



# Sectional Views

– Why sectional views are needed

- ❖ Invisible features of an object are shown by means of hidden lines in their projected views.
- ❖ But when such lines are too many, these lines make the views more complicated and difficult to interpret.

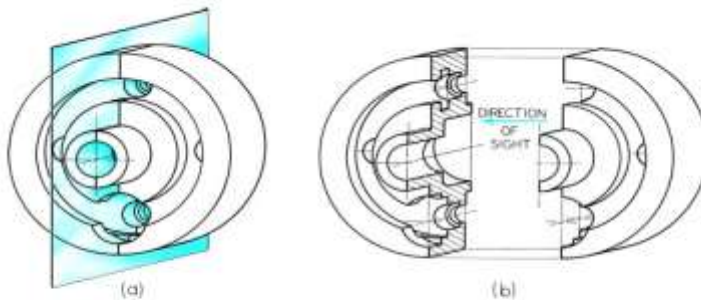


Figure 7-1  
A Section.

In such a case it is customary to imagine the object as being cut through by plane

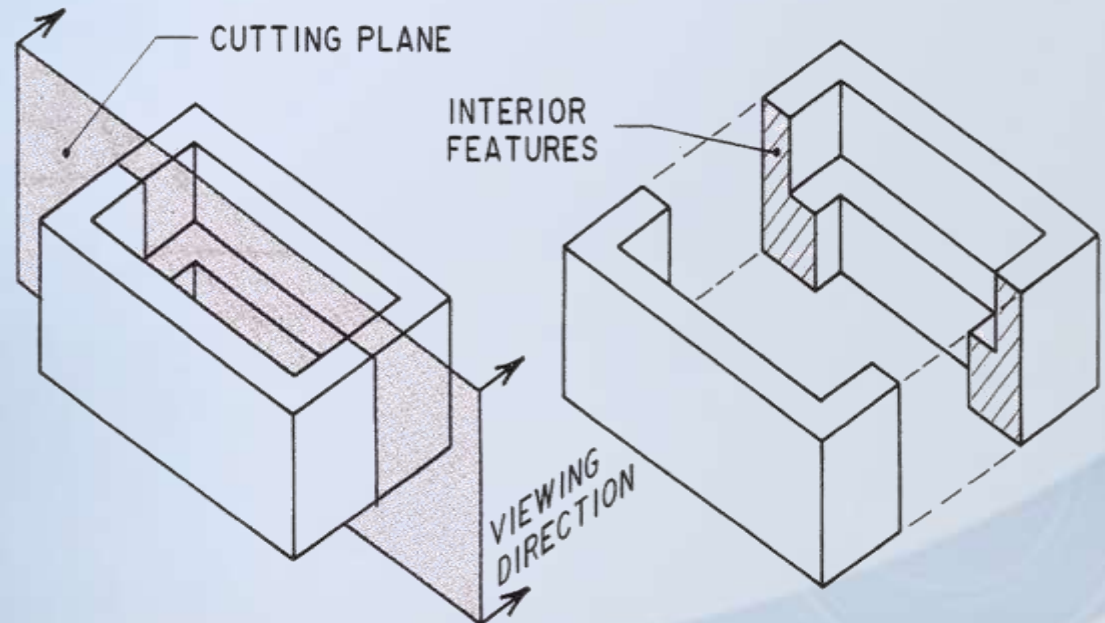
The part of the object between a plane & observer is assumed to be removed



# Important terms

## Cutting plane or section plane

The imaginary plane by which the object is assumed to be cut through. It is assumed to be parallel to the plane on which the view is projected.

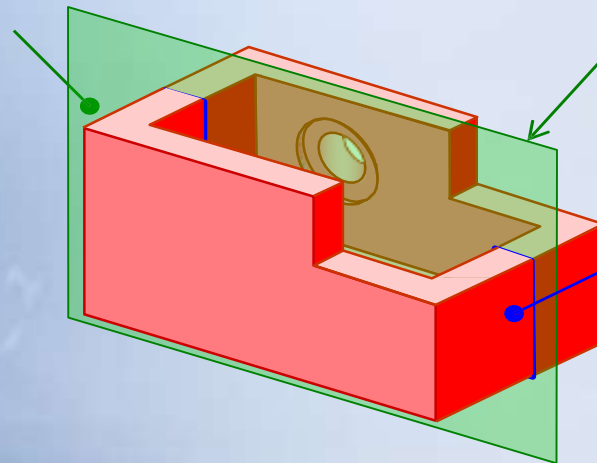




# CUTTING PLANE

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

Cutting plane



Cutting plane line

Section lines



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**Section** : The surface produced by cutting an object by the section plane is called section.

