Multiview Sketching

Multiview Characteristics

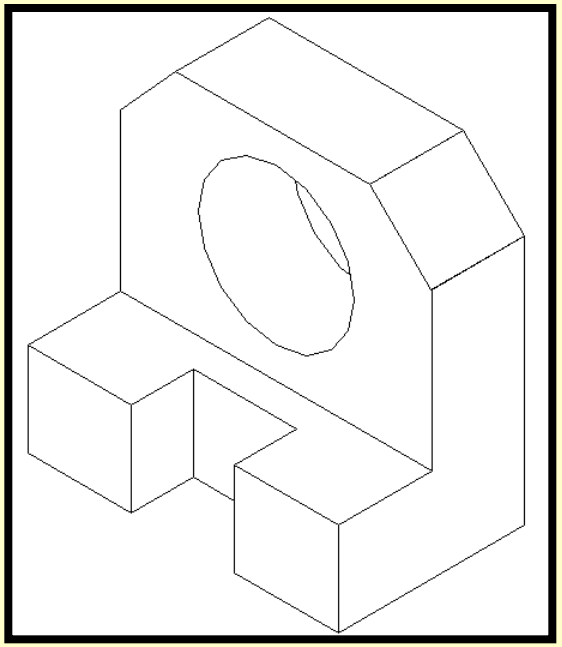
The Projection Box - and Opening It

Line Types

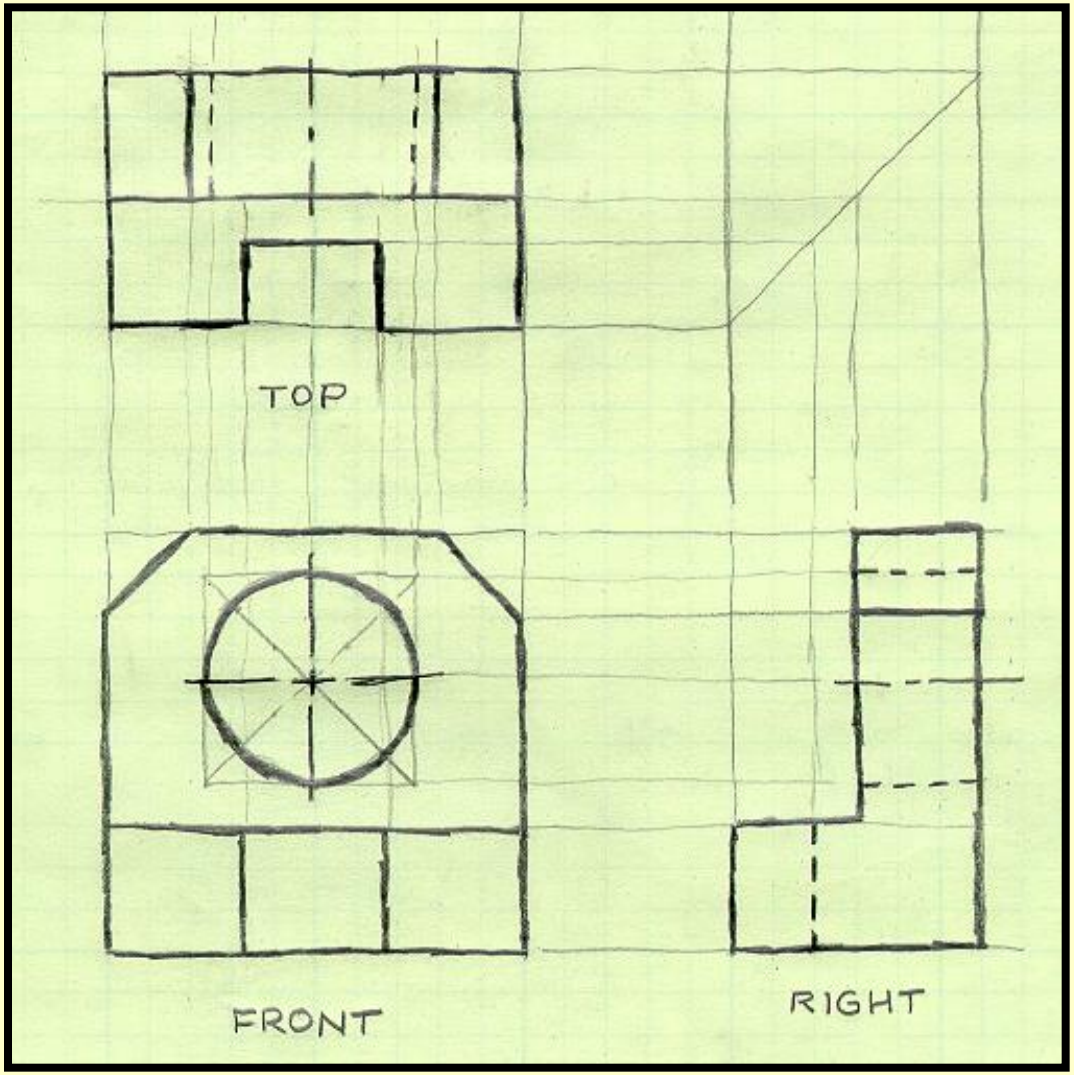
Producing a Multiview Sketch

