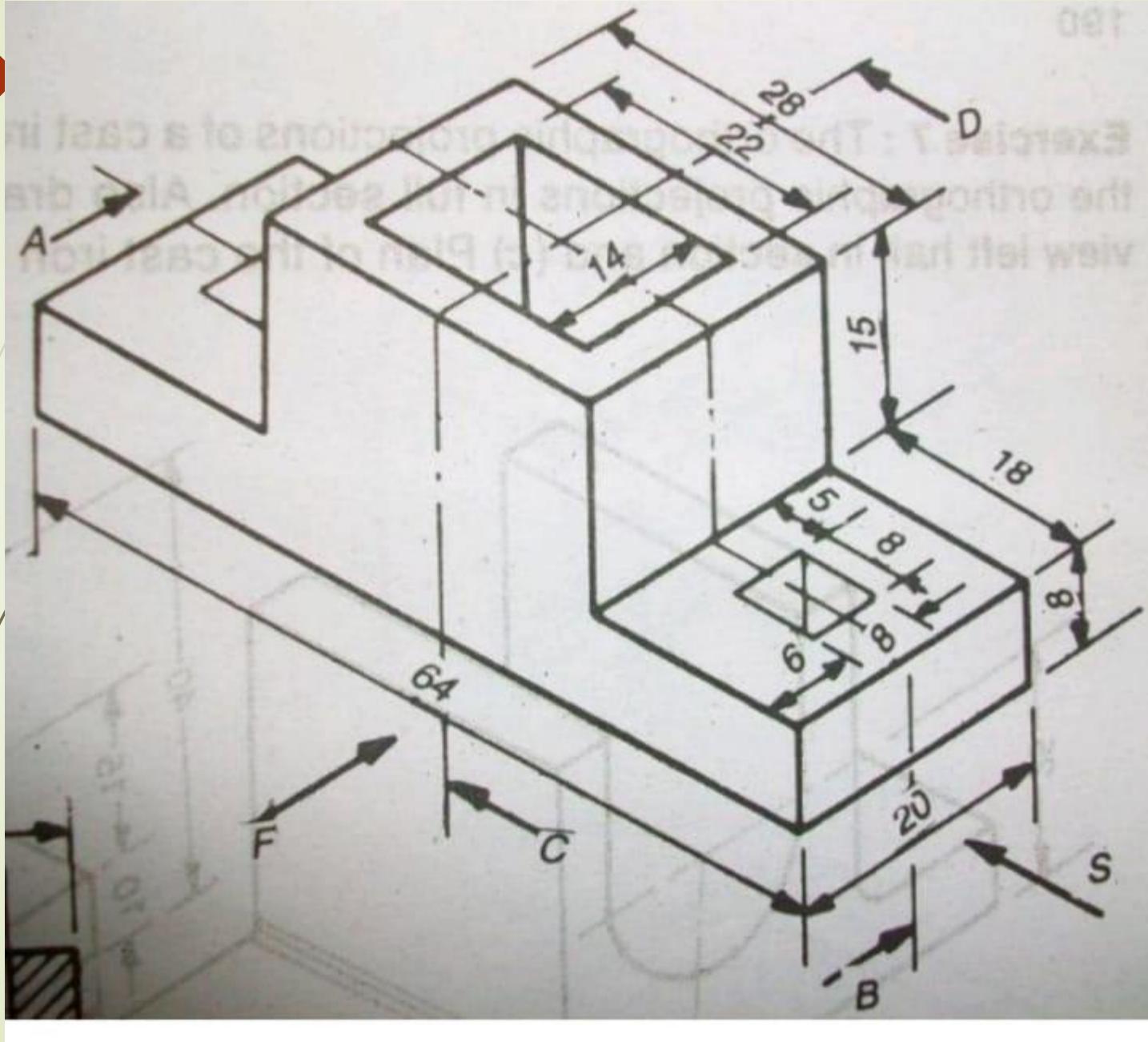