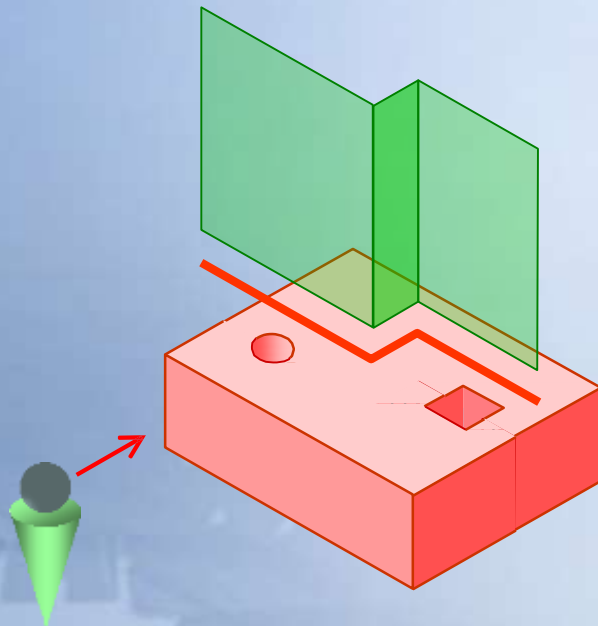
**Sectional view** : The projection of the section along with the remaining part of the object is called sectional view.

**Cutting plane line** : The position of the cutting plane is indicated by these line. The direction of viewing the section is shown by arrows resting on the cutting plane line & designated by capital letter. e.g. A-A.

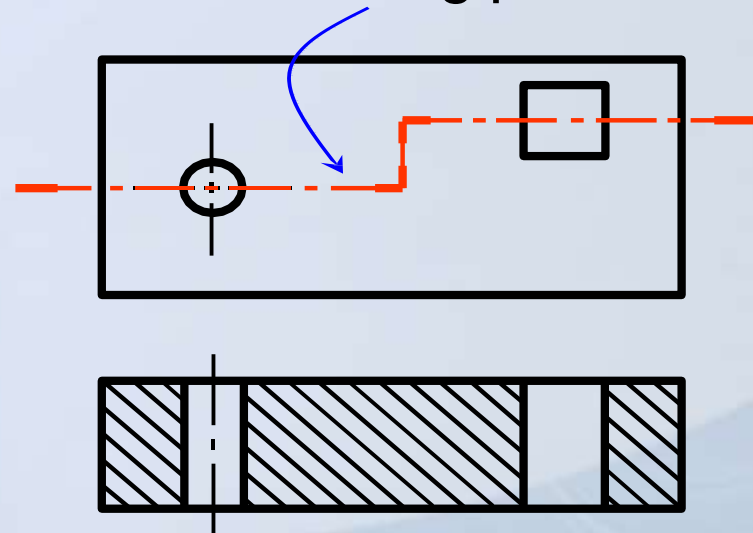


# CUTTING PLANE LINE

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



Indicate the *path* of cutting plane.







