

# **ME-160**

# **Mechanical Engineering**

# **Drawing**

## **Sectional Views**



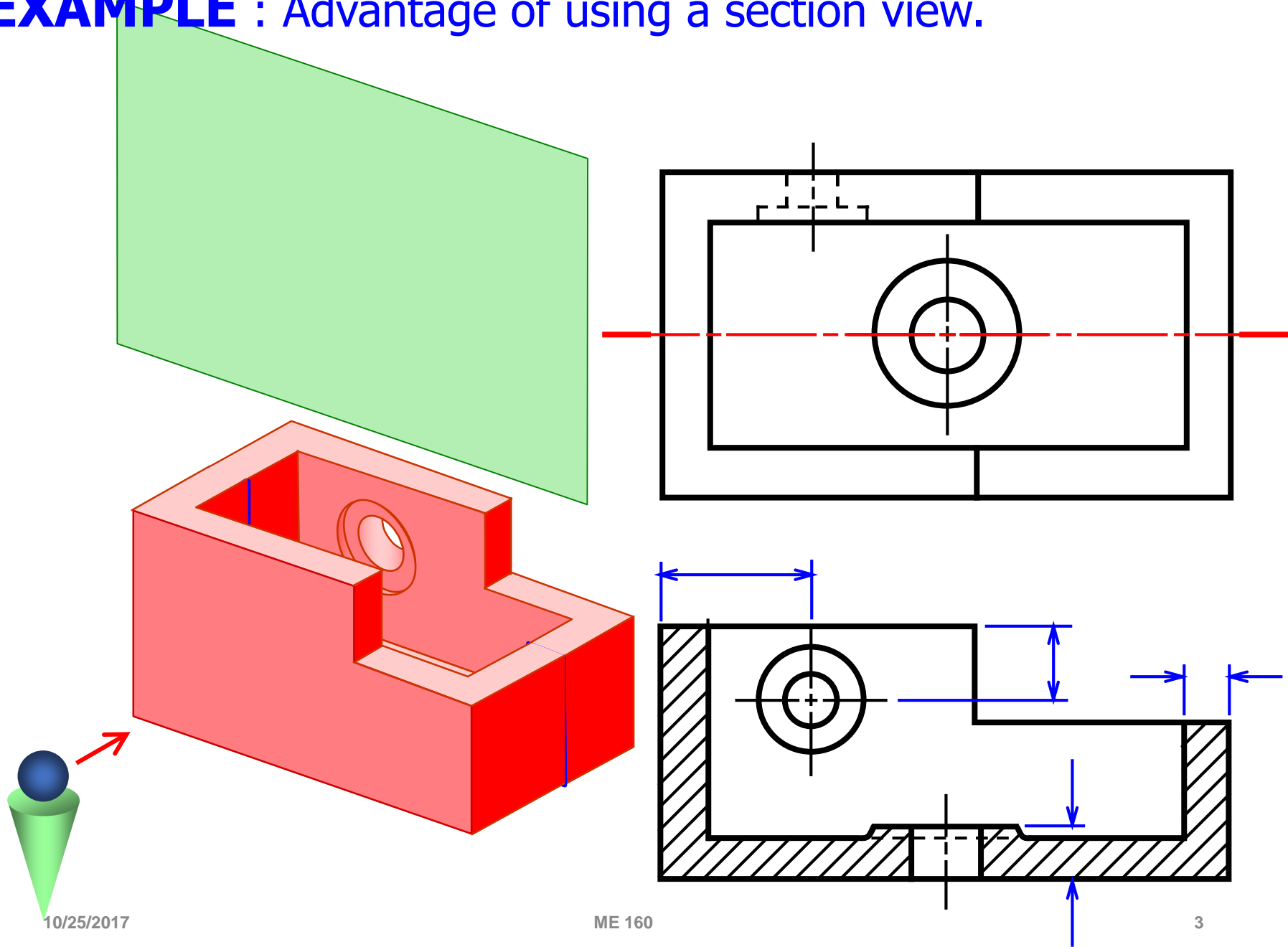
**Course Teachers:**  
**Dr. Mohammad Nasim Hasan**  
**Md. Tanvir Hossain**

# PURPOSES OF SECTION VIEWS

- Clarify the views by
  - ❖ reducing or eliminating the hidden lines.
  - ❖ revealing the cross sectional's shape.
- Facilitate the dimensioning.

*Let See the example*

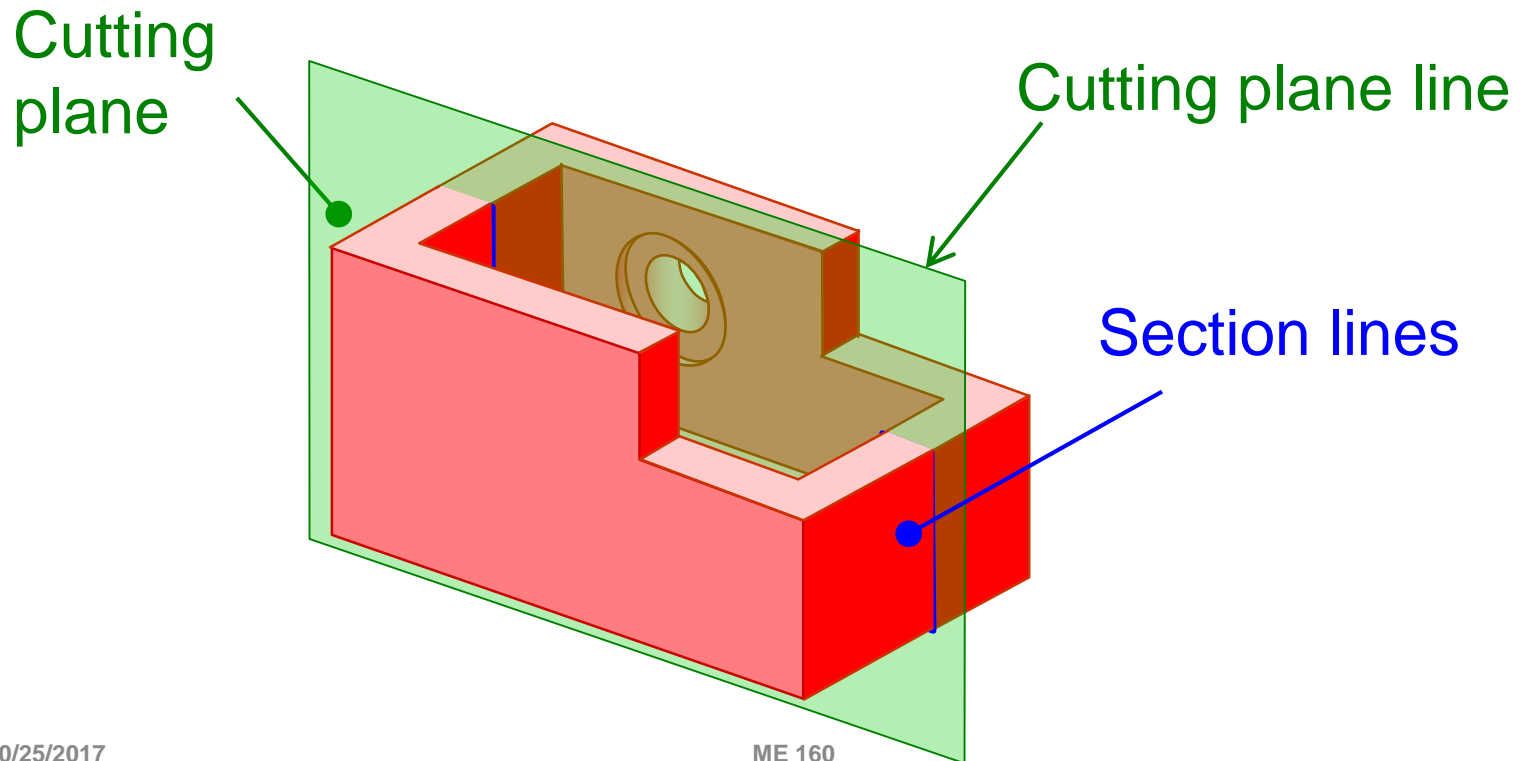
# EXAMPLE : Advantage of using a section view.