First-Angle Projections

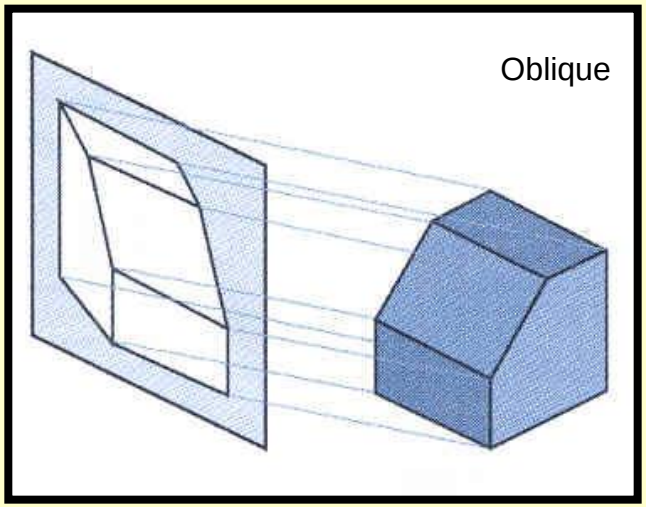
Multiview and Isometric Pictorial

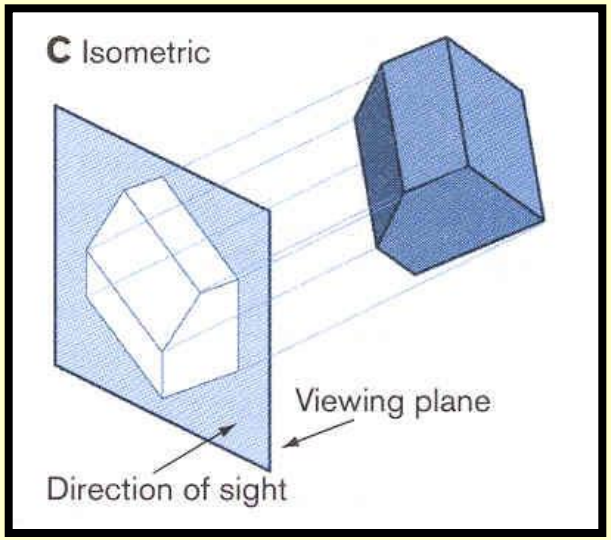


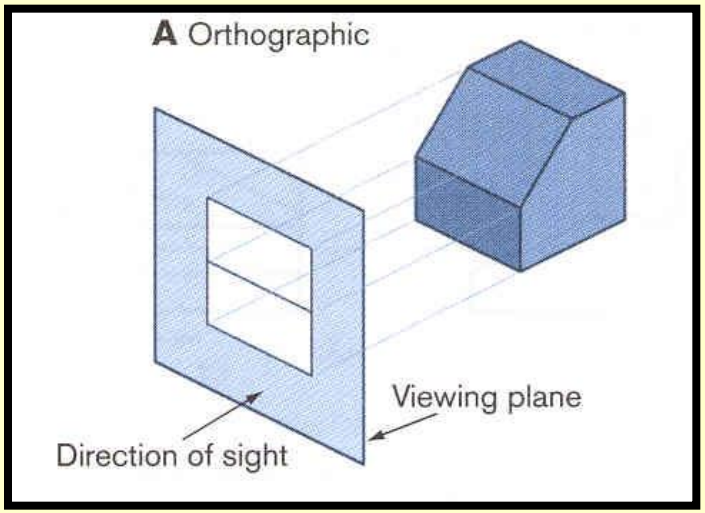
What's new/ different?