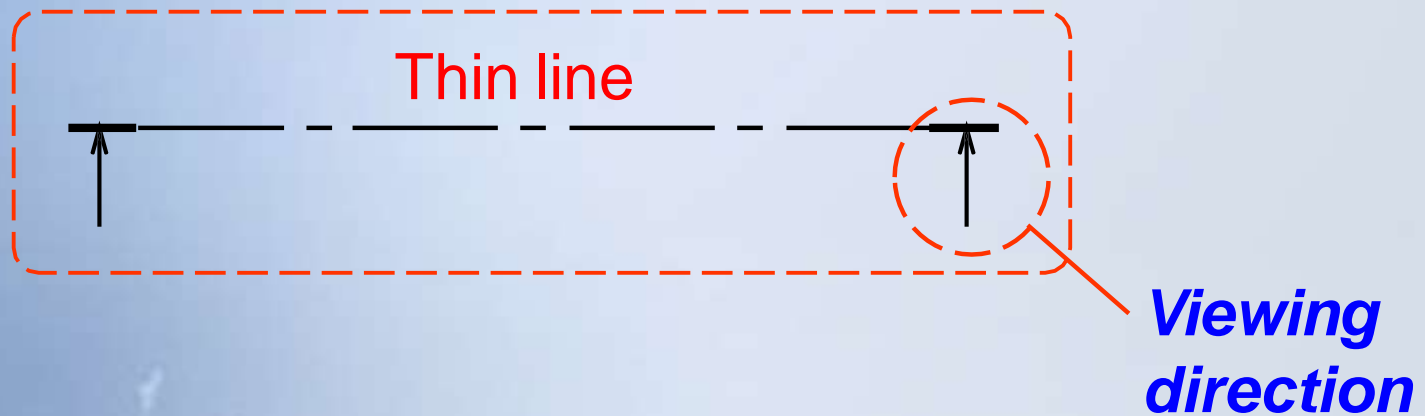
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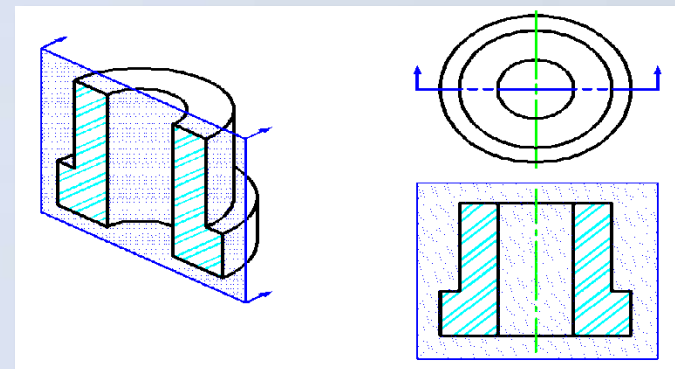
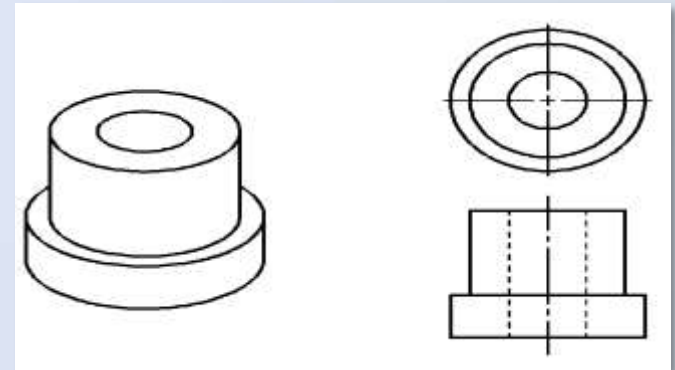
# CUTTING PLANE LINE





# CUTTING PLANE LINE

- The sight arrows at the end of the cutting plane are always perpendicular to the cutting plane.
- The direction of the arrow indicates the line of sight.





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The section is indicated by hatching or section lines.

The section lines should be drawn evenly spaced inclined at  $45^{\circ}$  to the axis or to the main outline of the section. It can be drawn at  $30^{\circ}$  or  $60^{\circ}$ .

Section lines should be drawn with 2H or 3H pencil.





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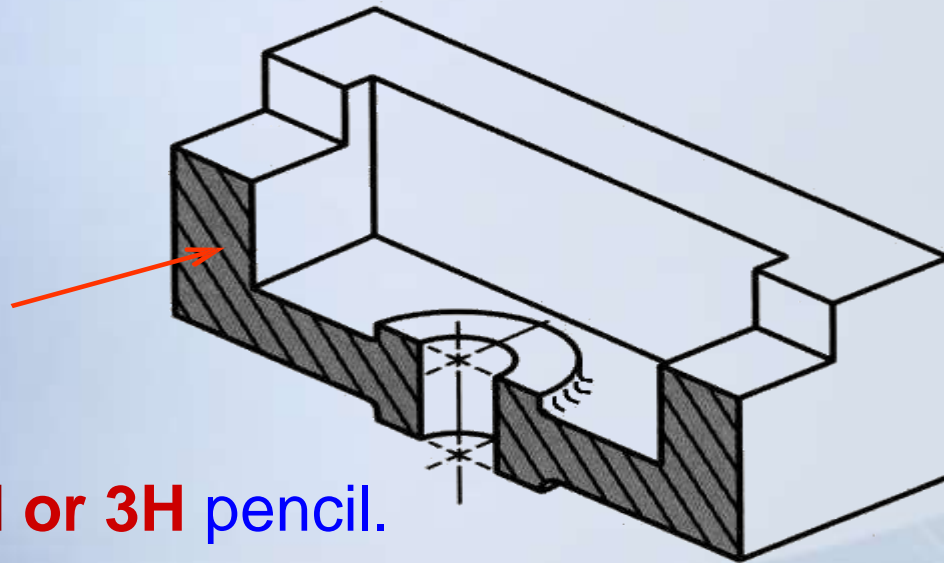
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# SECTION LINING

