

Sectional Views

Unit 4

Sectional Orthographic Projections:

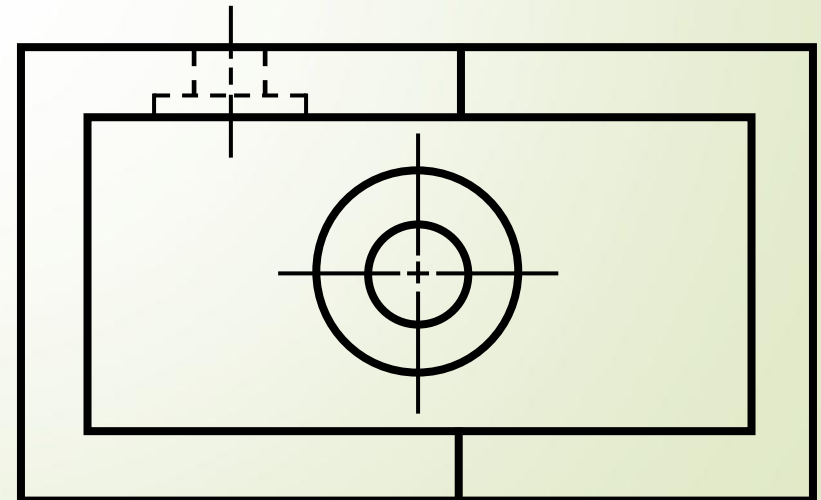
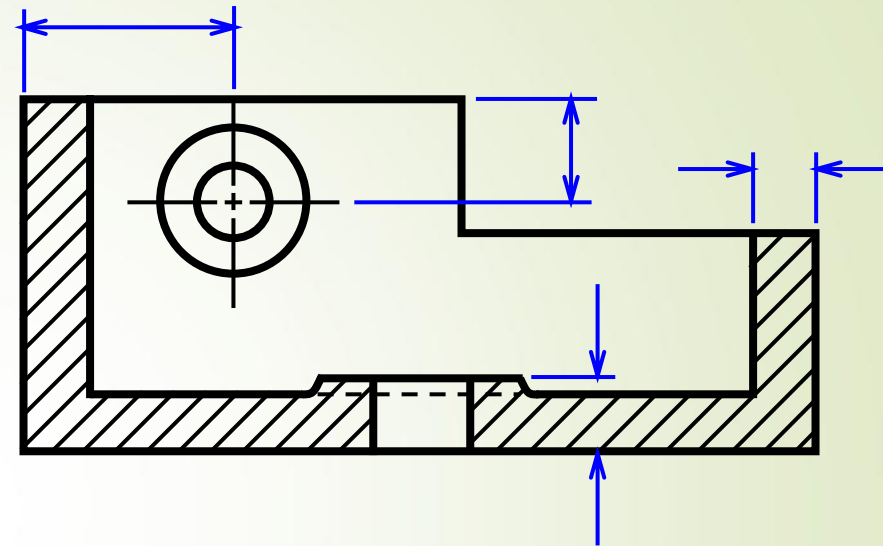
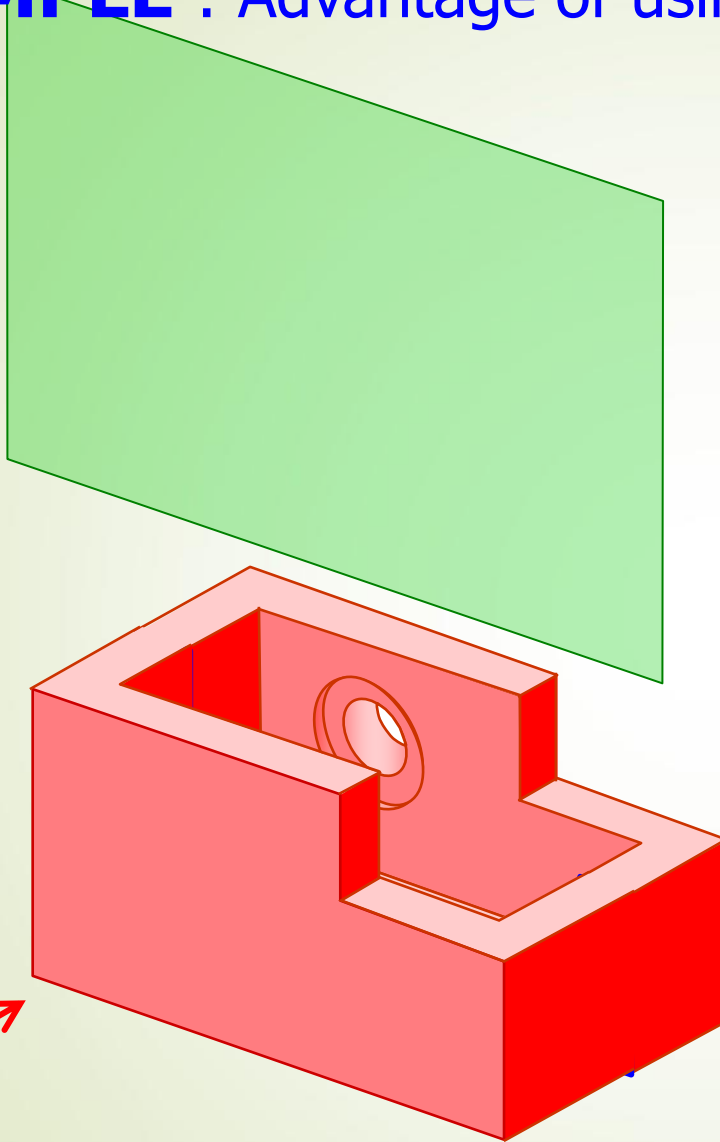
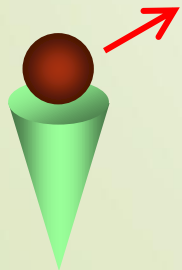
The projections in which the internal shape of an object is shown.

PURPOSES OF SECTION VIEWS

Clarify the views by:

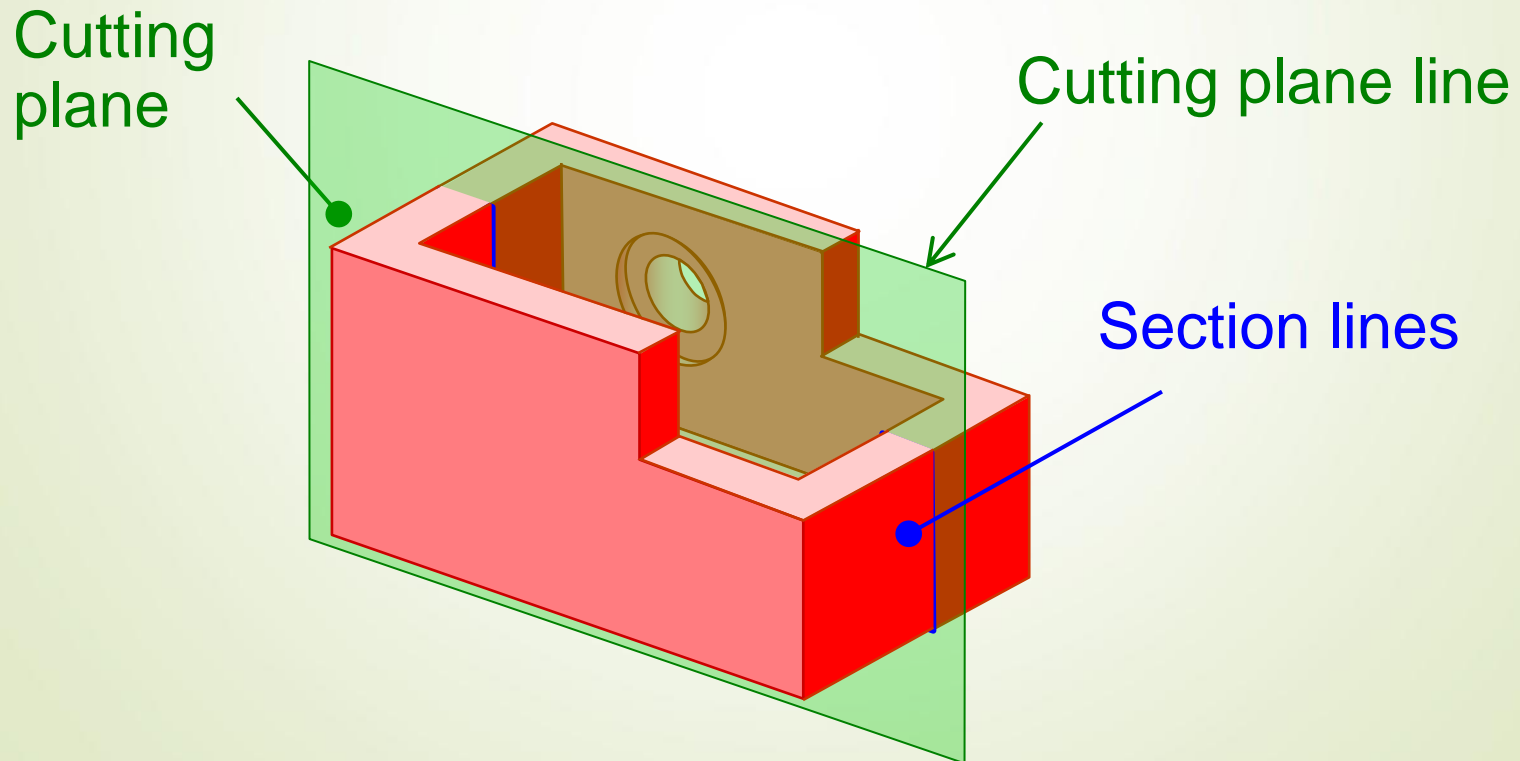
- ❖ Reducing or eliminating the hidden lines.
- ❖ Revealing the cross sectional's shape.