# *Terminology and common practices*

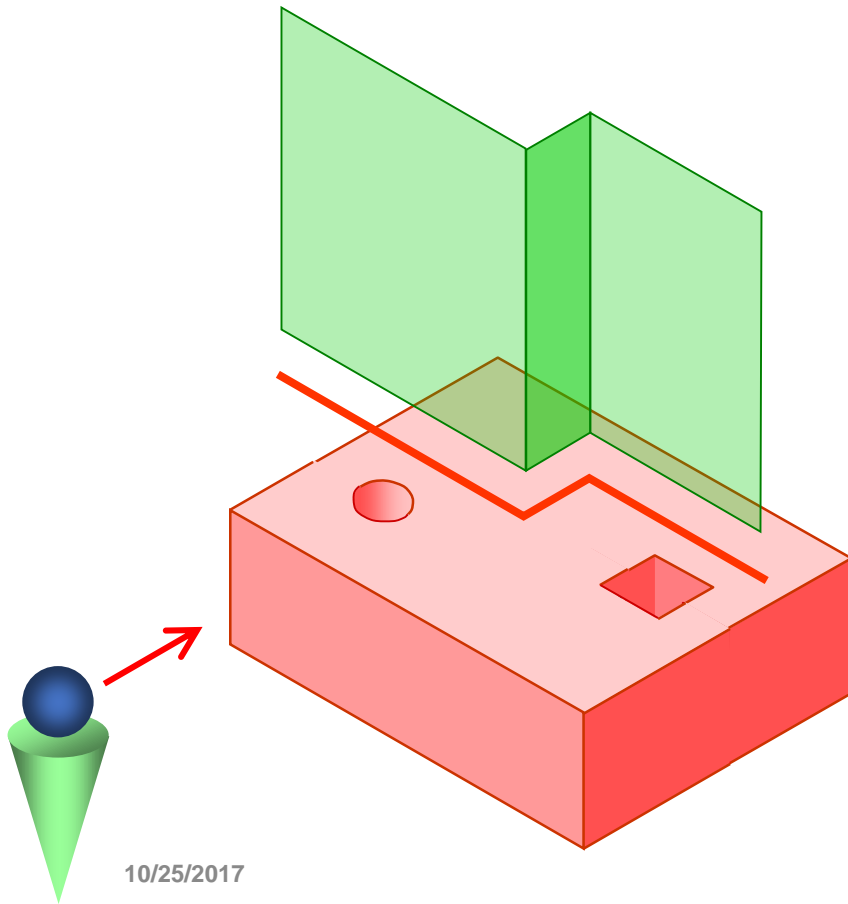
# CUTTING PLANE

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

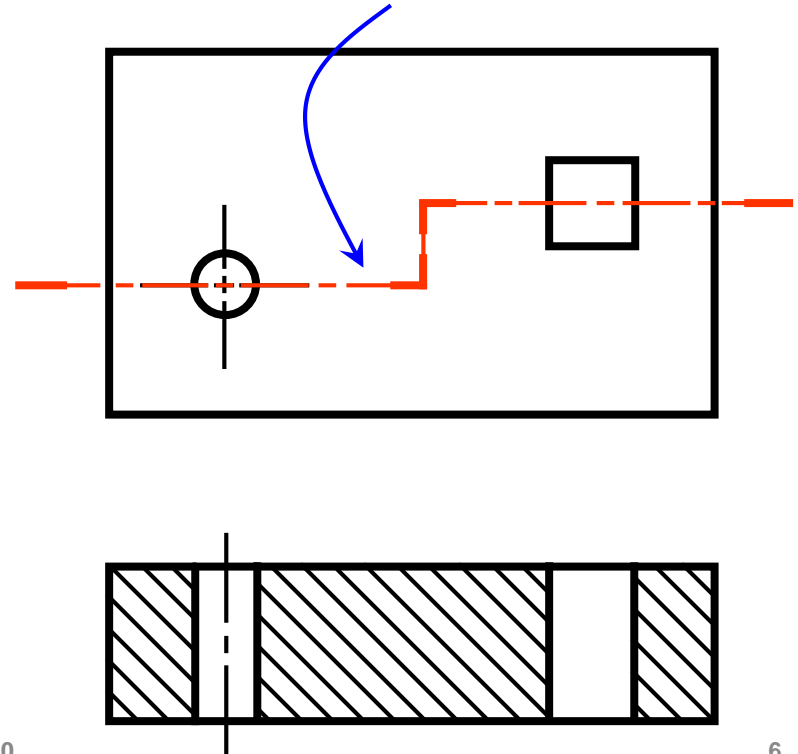


# CUTTING PLANE LINE

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

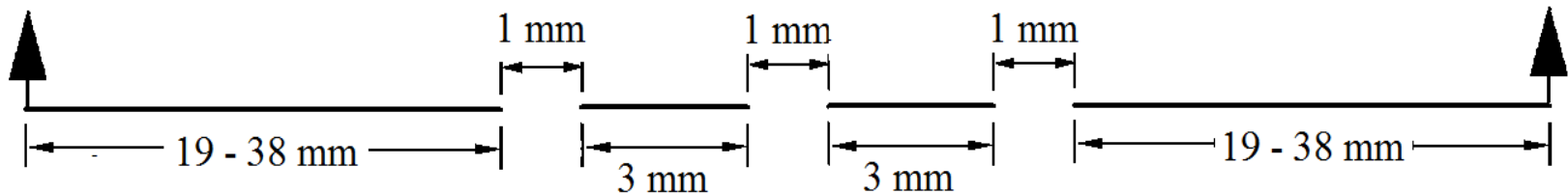
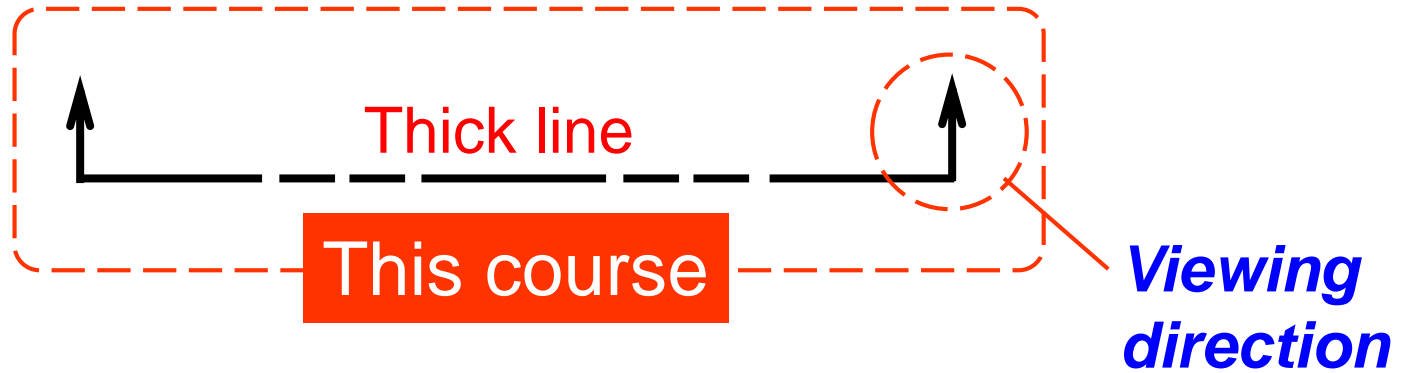


Indicate the ***path*** of cutting plane.



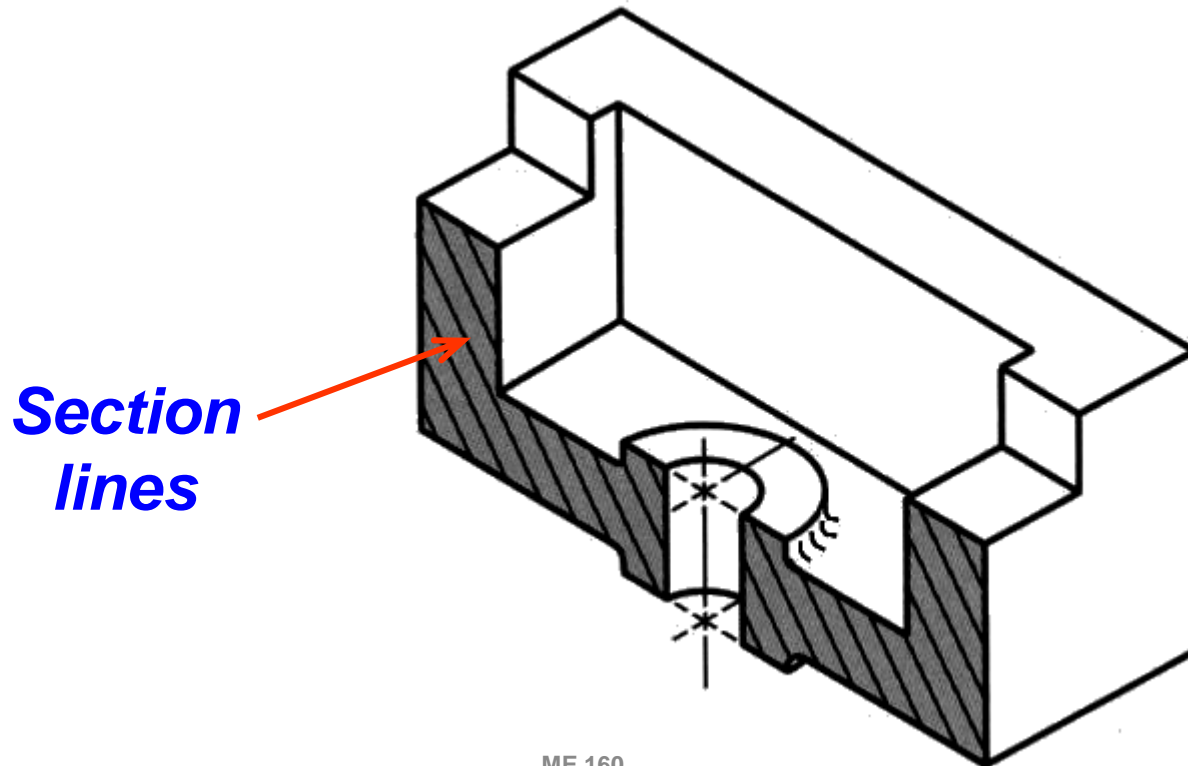
# CUTTING PLANE LINESTYLES

ANSI  
standard



# SECTION LINING

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





# SECTION LINES SYMBOLS

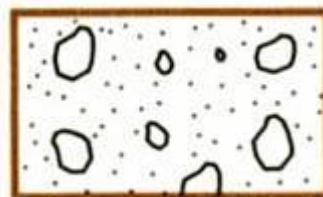
- The section lines are different for each of material's type.
- For practical purpose, the cast iron symbol is used most often for any materials.