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

**Section lines**

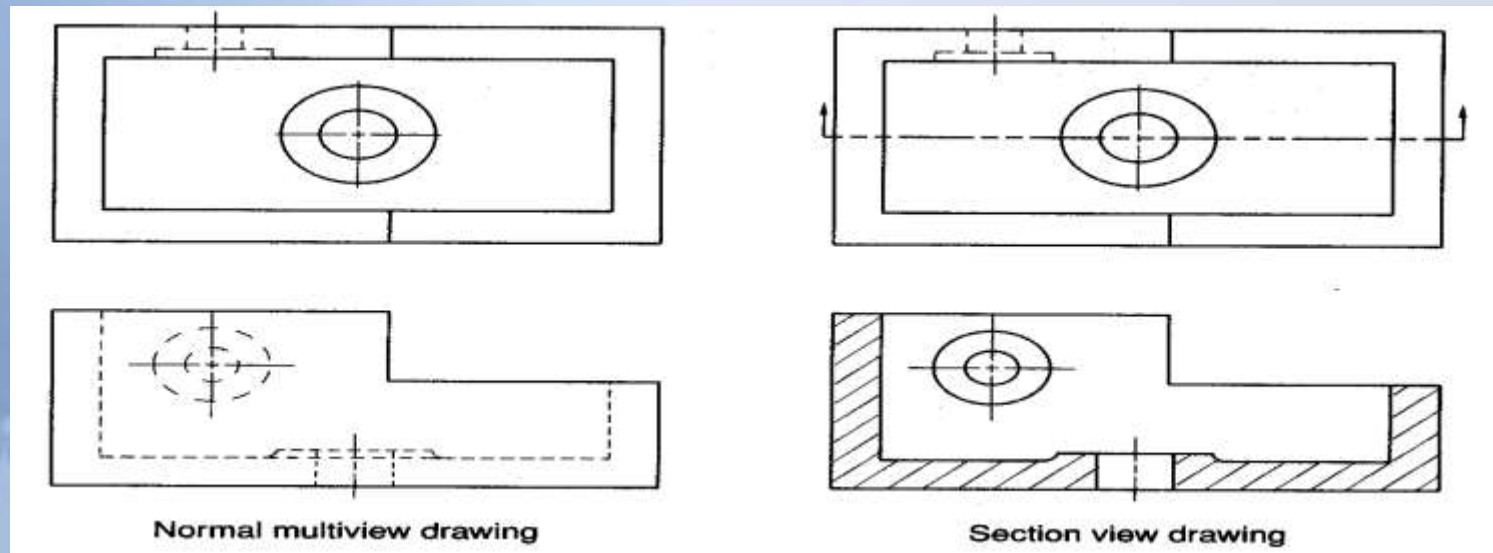


Drawn with **2H** or **3H** pencil.



# Section Lines

- Section lines (crosshatching) are used to show where the cutting plane passed through solid material.





# SECTION LINES SYMBOLS

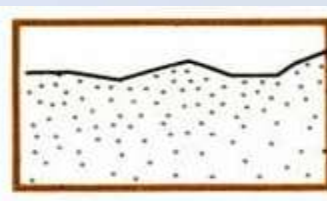
- The section lines are different for each of material's type.
- For practical purpose, the cast iron symbol is used most often for any materials.



**Cast iron,  
Malleable iron**



**Concrete**



**Sand**

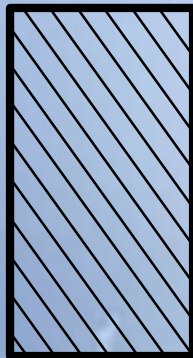


**Wood**

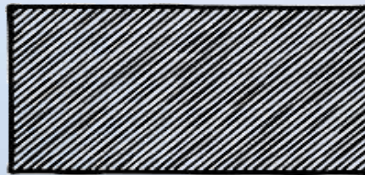


## SECTION LINING PRACTICE

- The spaces between lines may vary from 1.5 mm for small sections to 3 mm for large sections.