EXAMPLE : Advantage of using a section view.



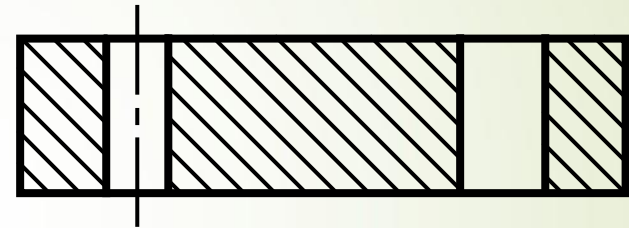
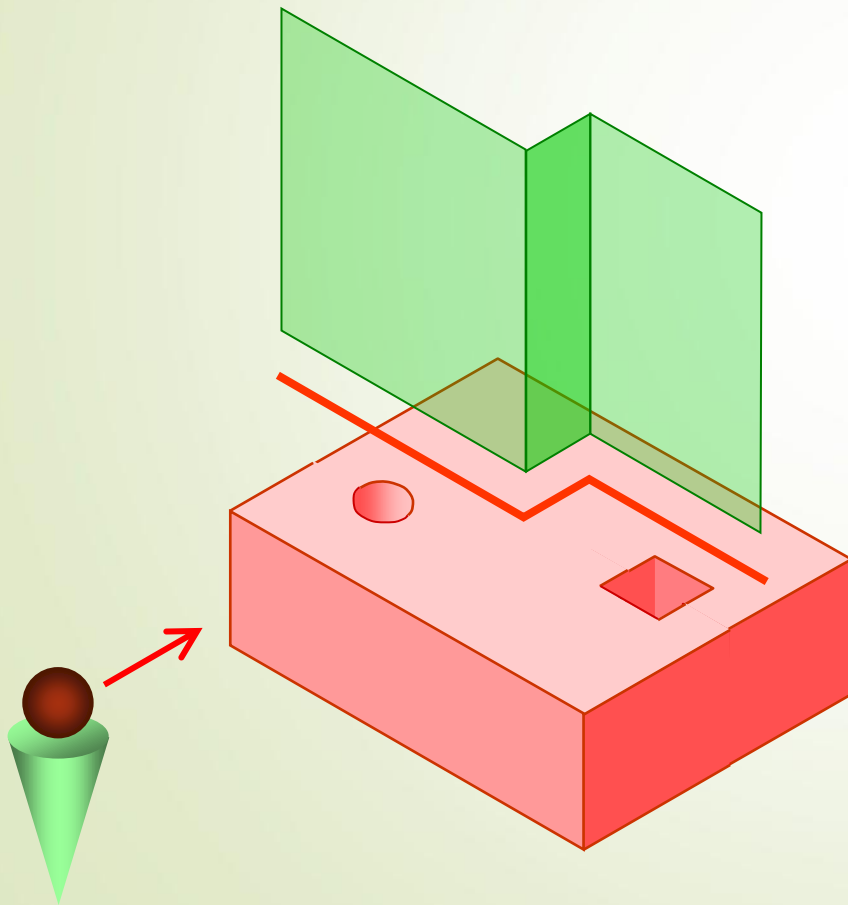
CUTTING PLANE

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

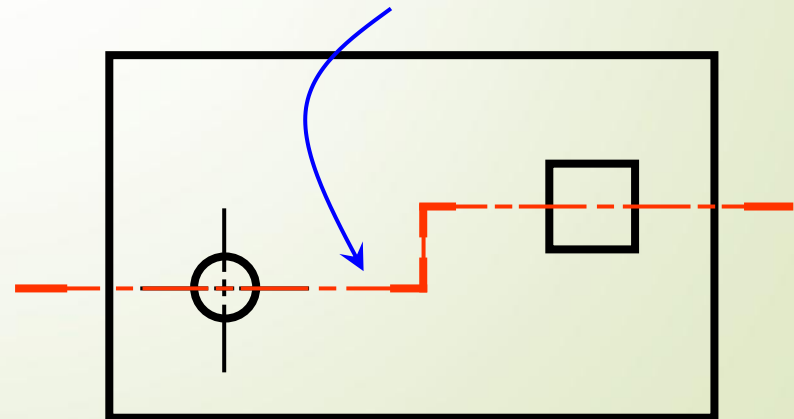


CUTTING PLANE LINE

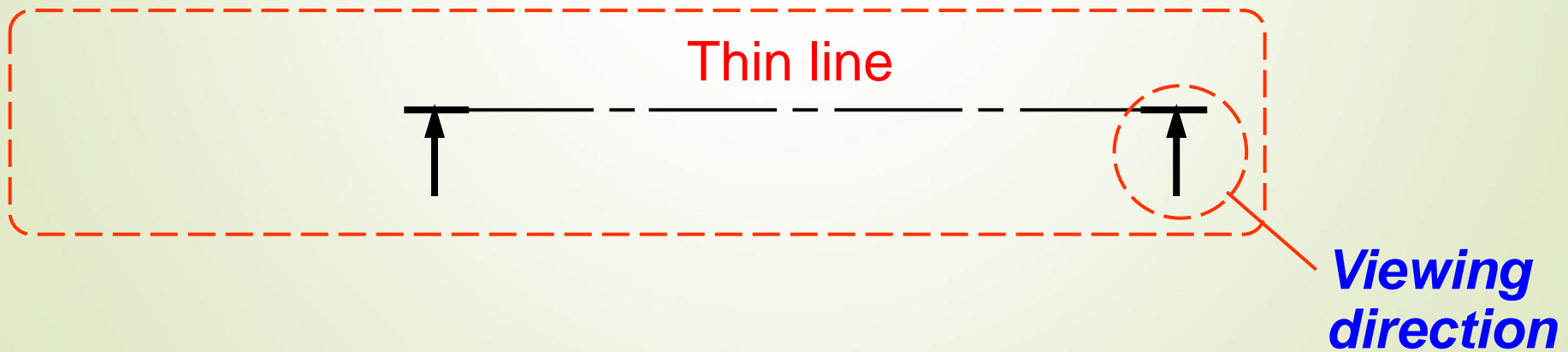
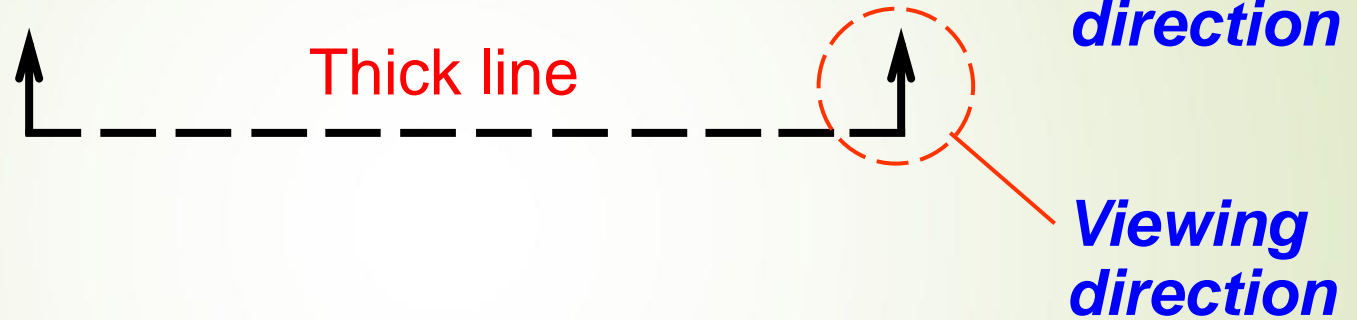
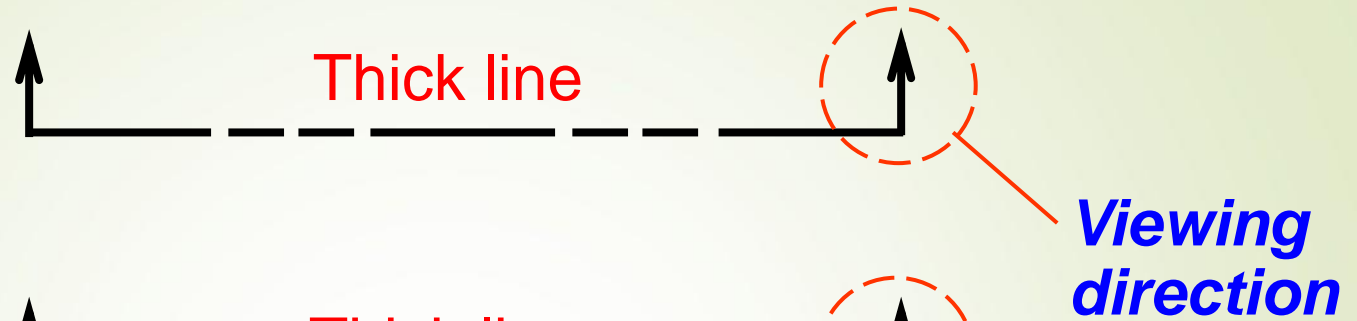
Cutting plane line is an ***edge view*** of the cutting plane.