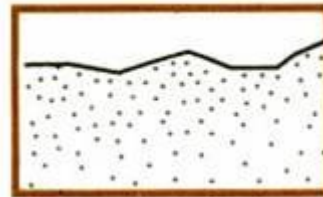
Cast iron,  
Malleable iron



Steel



Concrete



Sand

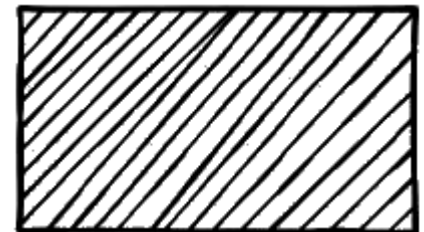
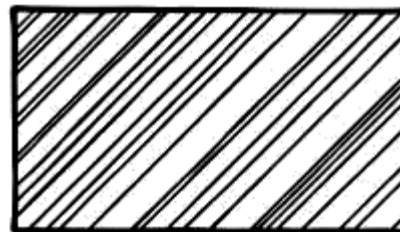
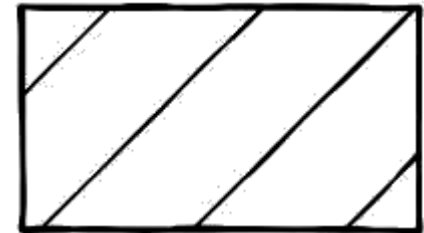
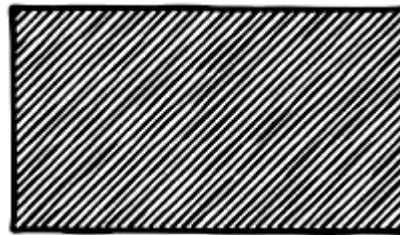


Wood

# SECTION LINING PRACTICE

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

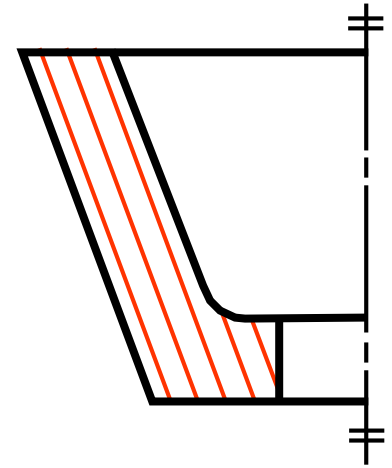
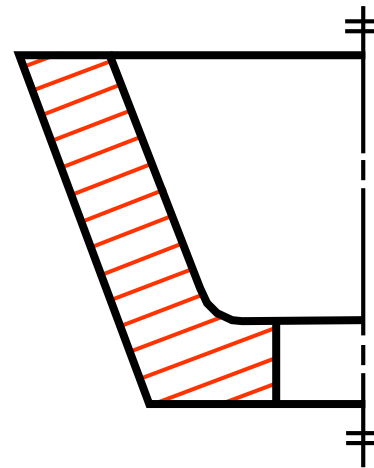
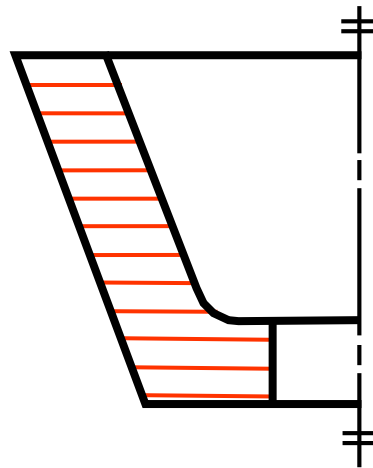
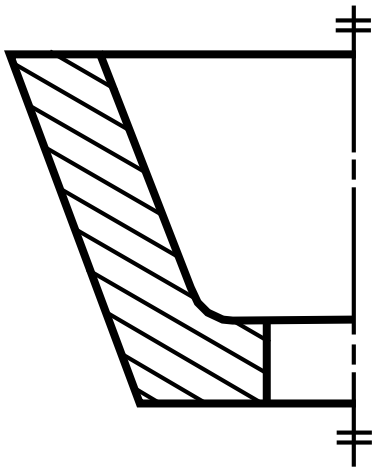
## COMMON MISTAKE



# SECTION LINING PRACTICE

- It ***should not*** be drawn *parallel* or *perpendicular* to the object line.

## COMMON MISTAKE



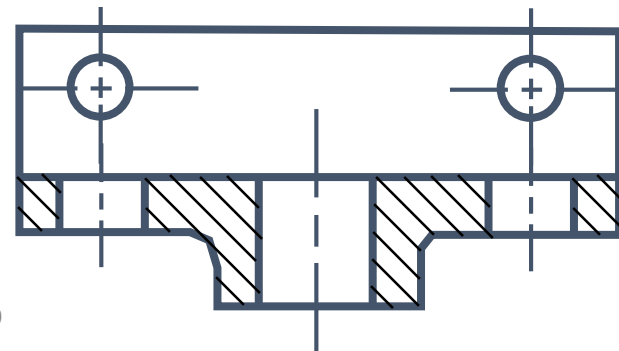
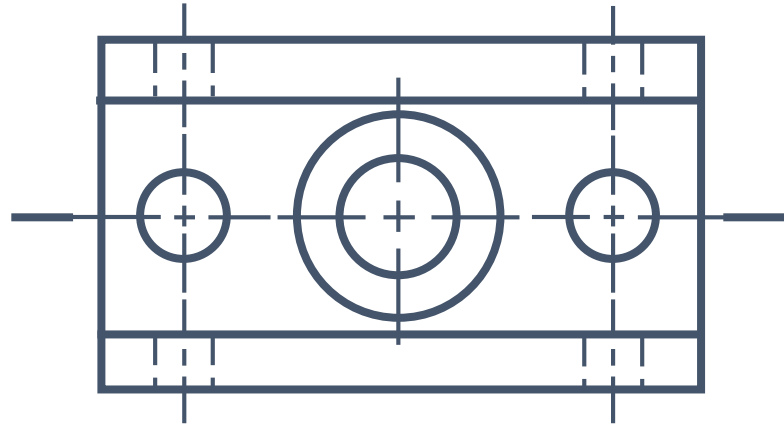
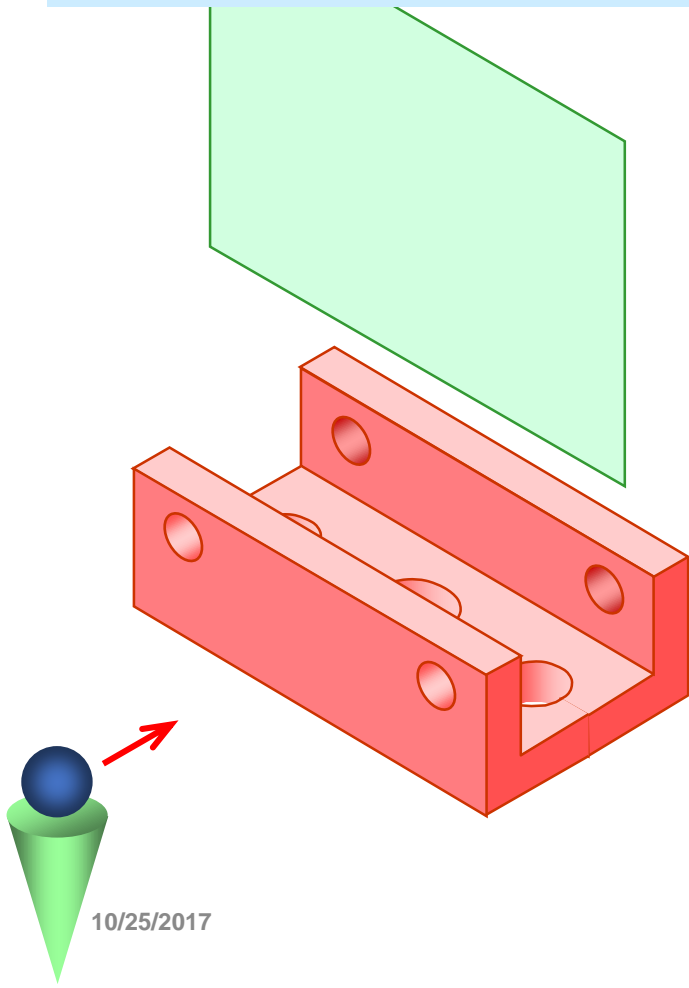
# *Kinds of Sections*

# KIND OF SECTIONS

1. Full section
2. Offset section
3. Half section
4. Broken-out section
5. Revolved section (aligned section)
6. Removed section (detailed section)

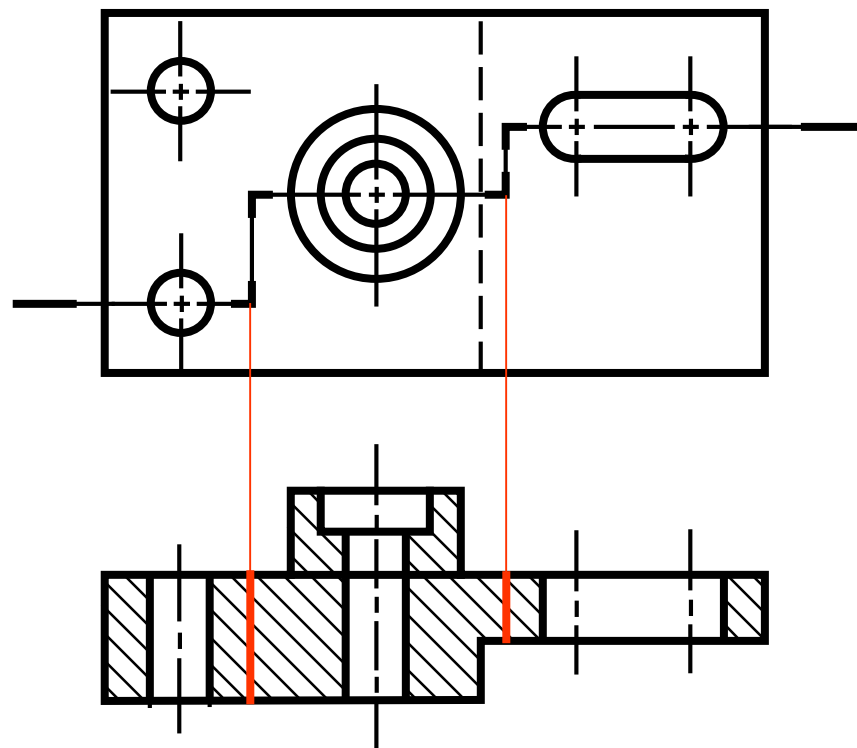
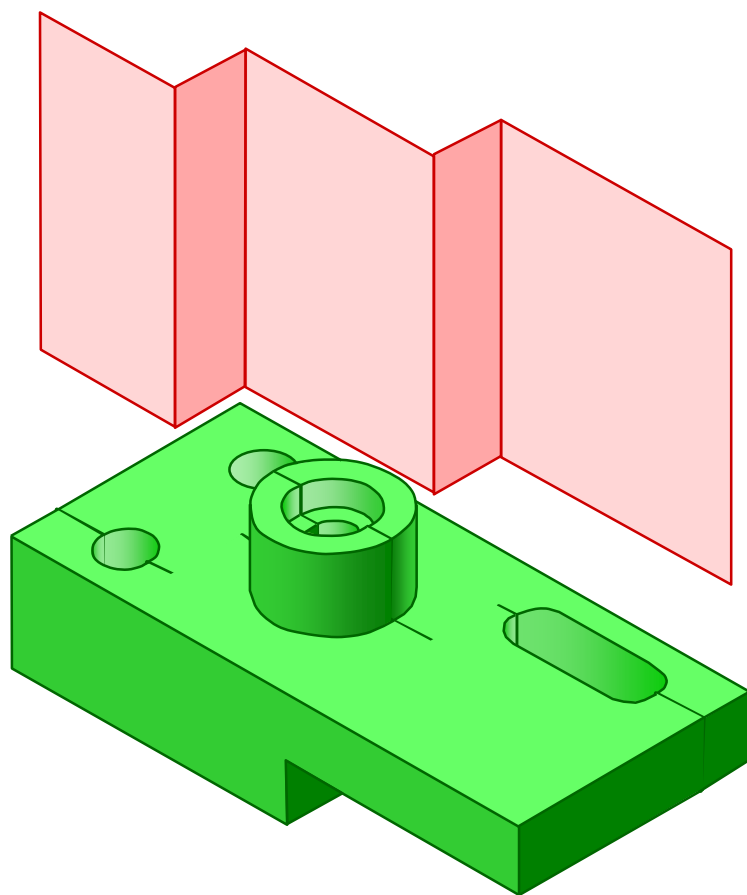
# FULL SECTION VIEW