### COMMON MISTAKE







# Section Lining Technique

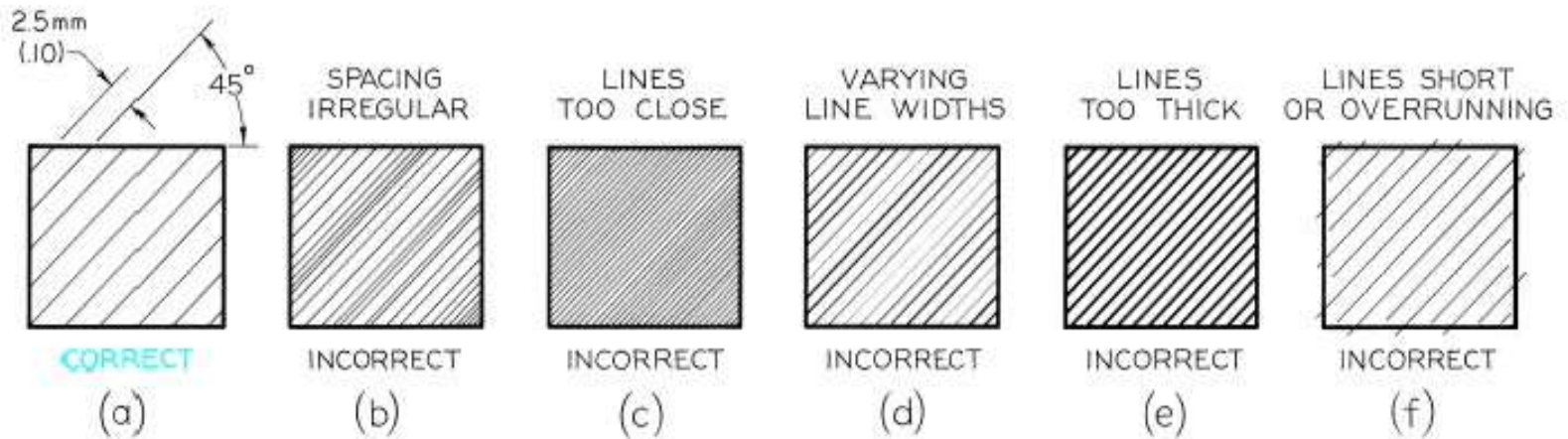


Figure 7-6

Section-Lining Technique





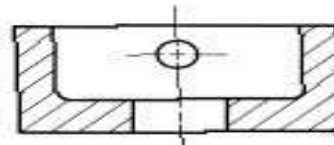
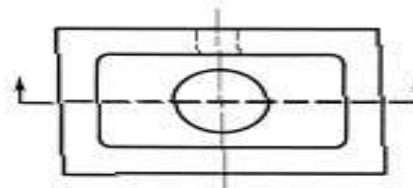
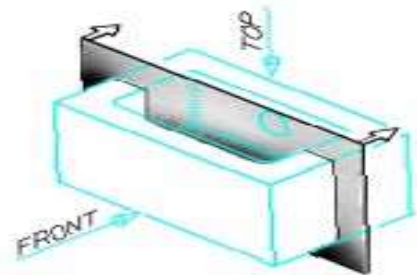
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# Cutting Planes & Sections