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

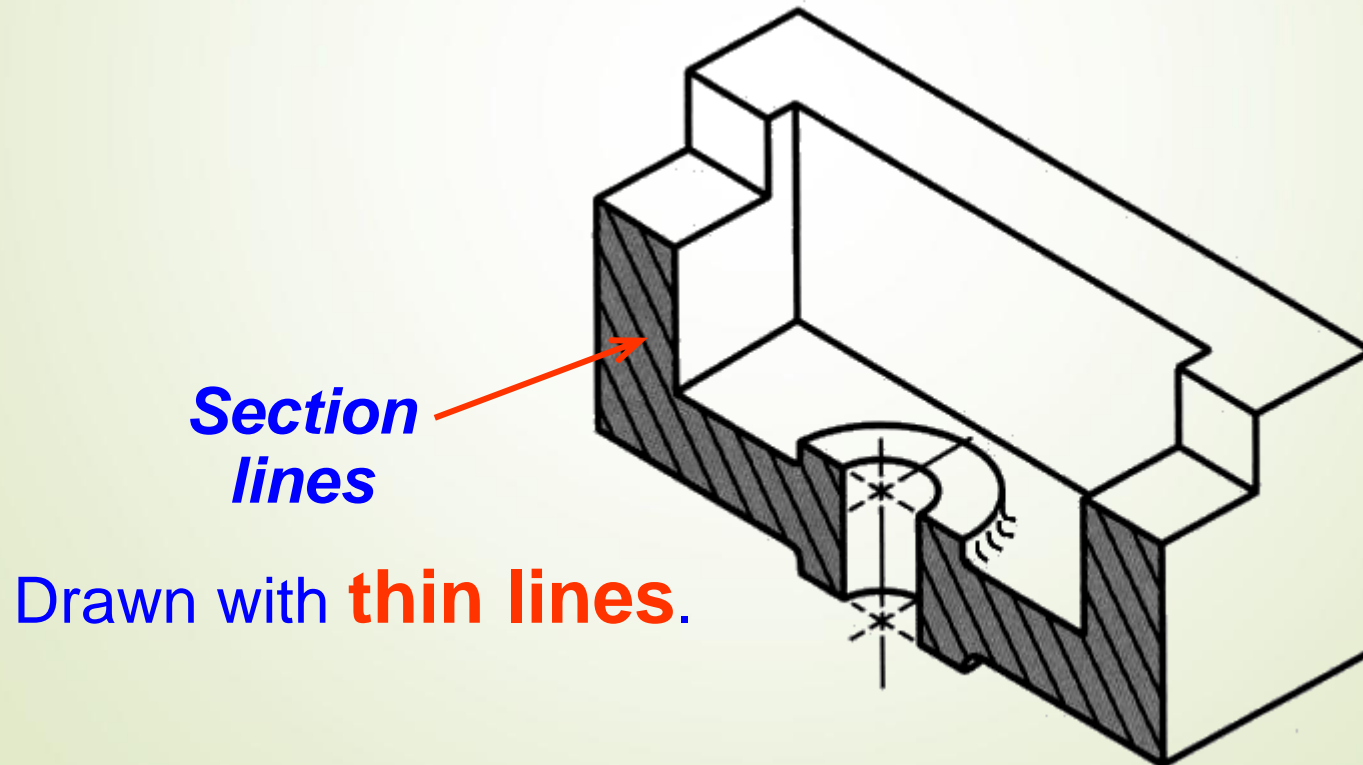


CUTTING PLANE LIFESTYLES



SECTION LINING

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



SECTION LINES SYMBOLS

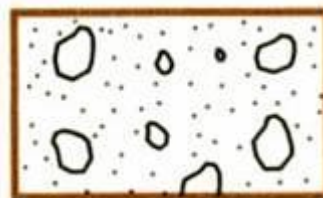
- The section lines are different for each of material's type.
- For practical purpose, the cast iron symbol is used most often for any materials.



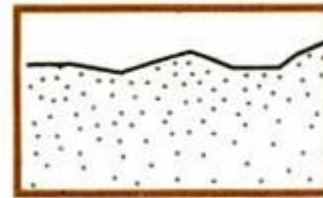
Cast iron,
Malleable iron



Steel



Concrete



Sand

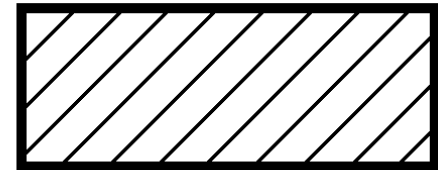


Wood

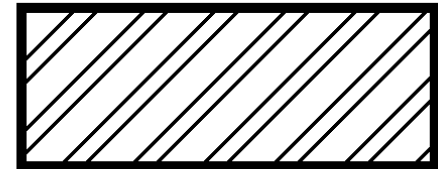
SECTION LINES SYMBOLS

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

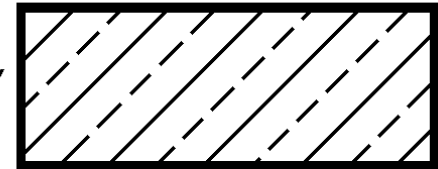
CAST
IRON



STEEL



BRONZE,
BRASS



ALUM.



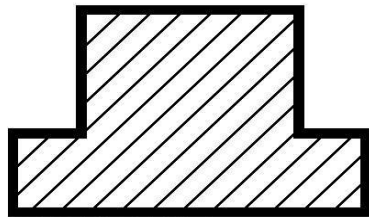
SECTION LINING

- 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

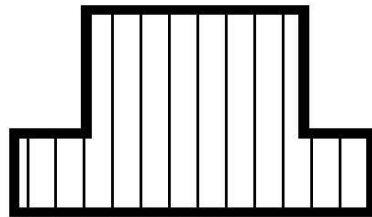
Section Lining – Line Placement

- 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.