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



# OFFSET SECTION VIEW

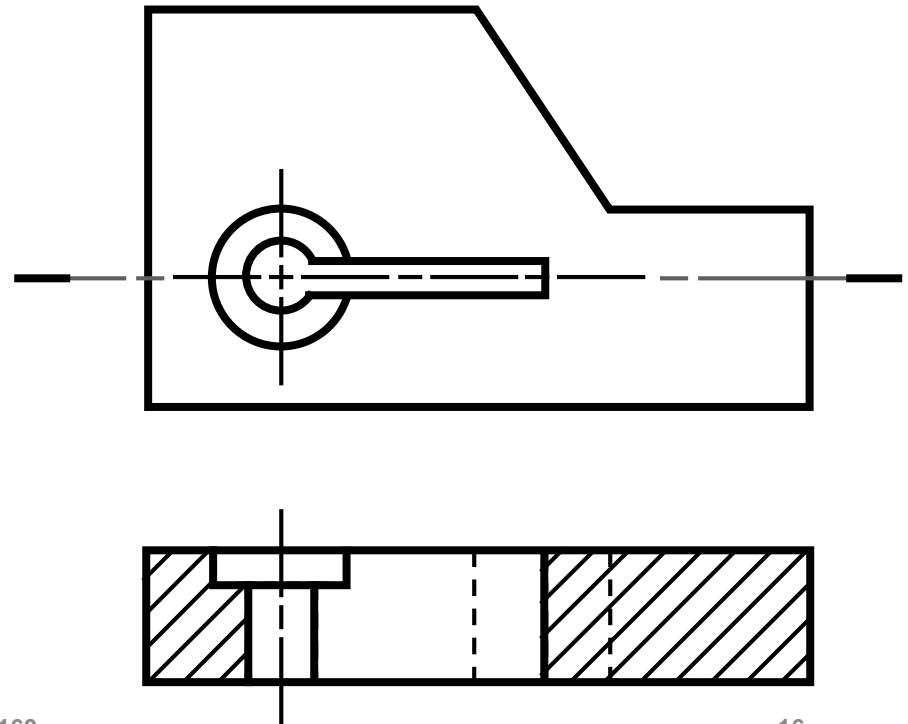
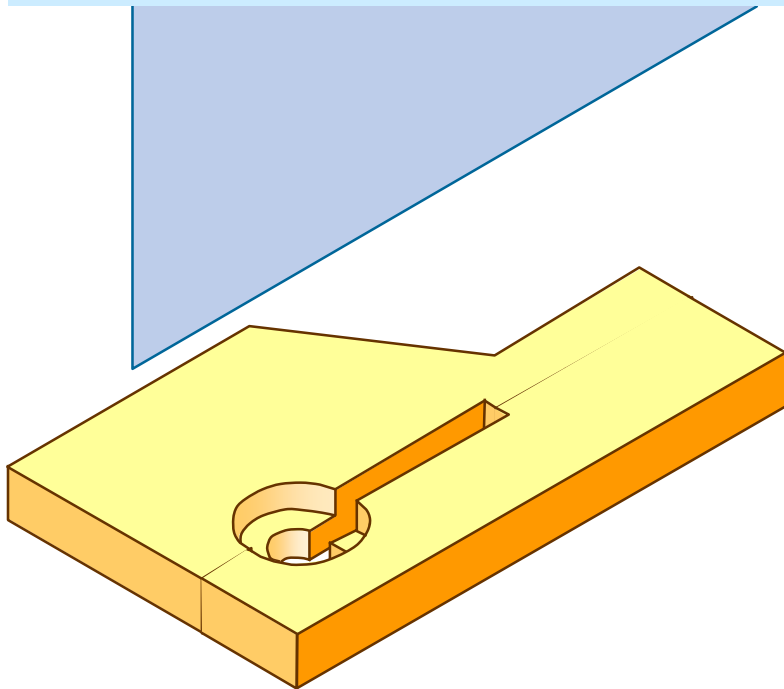
The view is made by passing the *bended* cutting plane *completely through* the part.



**Do not show the edge views of the cutting plane.**

# TREATMENT OF HIDDEN LINES

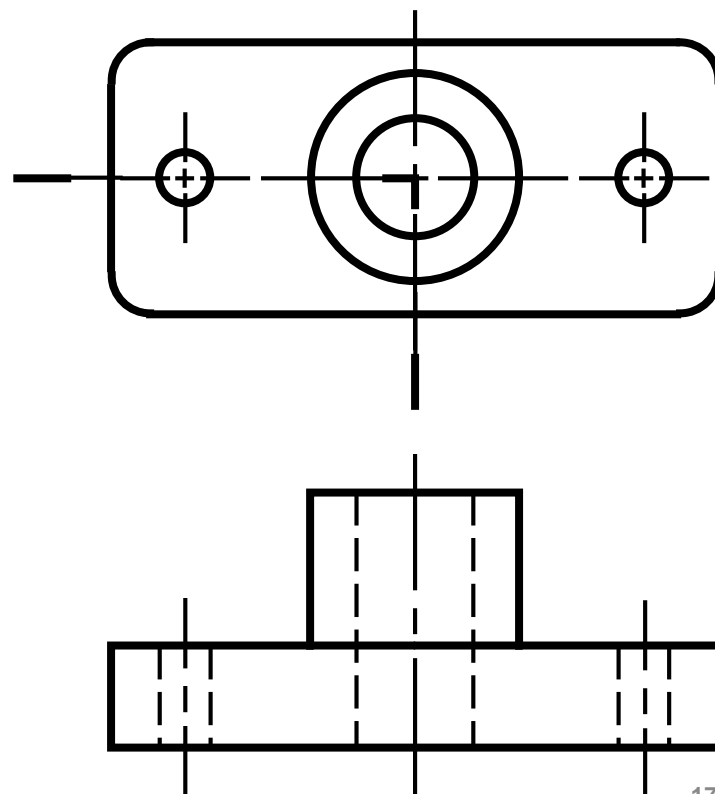
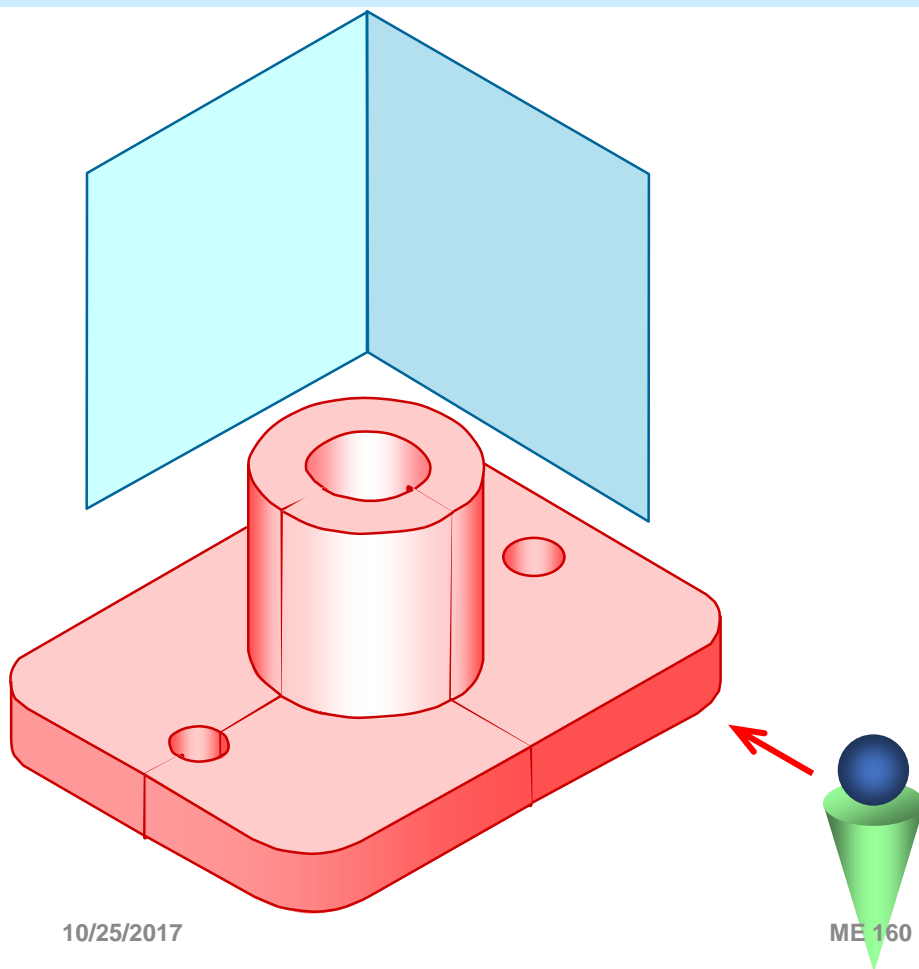
- Hidden lines are *normally omitted* from section views.