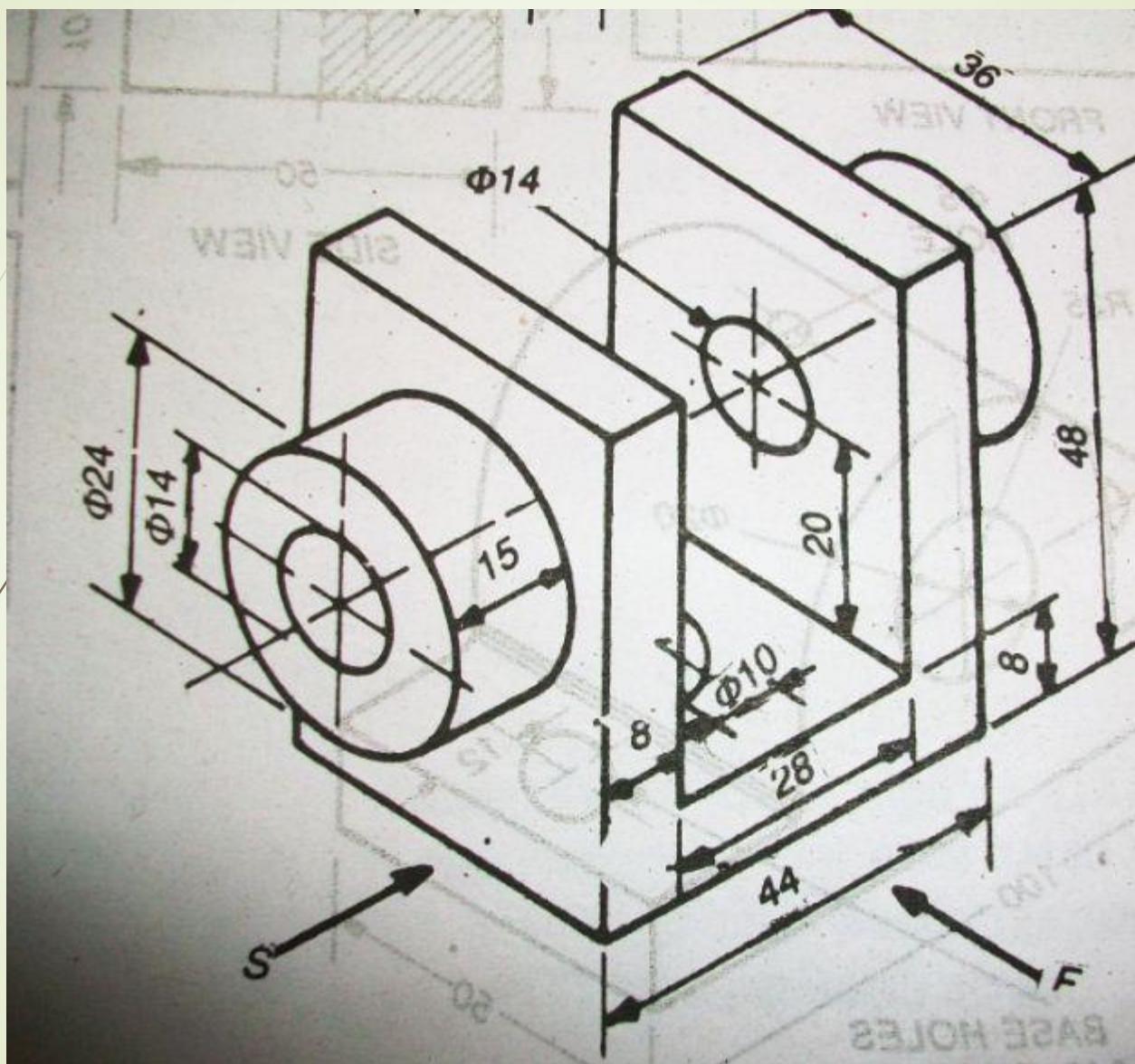
projection.