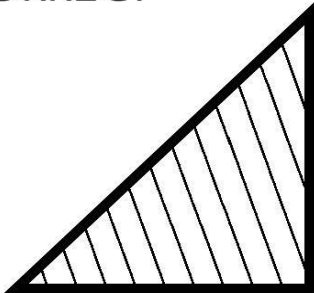
Section Lining – Line Placement



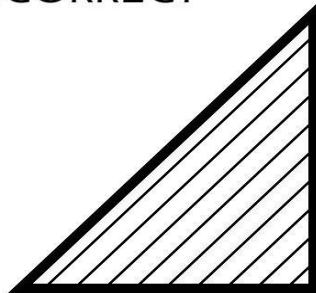
CORRECT



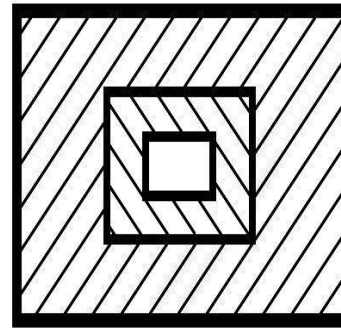
INCORRECT



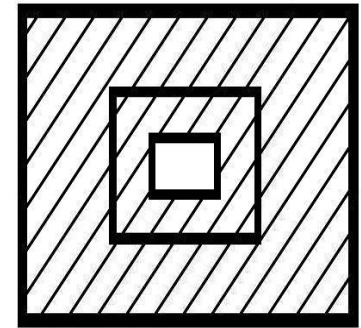
CORRECT



INCORRECT



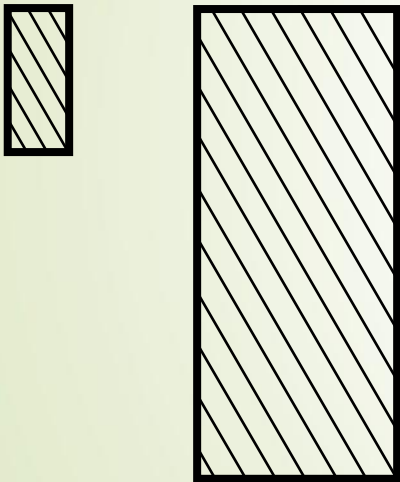
CORRECT



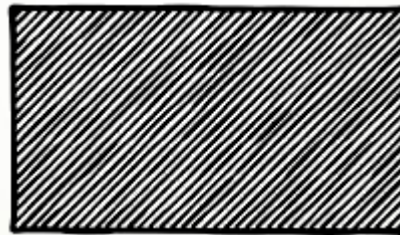
INCORRECT

SECTION LINING PRACTICE

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



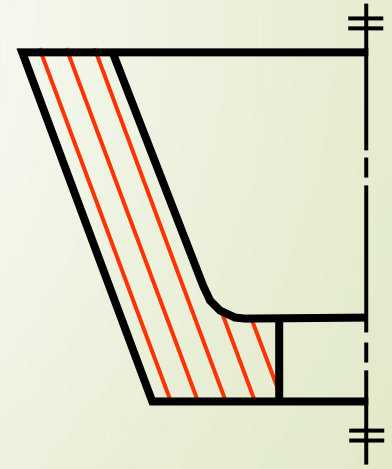
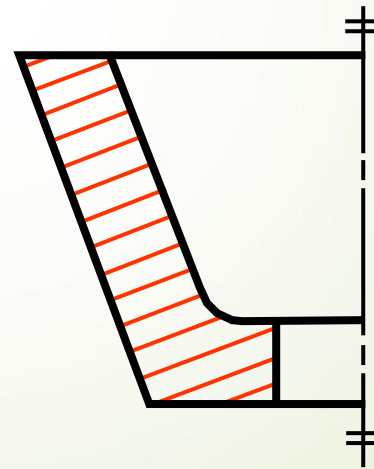
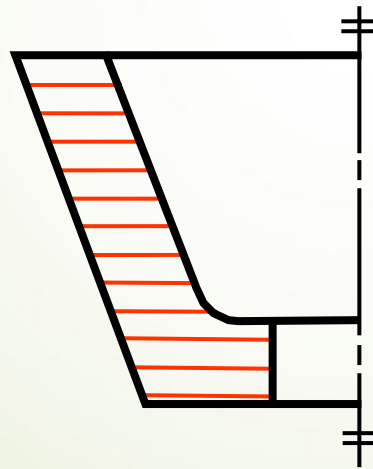
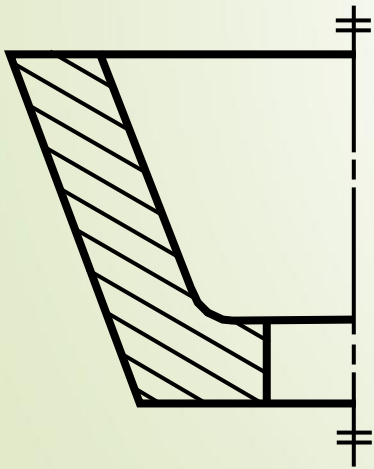
COMMON MISTAKE



SECTION LINING PRACTICE

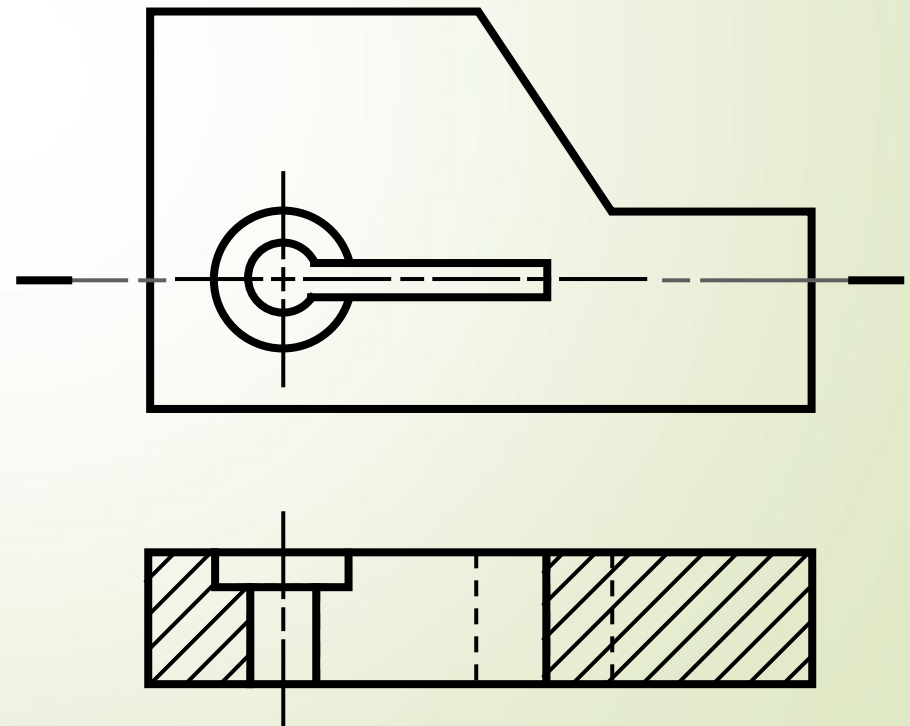
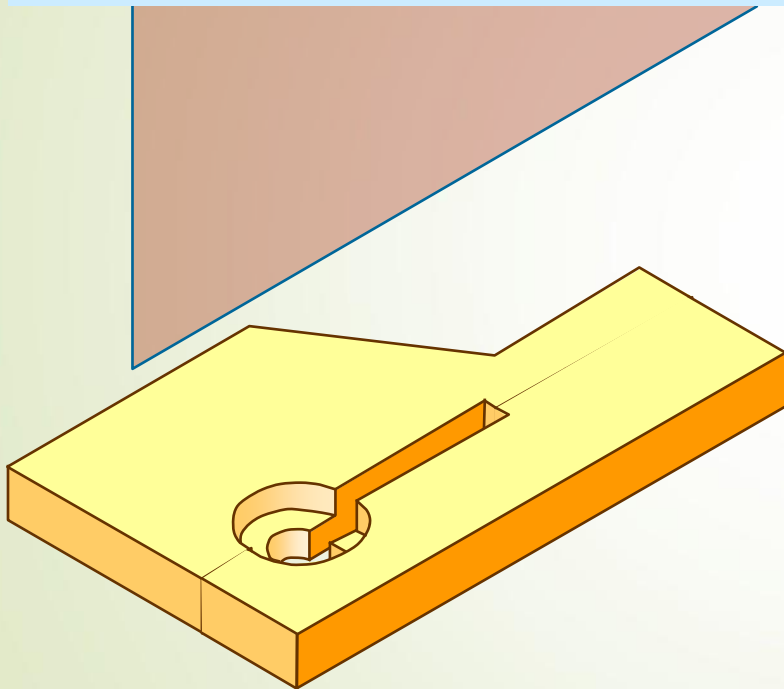
- It ***should not*** be drawn *parallel* or *perpendicular* to contour of the view.