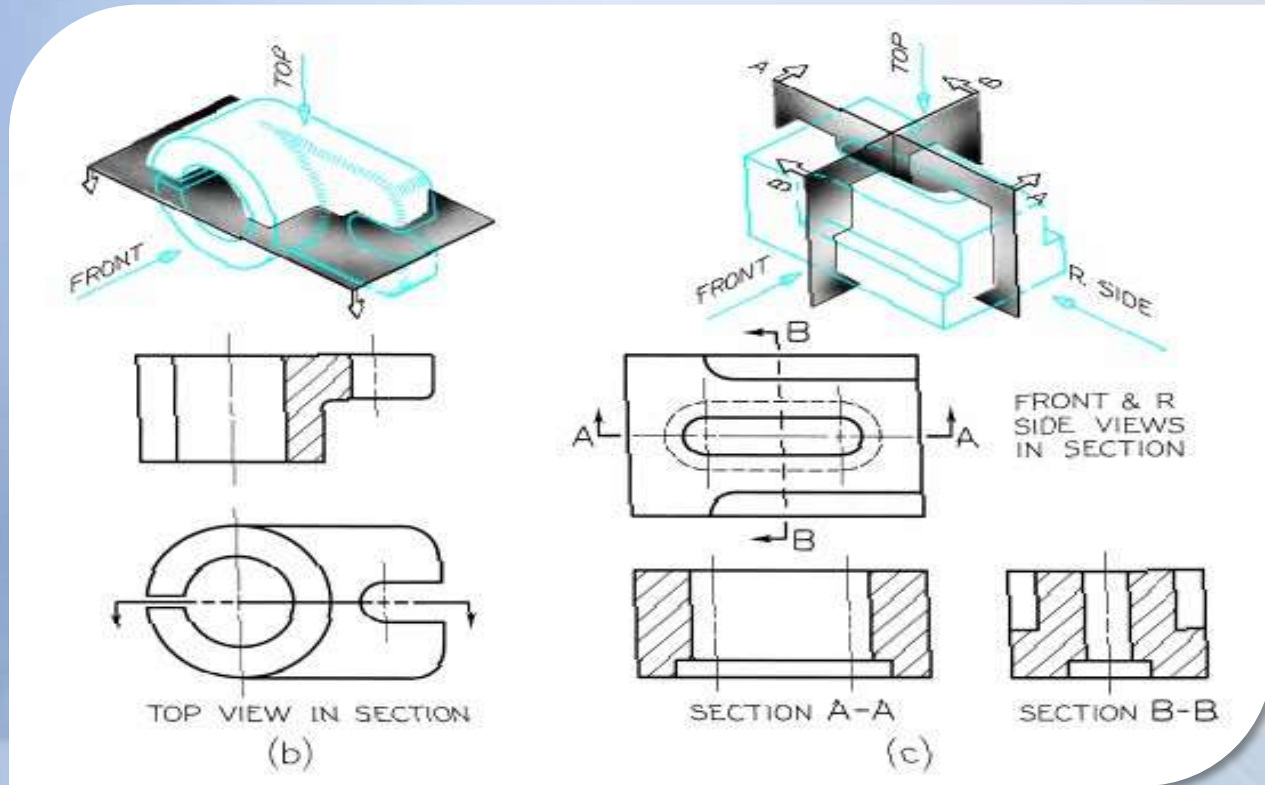


FRONT VIEW IN SECTION

(a)



# Cutting Planes & Sections





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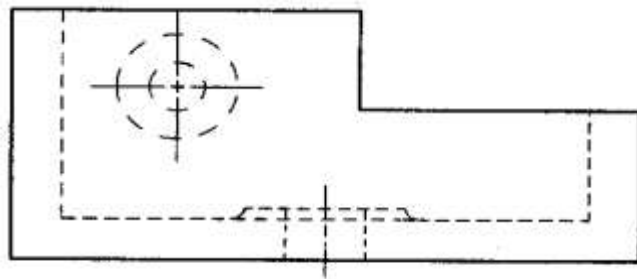
# Types of Section Views

- Full sections
- Half sections
- Revolved sections
- Removed sections
- Offset sections

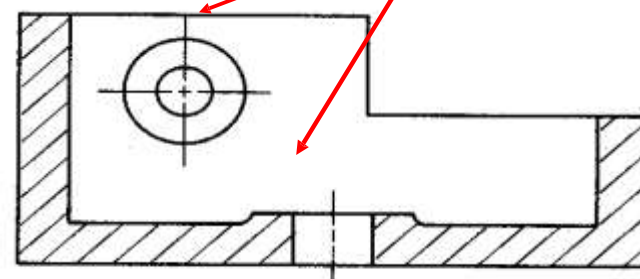


# Full Section View

- In a full section view, when the object is assumed to be cut through entirely and the front half removed.
- Note that hidden lines become visible in a Section view



Normal multiview drawing

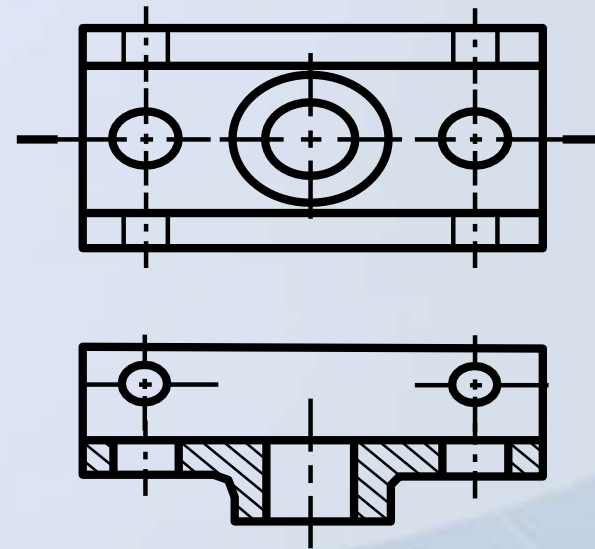
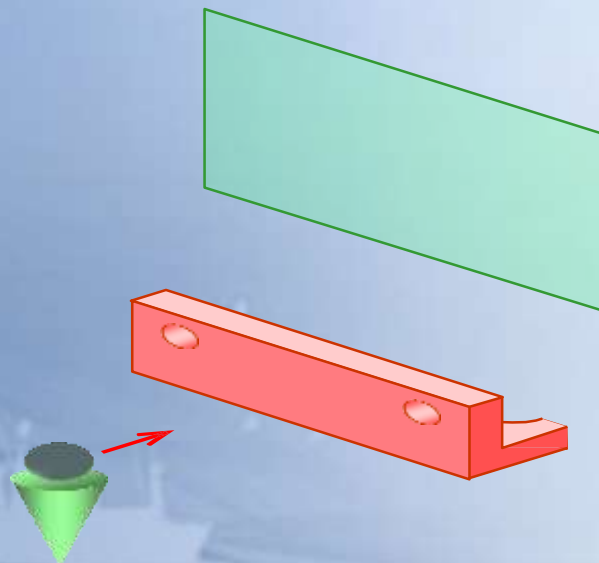