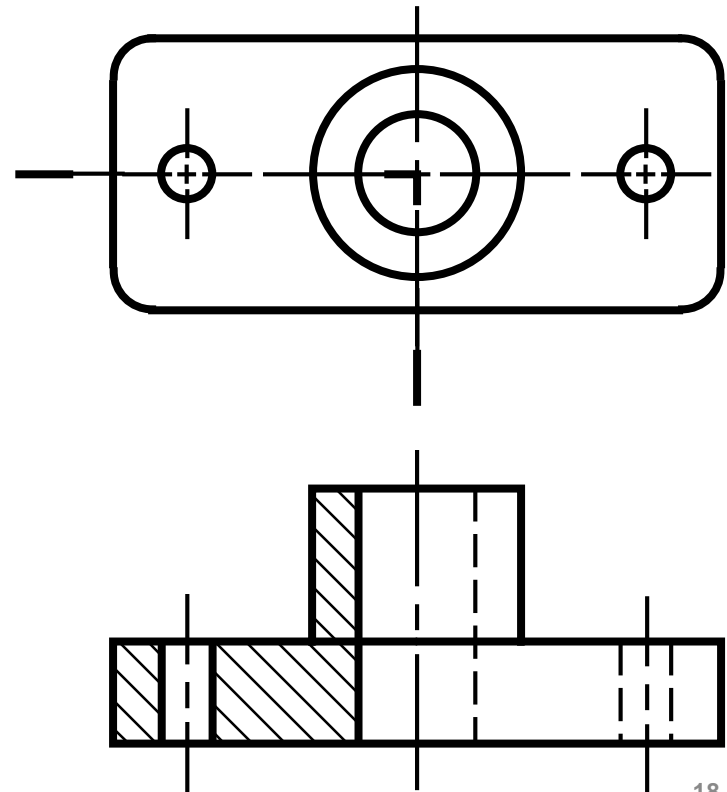
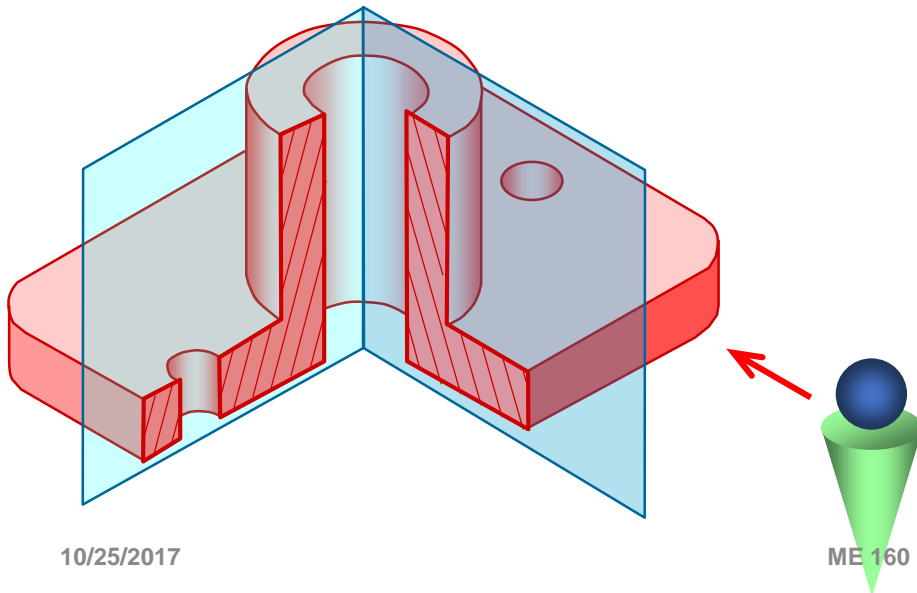
# HALF SECTION VIEW

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



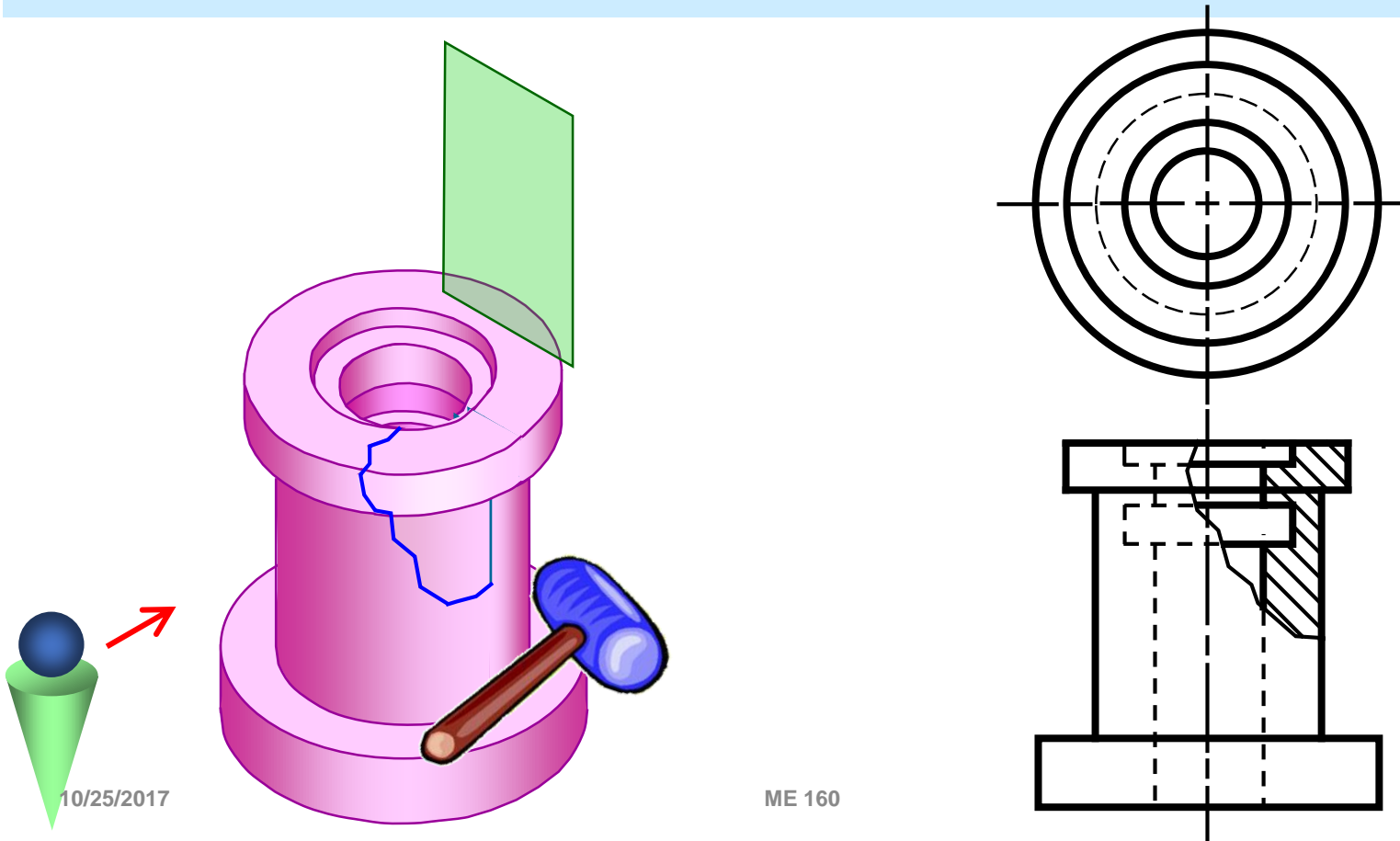
# HALF SECTION VIEW

- 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.



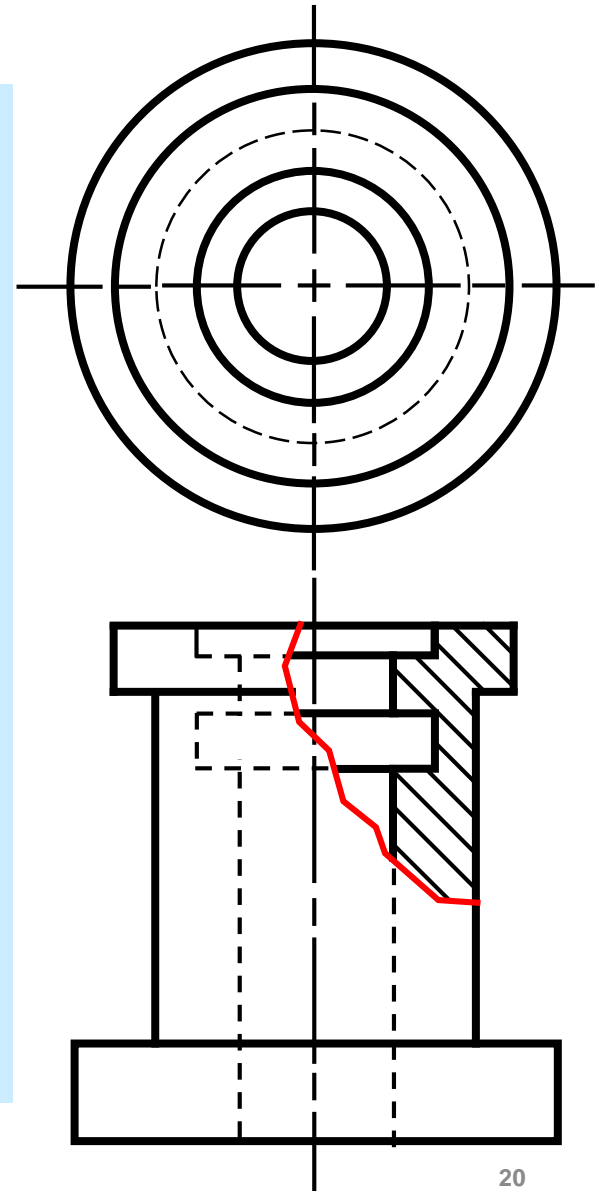
# BROKEN-OUT SECTION VIEW

The view is made by passing the cutting plane normal to the viewing direction and removing the portion of an object in front of it.