COMMON MISTAKE



TREATMENT OF HIDDEN LINES

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

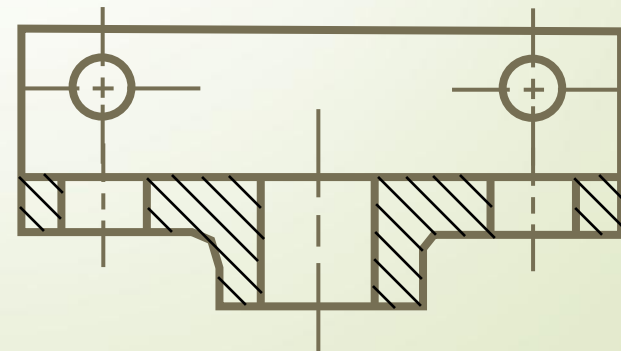
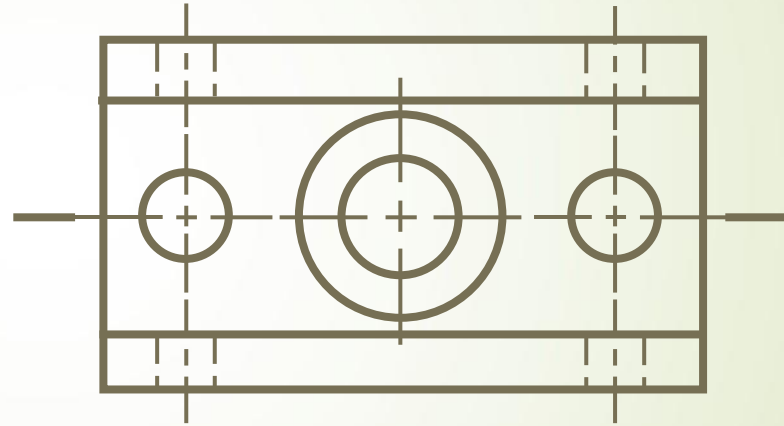
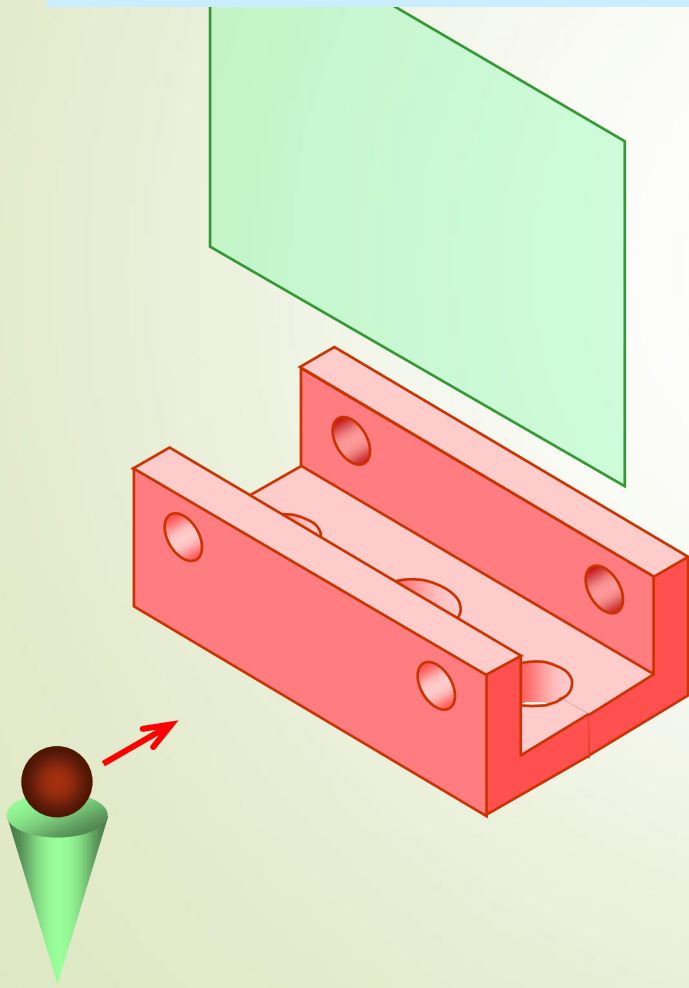


Types of Sectioning

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

FULL SECTION VIEW

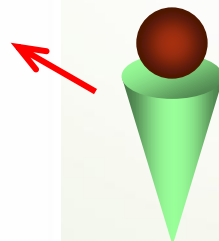
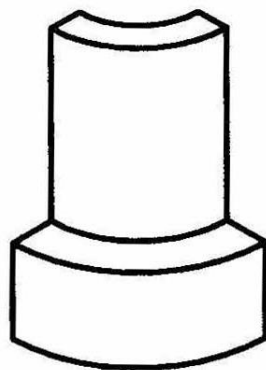
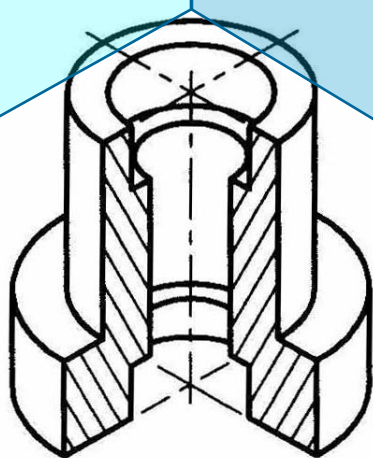
The view is made by passing the *straight* cutting plane *completely through* the part.



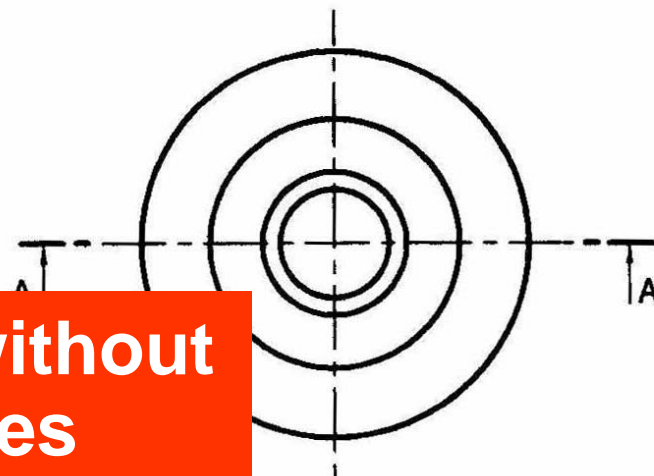
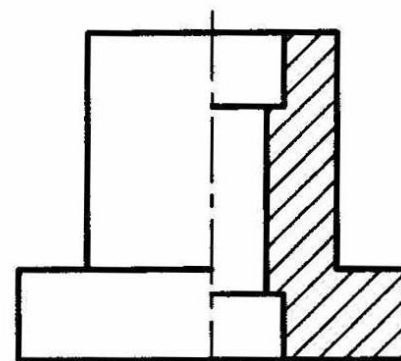
HALF SECTION VIEW

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.