Section view drawing



# FULL SECTION VIEW

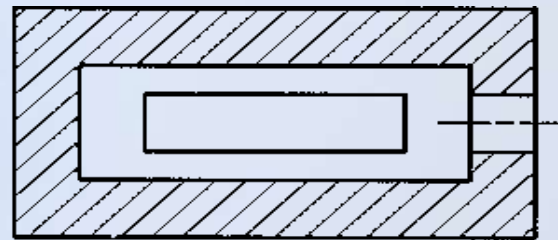
The view is made by passing the *straight* cutting plane *completely through* the part.



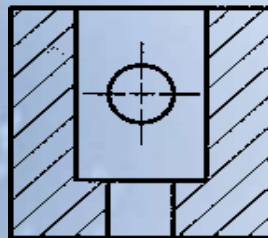




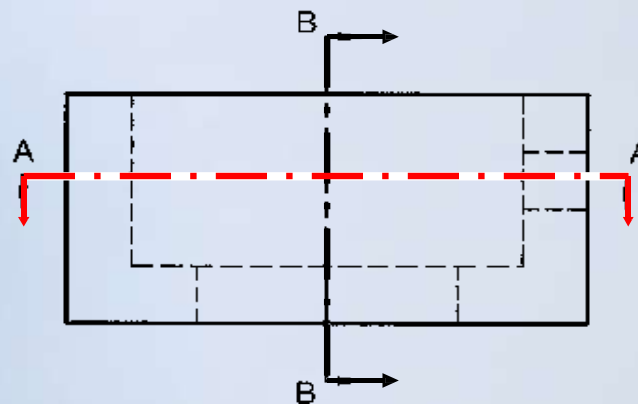
# Multiple Sectioned Views



SECTION A-A



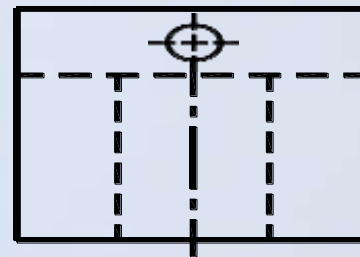
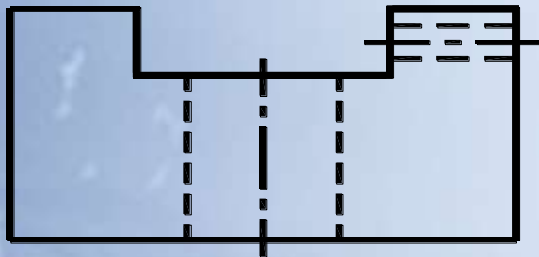
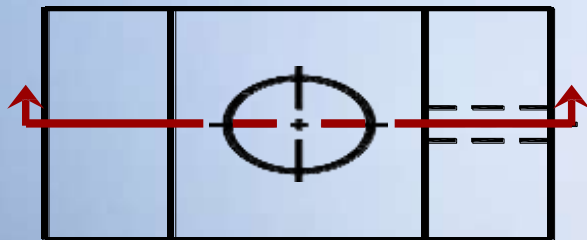
SECTION B-B





# Individual Exercise

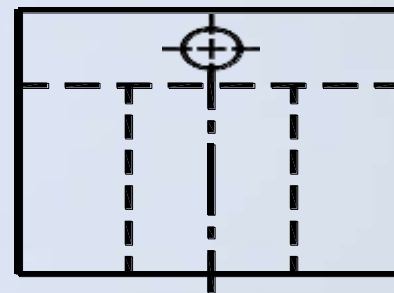
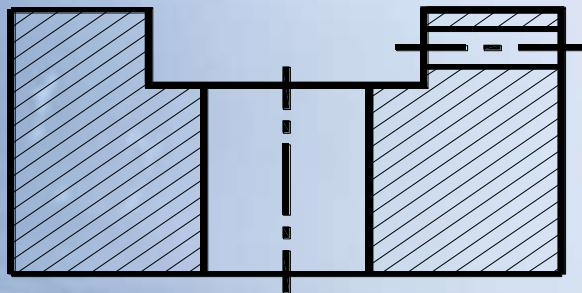
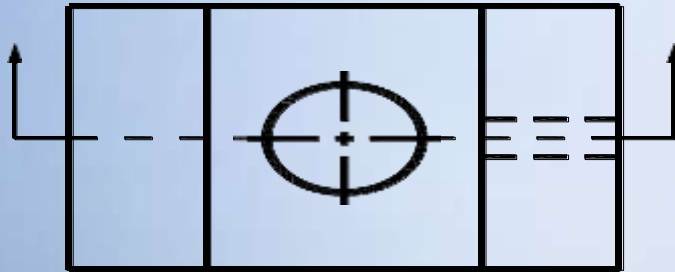
- Sketch a full section of the object shown below





# Individual Exercise

- Were you correct ?