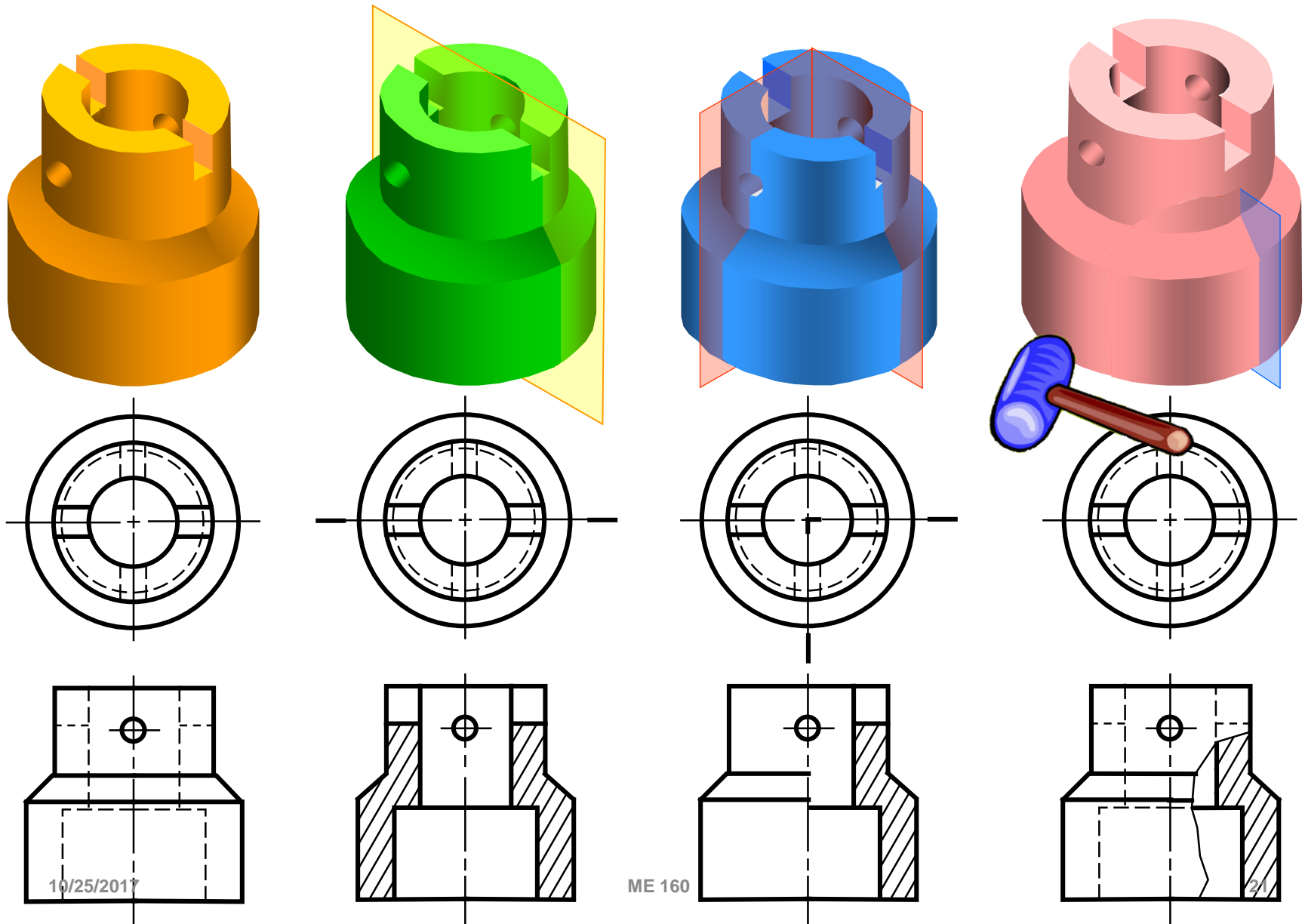


# BROKEN-OUT SECTION VIEW

- A **break line** is used to separate the sectioned portion from the unsectioned portion of the view.
- Break line is a thin continuous line and is drawn freehand.
- There is **no** cutting plane line.



# EXAMPLE : Comparison among several section techniques

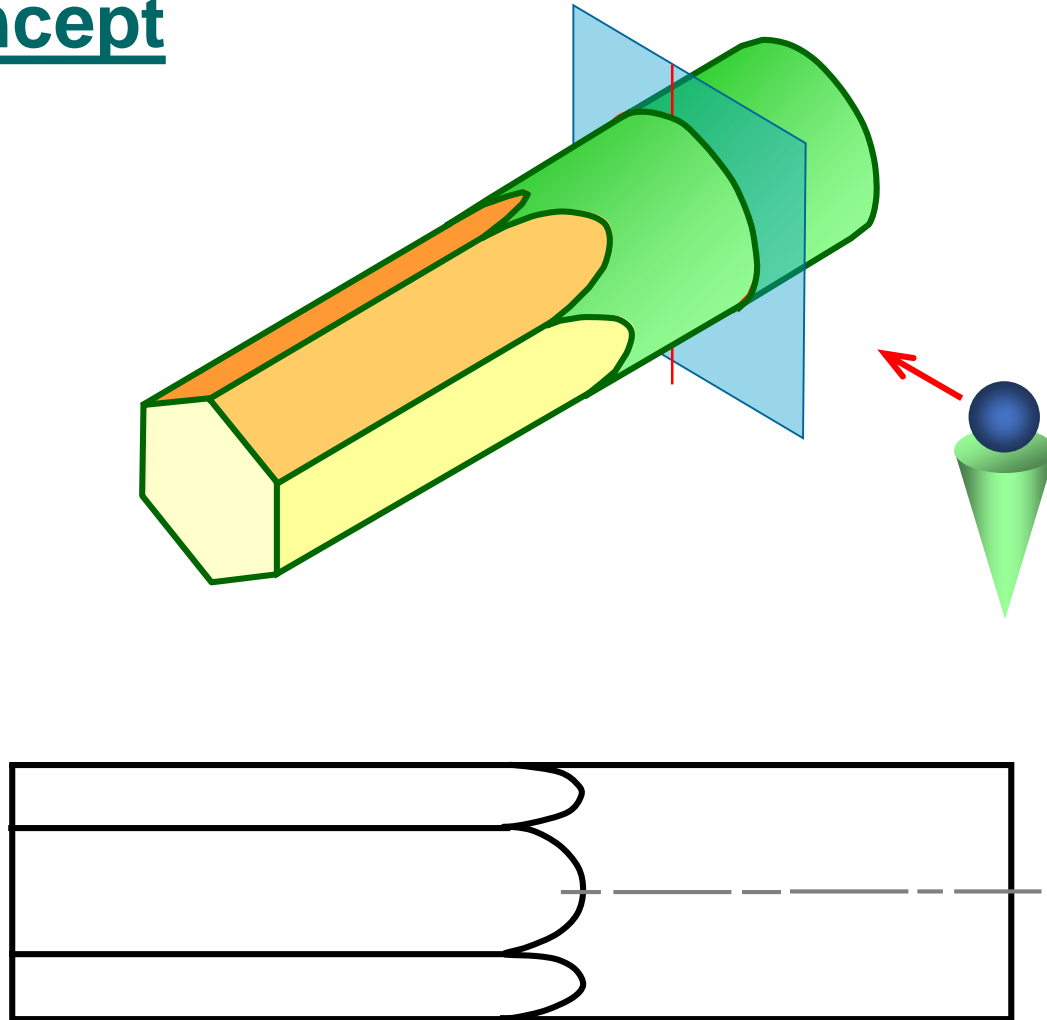


# REVOLVED SECTION VIEW

- Revolved sections *show cross-sectional features* of a part.
- No need for additional orthographic views.
- This section is especially helpful when a cross-section varies.