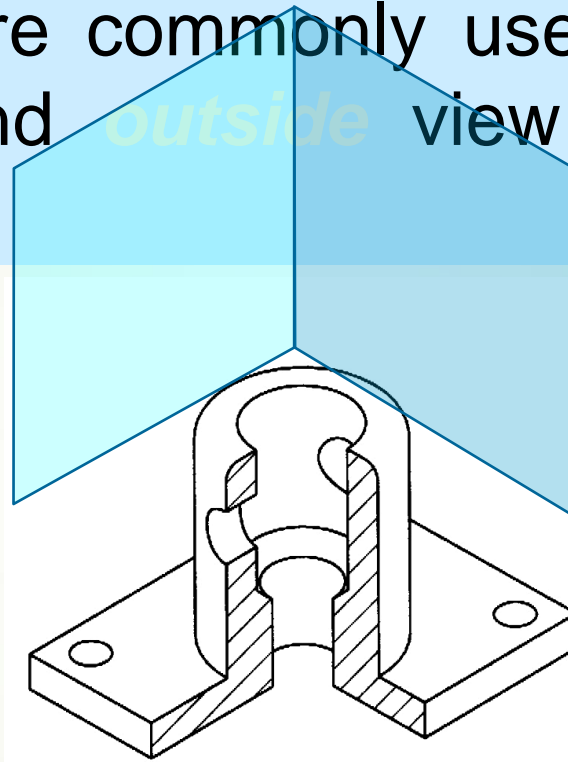


**Half section without
hidden lines**

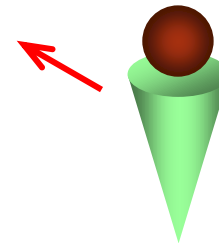
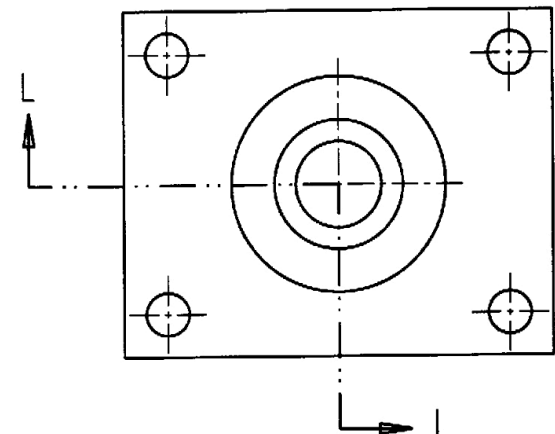
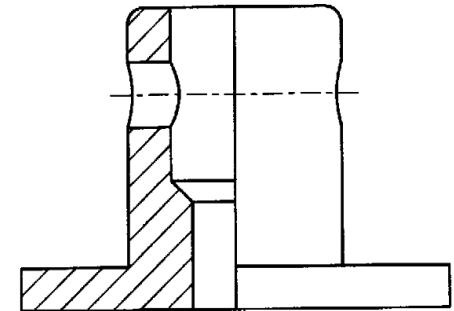


HALF SECTION VIEW

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

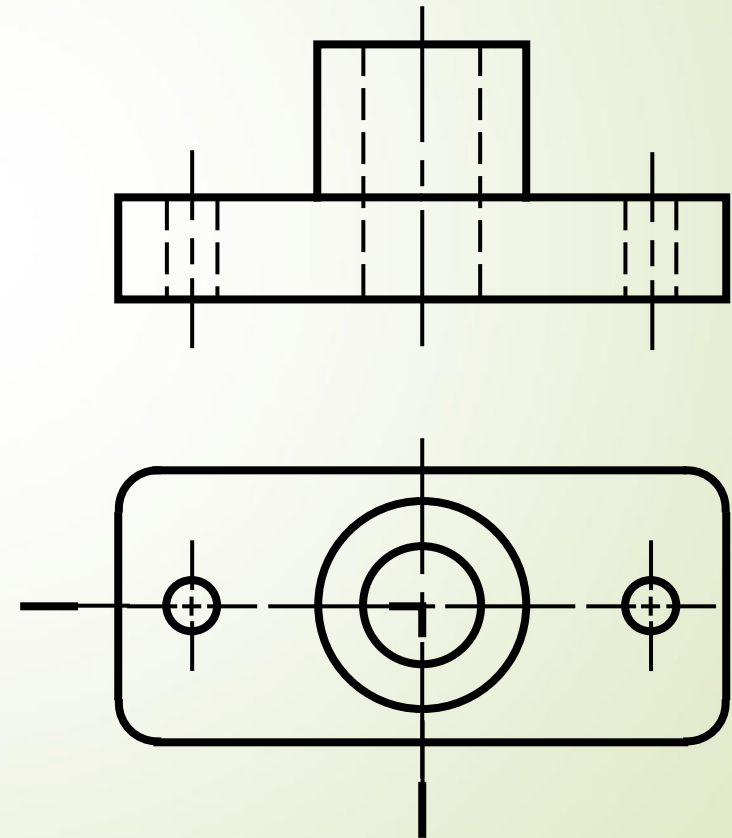
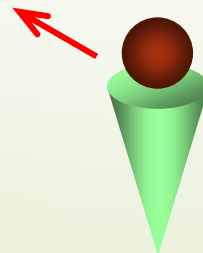
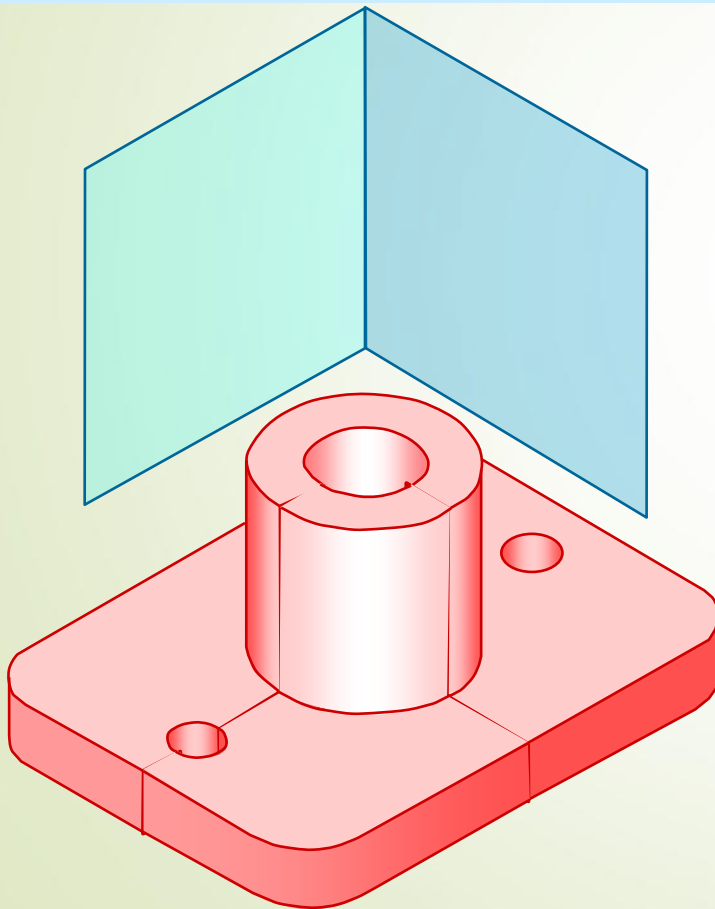