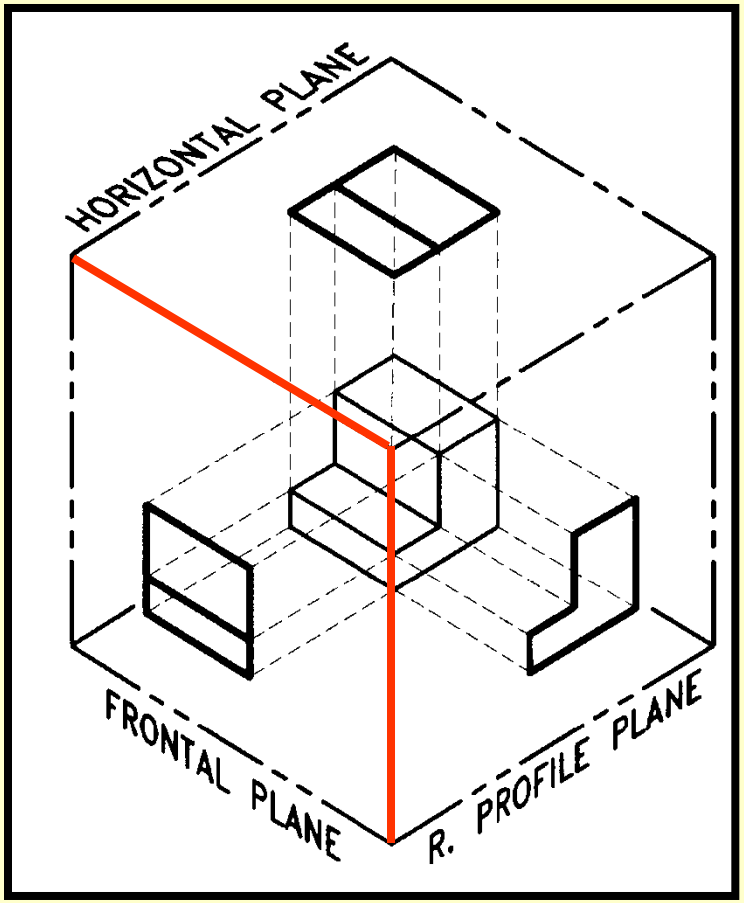
Projection Planes – Parallel Projectors

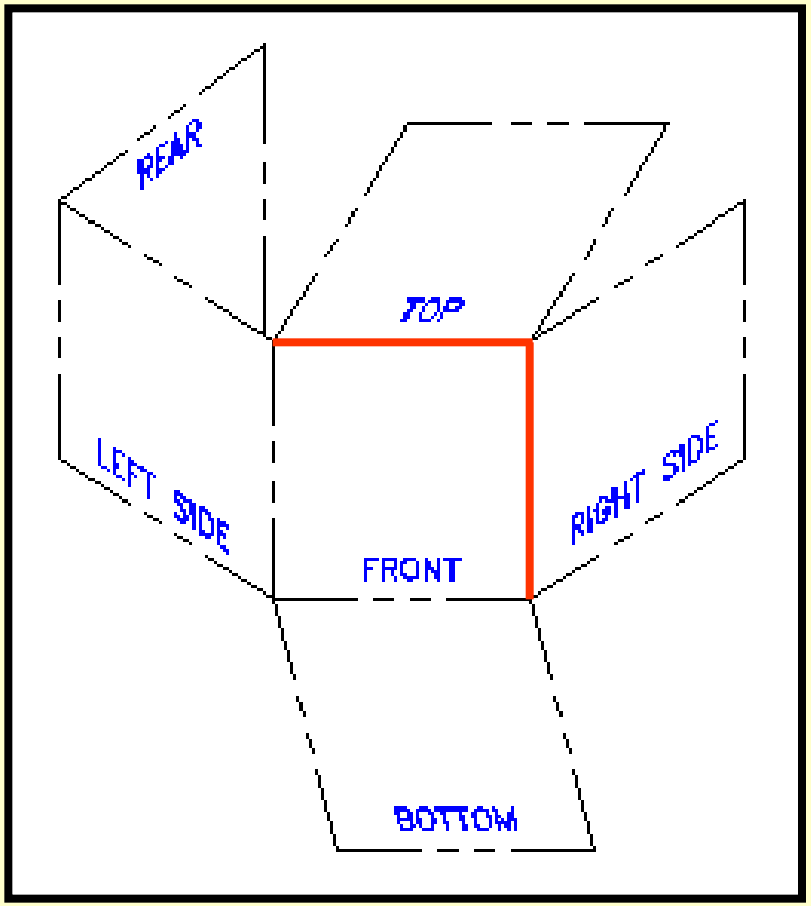