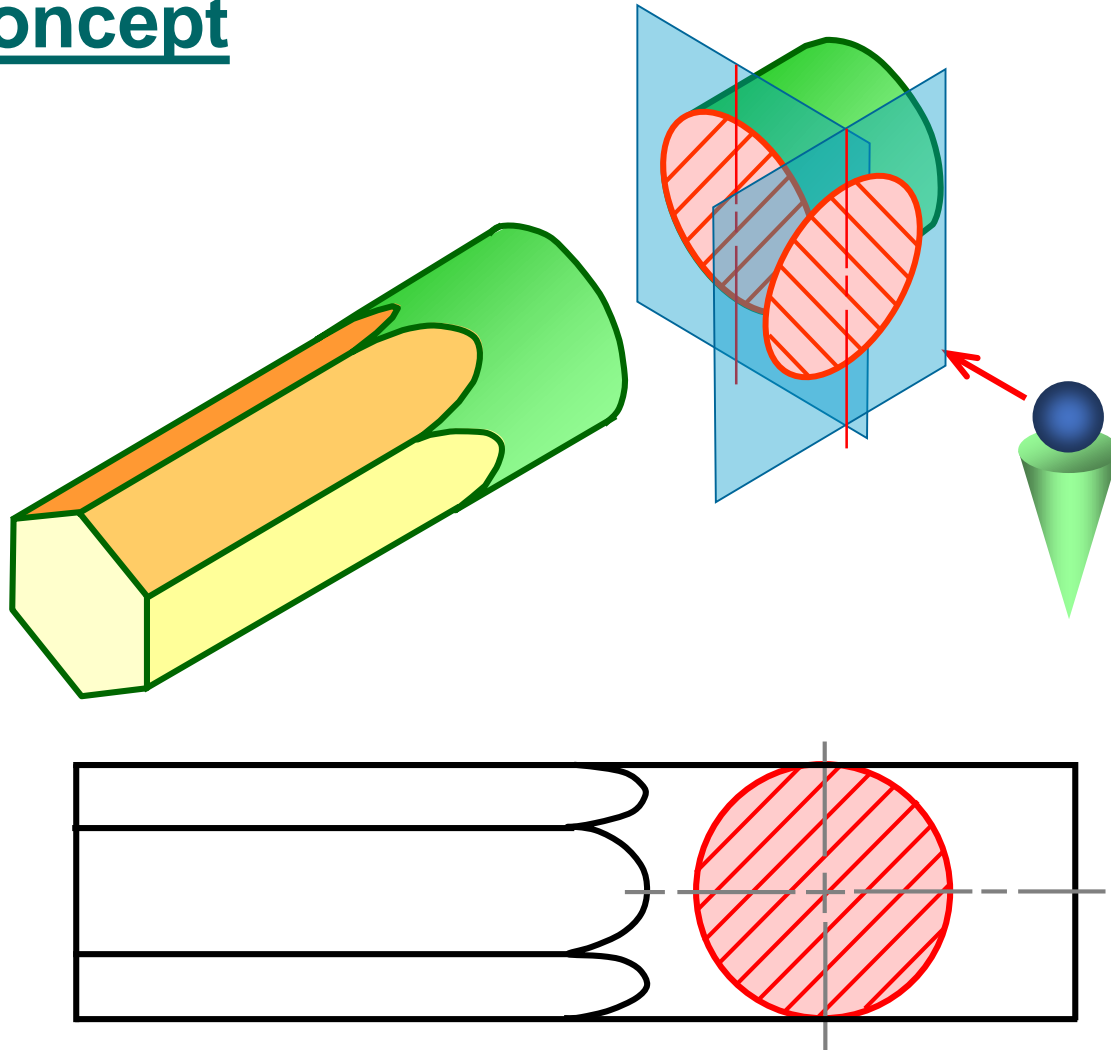
# REVOLVED SECTION VIEW

## Basic concept



# REVOLVED SECTION VIEW

## Basic concept



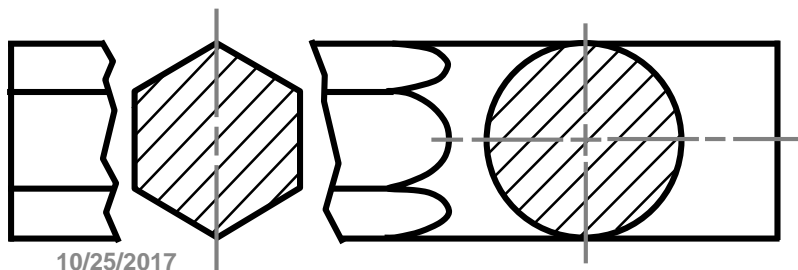
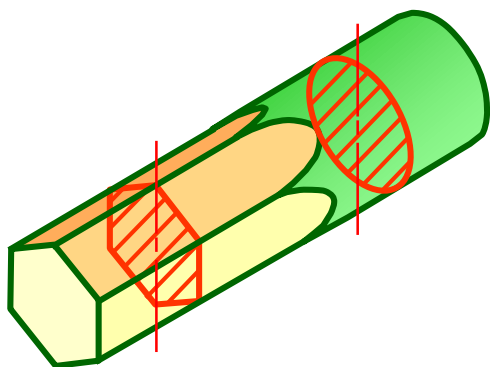


# REMOVED SECTION VIEW

- Removed section is revolved section.
- Section view is shown outside the view.
- Used where space does not enough for revolved section
- Can be located elsewhere on a drawing with *properly labeled*

# REMOVED SECTION VIEW

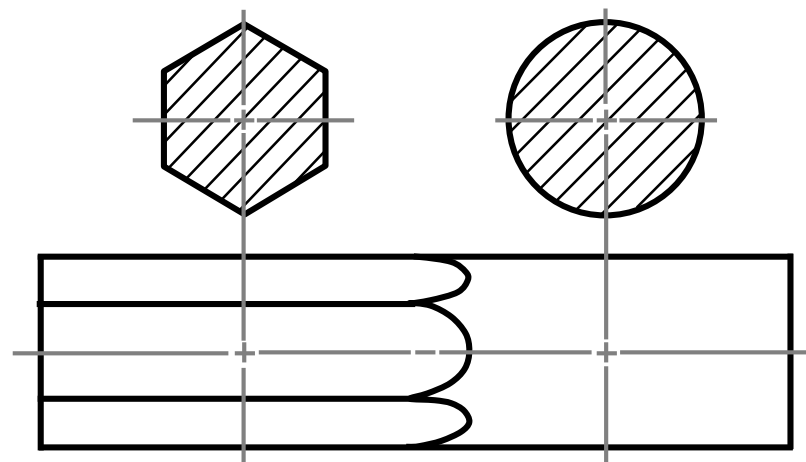
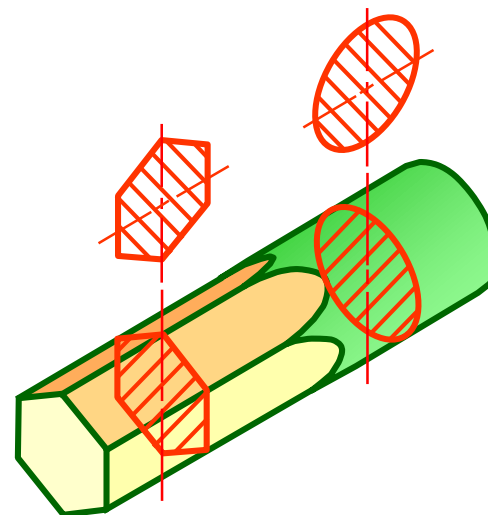
Revolved section



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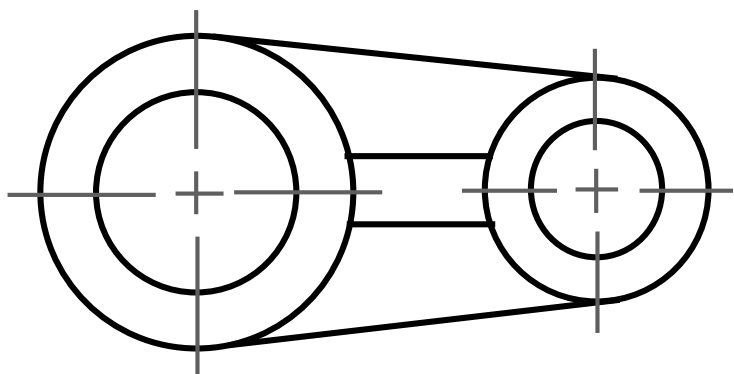
Removed section



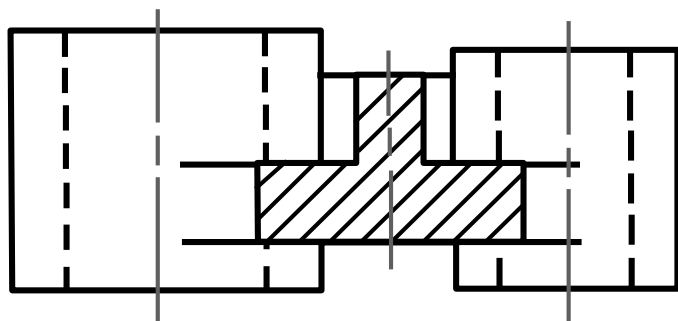
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# REMOVED SECTION VIEW

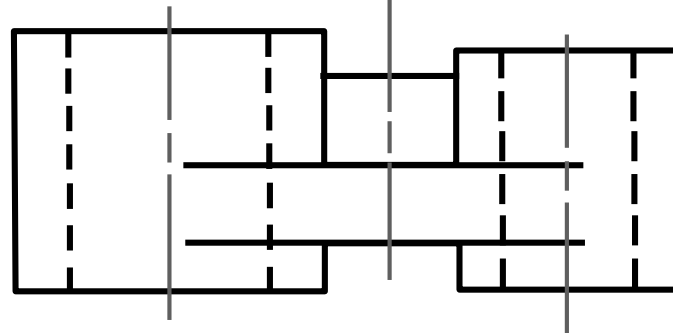
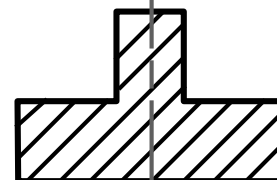
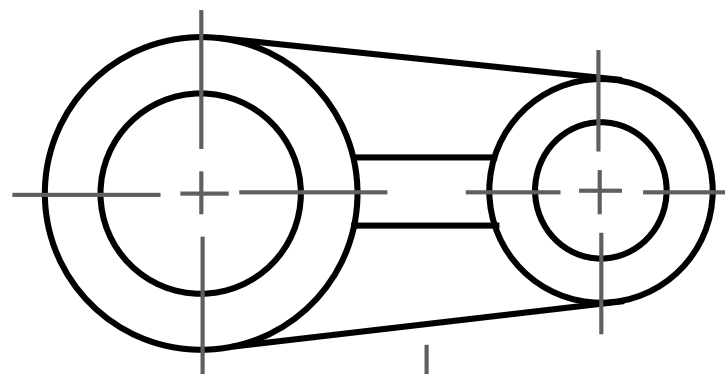
Poor