SECTION L-L



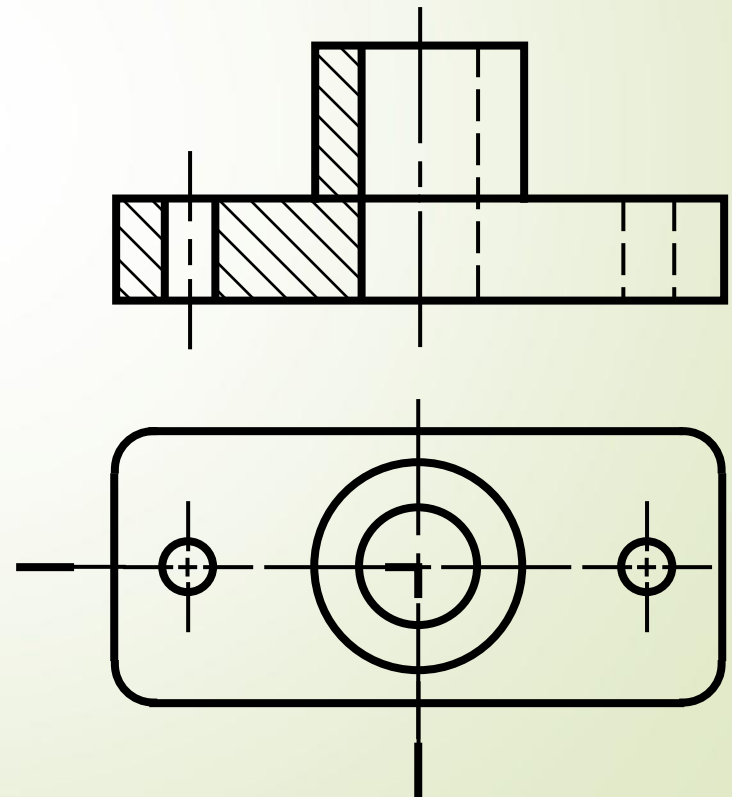
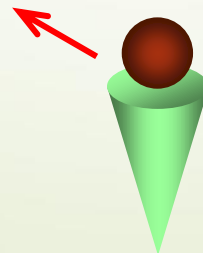
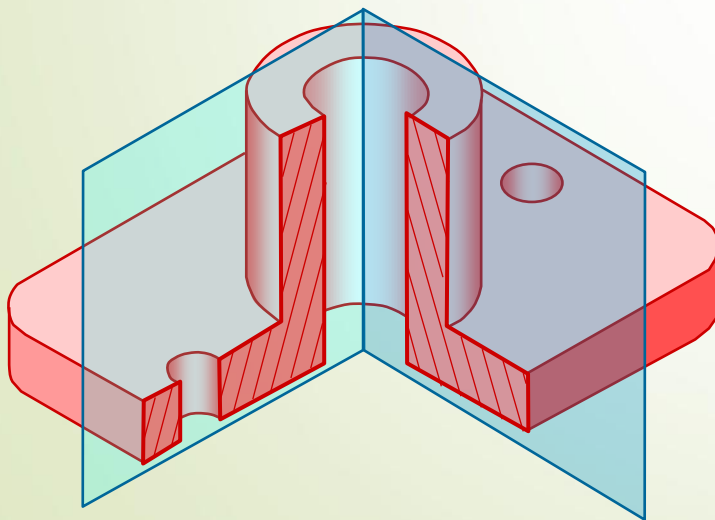
HALF SECTION VIEW

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



HALF SECTION VIEW

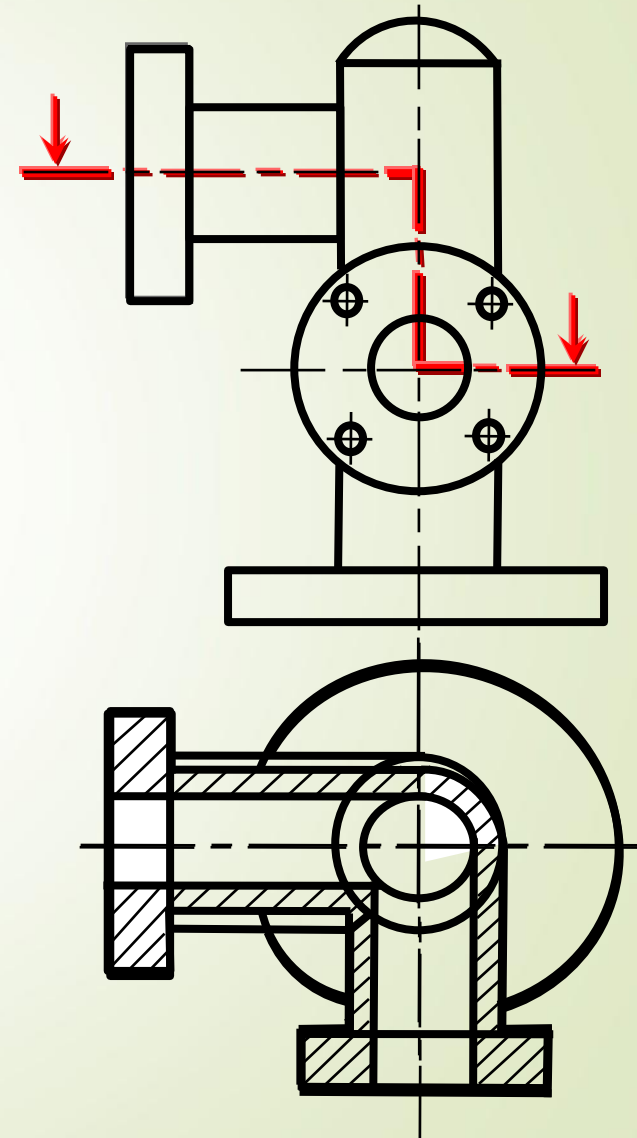
- A **center line** is used to separate the sectioned half from the unsectioned half of the view.
- **Hidden line** is omitted in unsection half of the view.



OFFSET SECTION VIEW

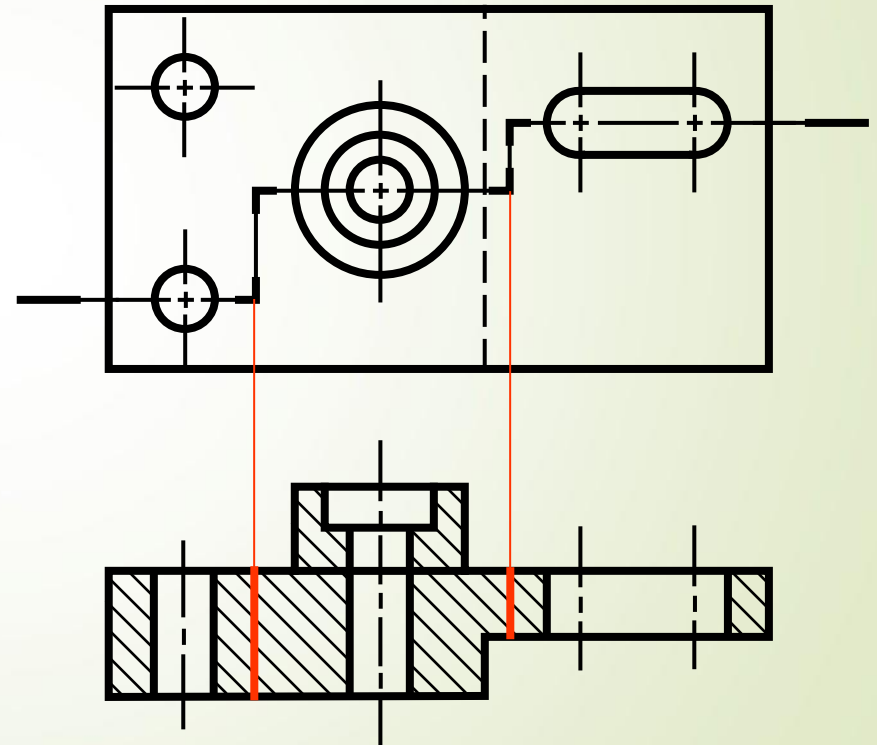
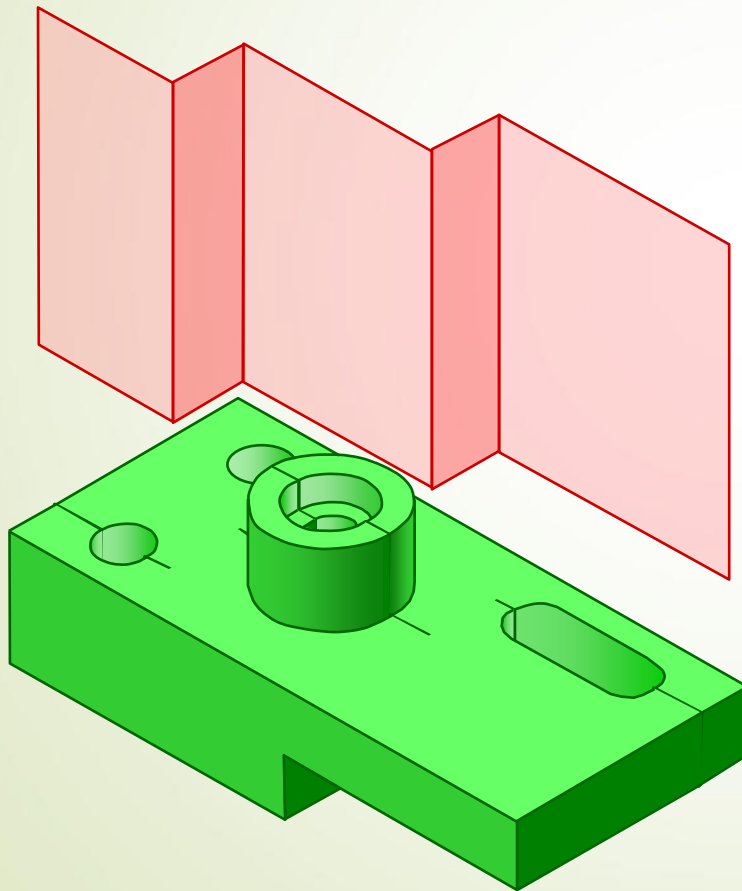
The cutting plane is *off-set* to include features that are not in a straight line.