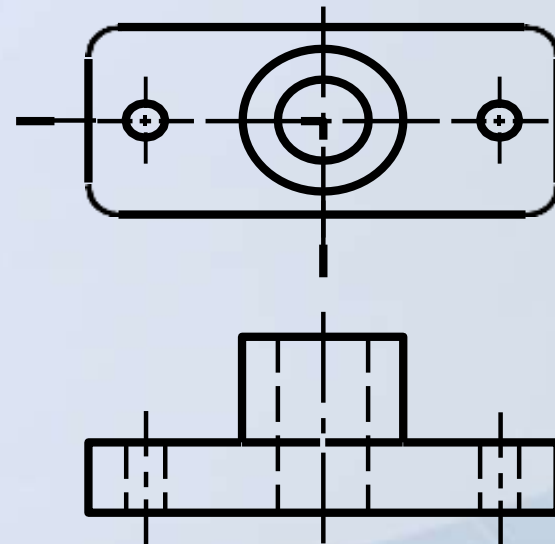
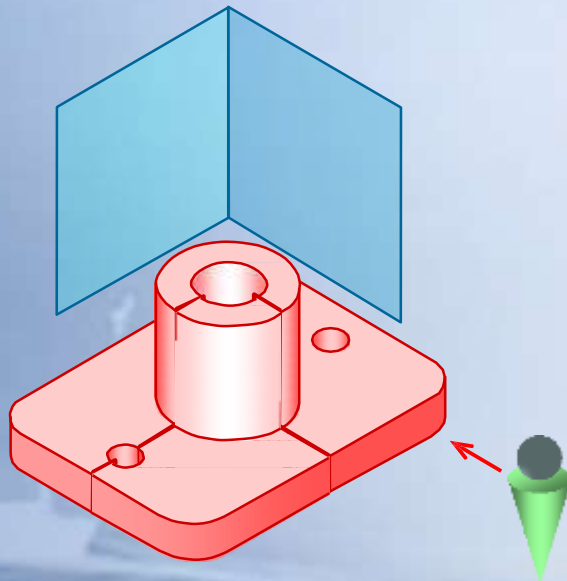




# HALF SECTION VIEW

It may be assumed to be cut by two cutting planes at right angle to each other and containing two center lines of the object.

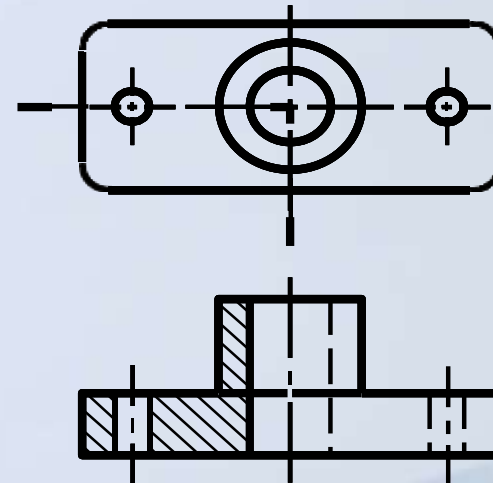
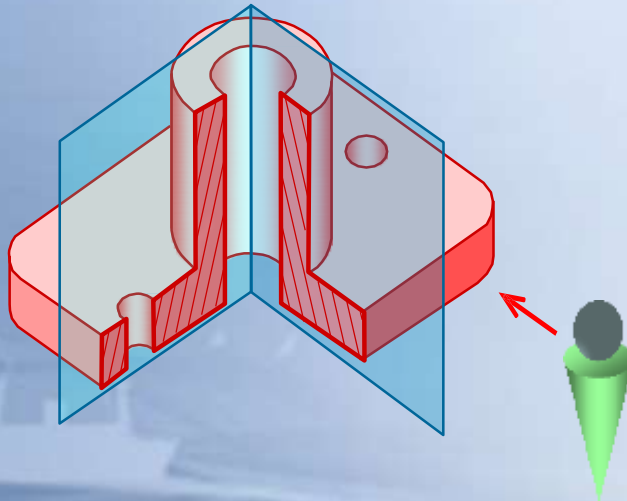
The one quarter of the object between two plane is then removed showing only a half section.





## 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.







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# The End

## Thanks