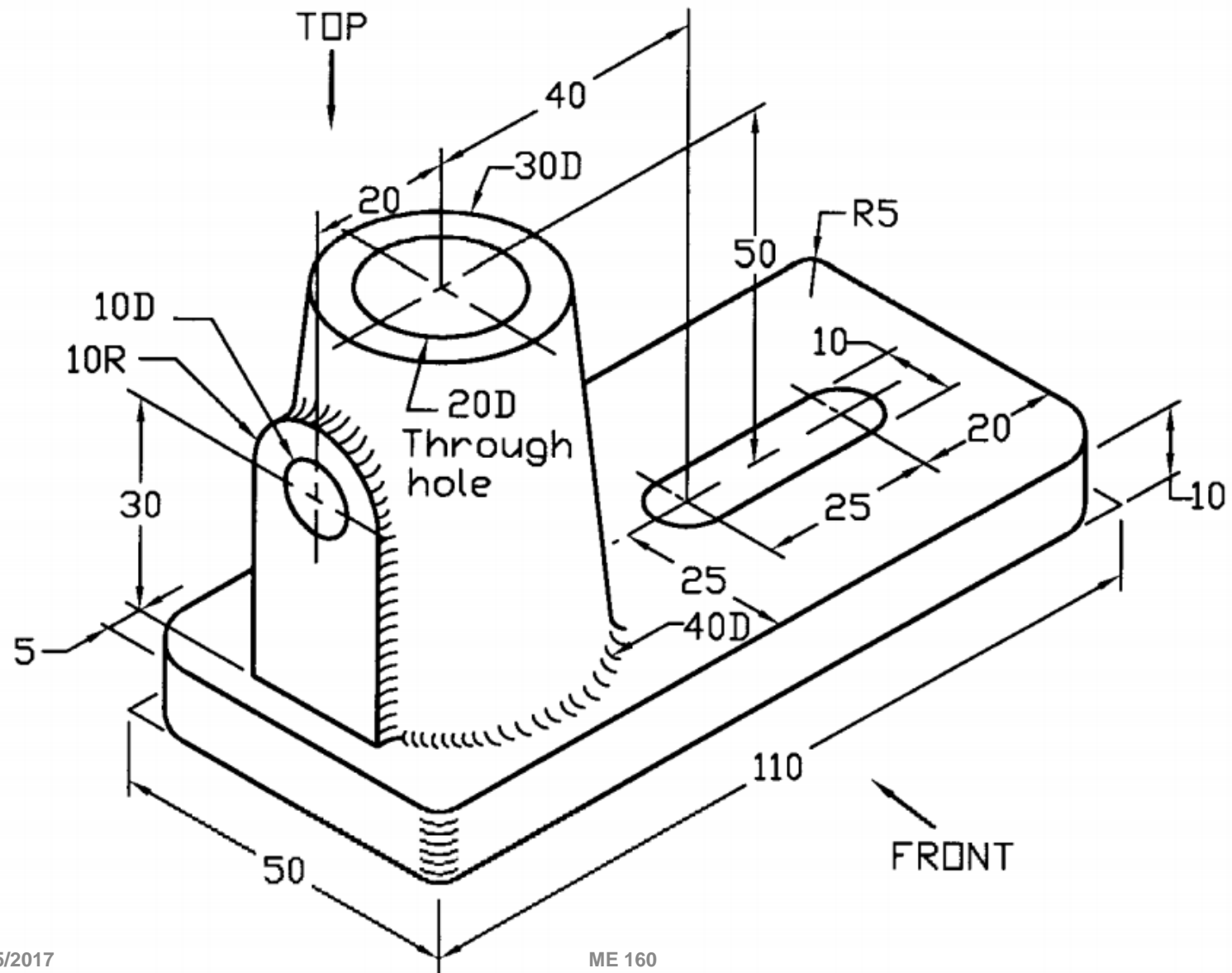
Too messy !!



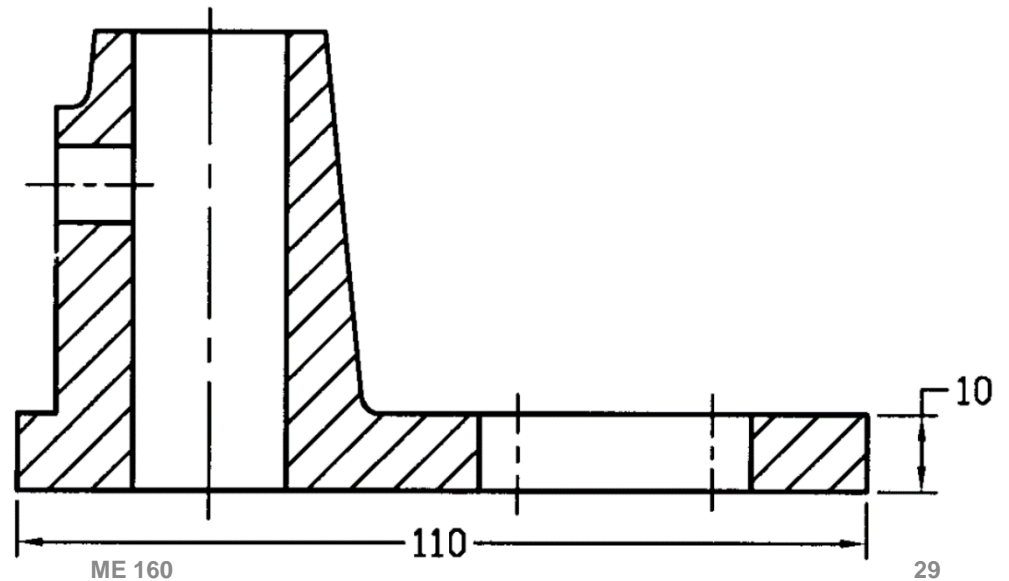
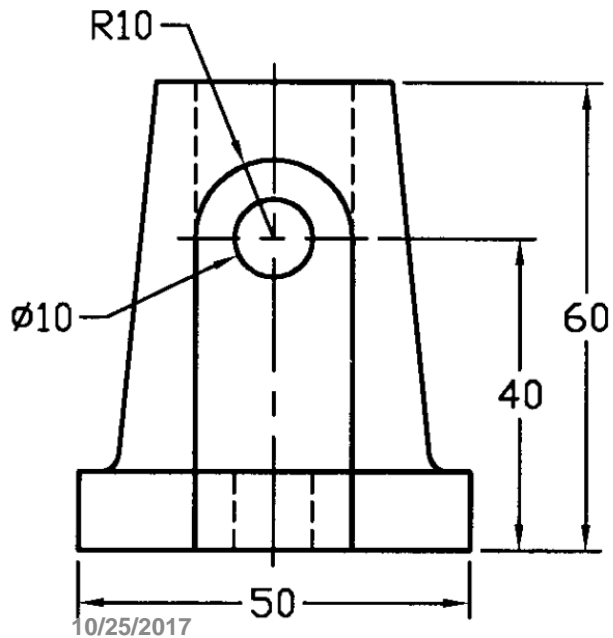
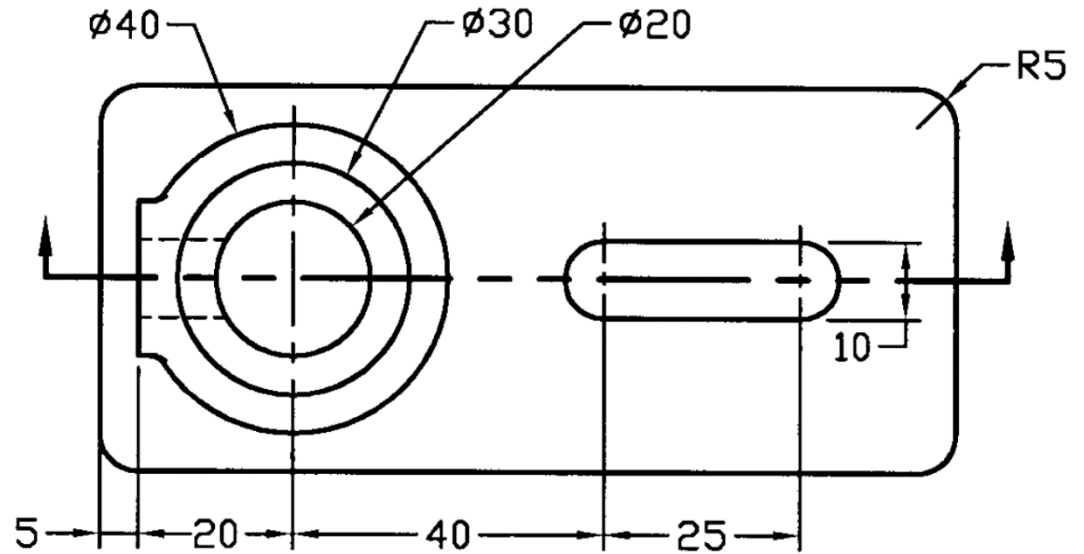
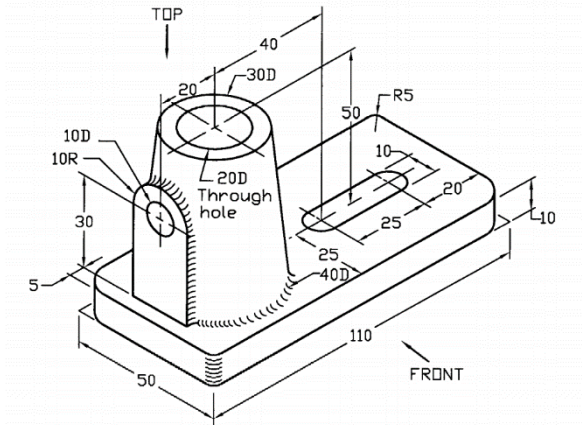
Preferred



# Example...



# Example...



# Thank you...

**“Believe you can and you’re halfway there”**

*- Theodore Roosevelt*