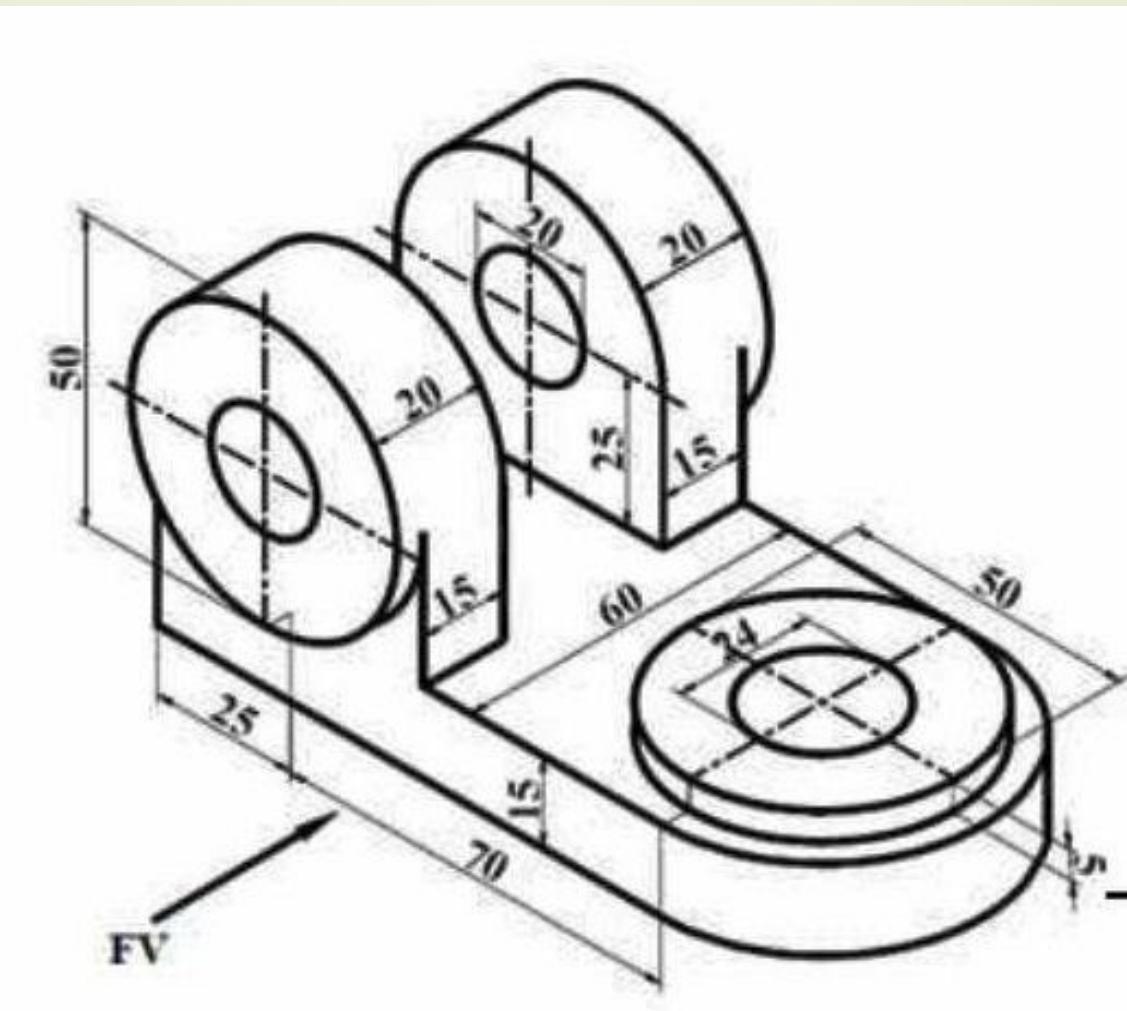




081









Thank You