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

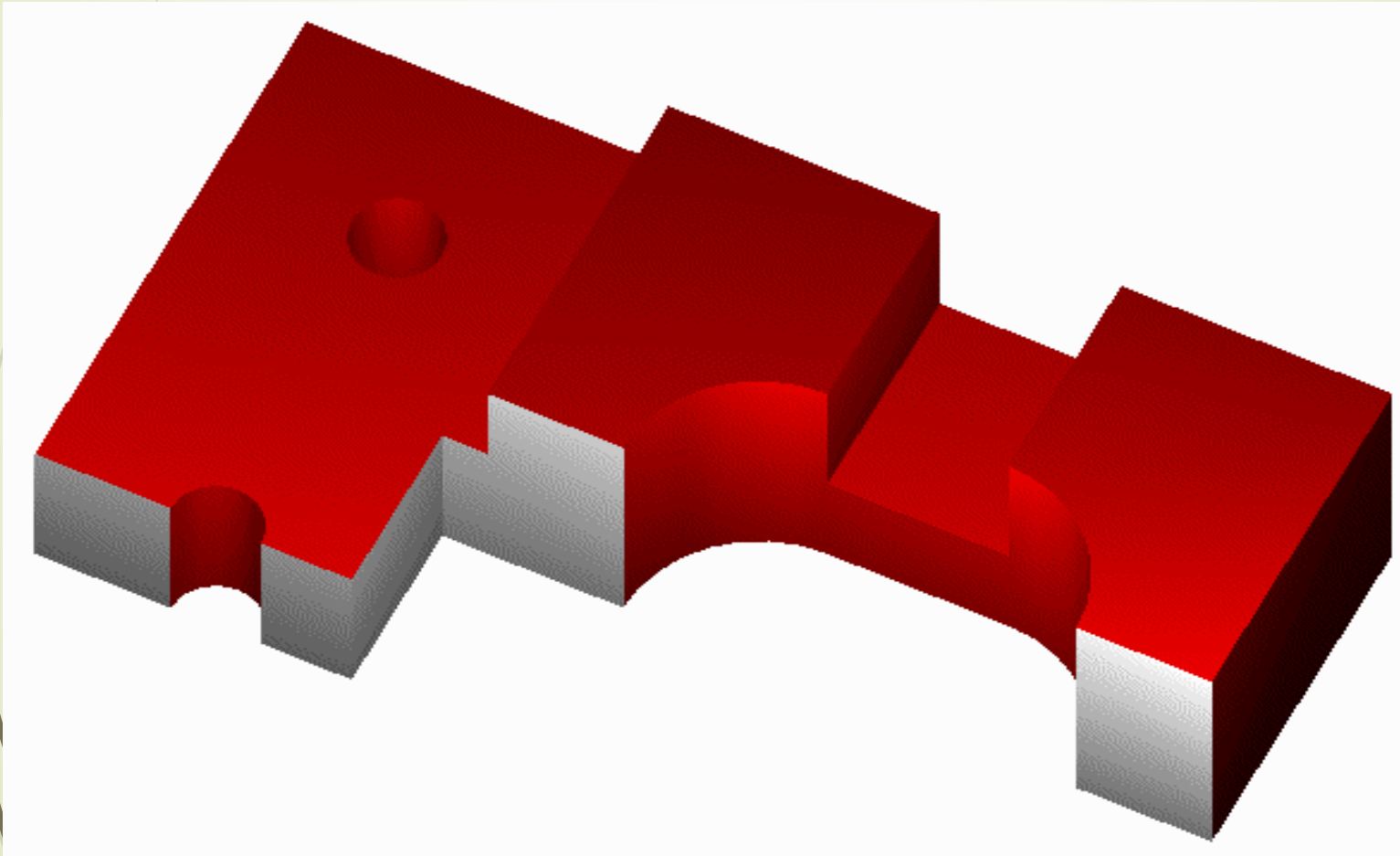
The view is made by passing the *bended* cutting plane *completely through* the part.



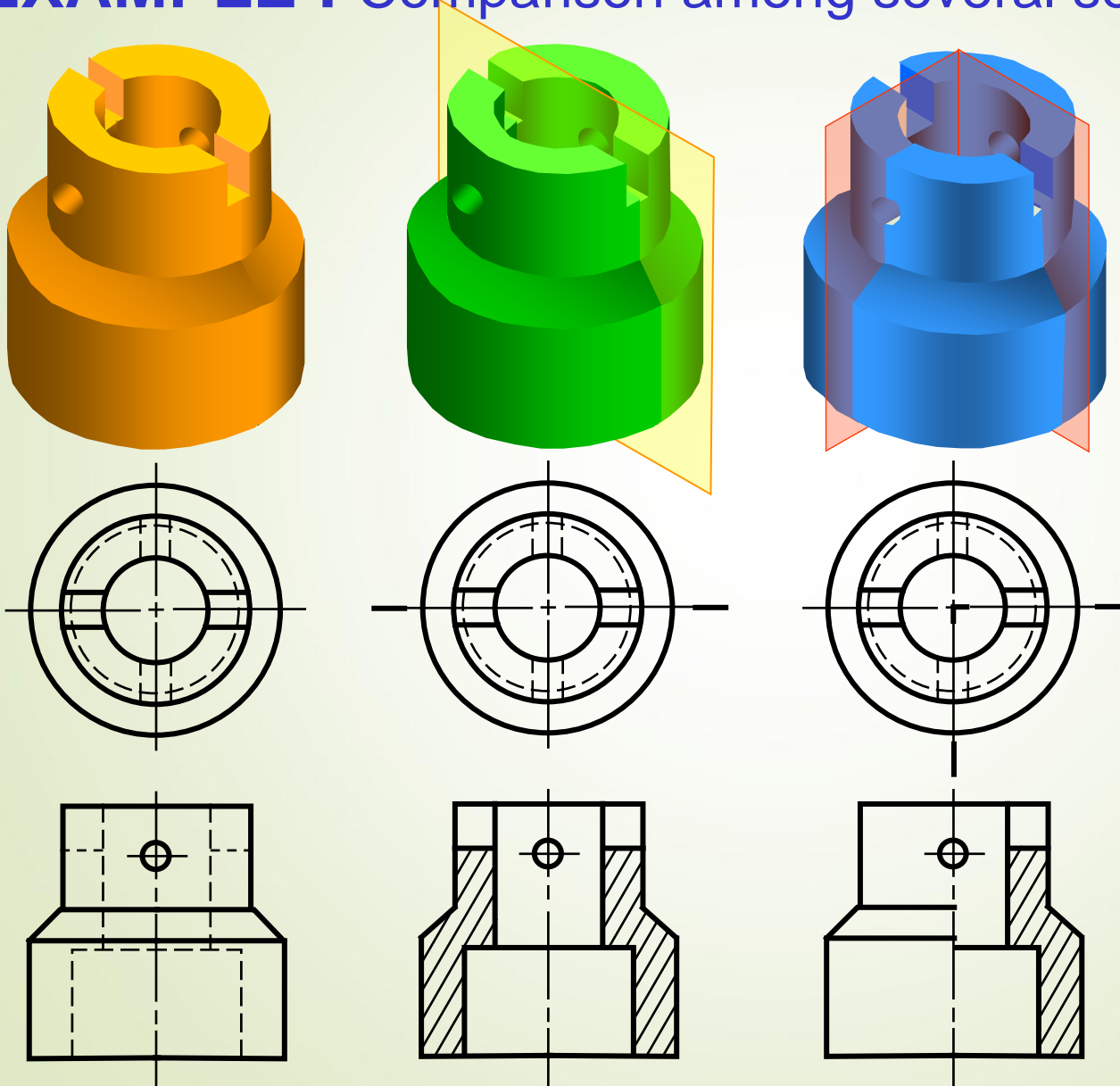
Do not show the edge views of the cutting plane.



OFFSET SECTION VIEW



EXAMPLE : Comparison among several section techniques





Thank You