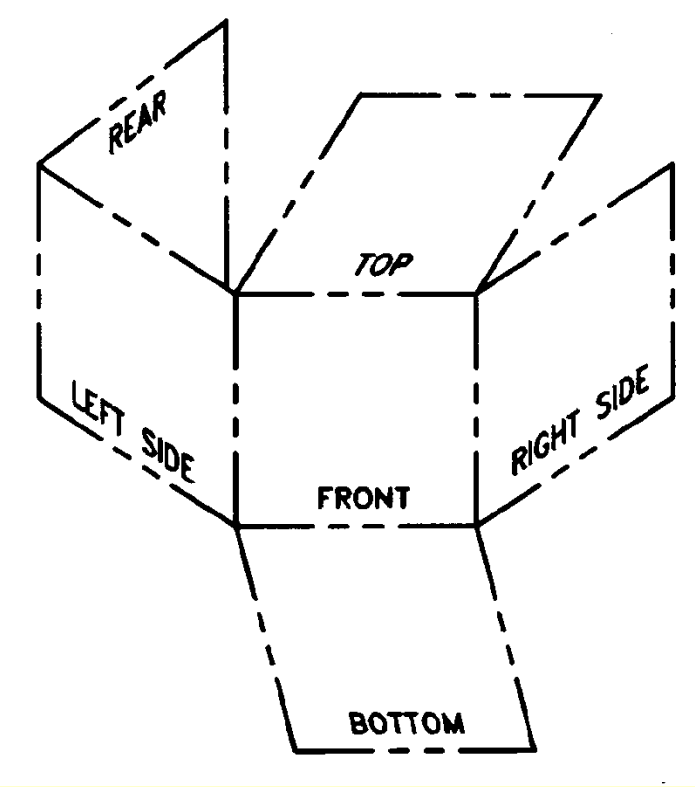


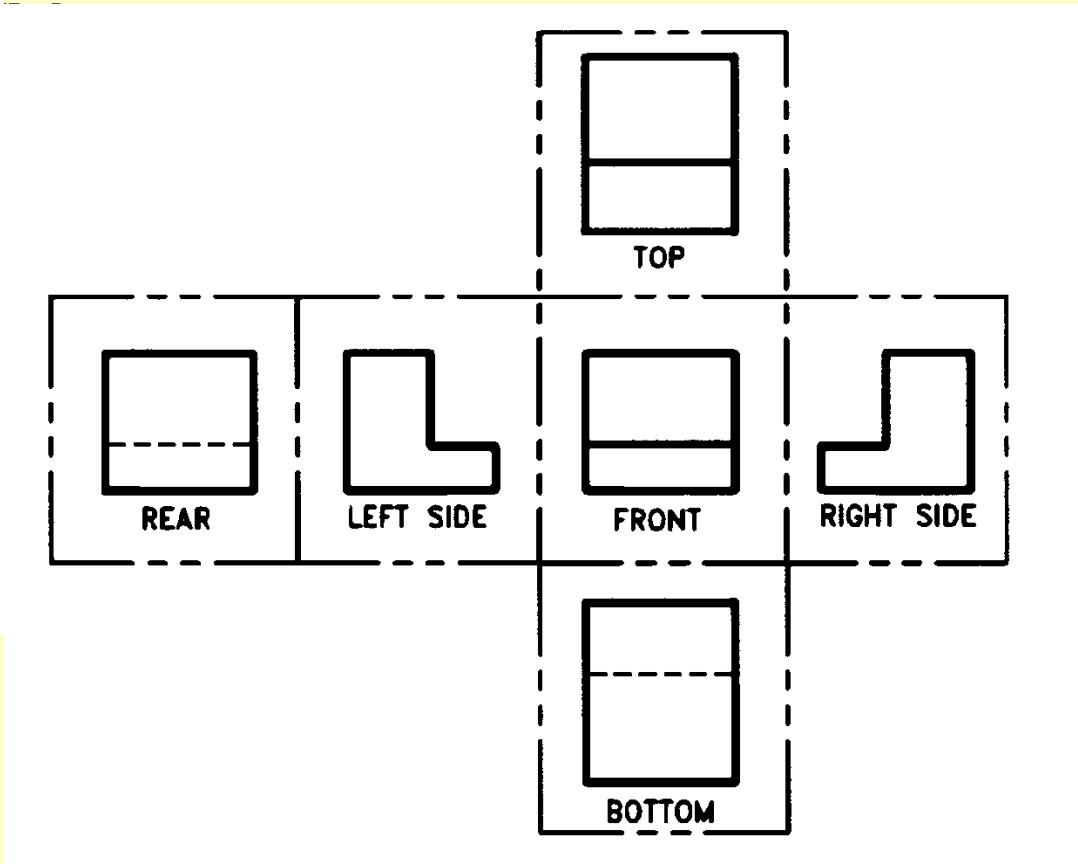
Projection Planes (Third Angle)



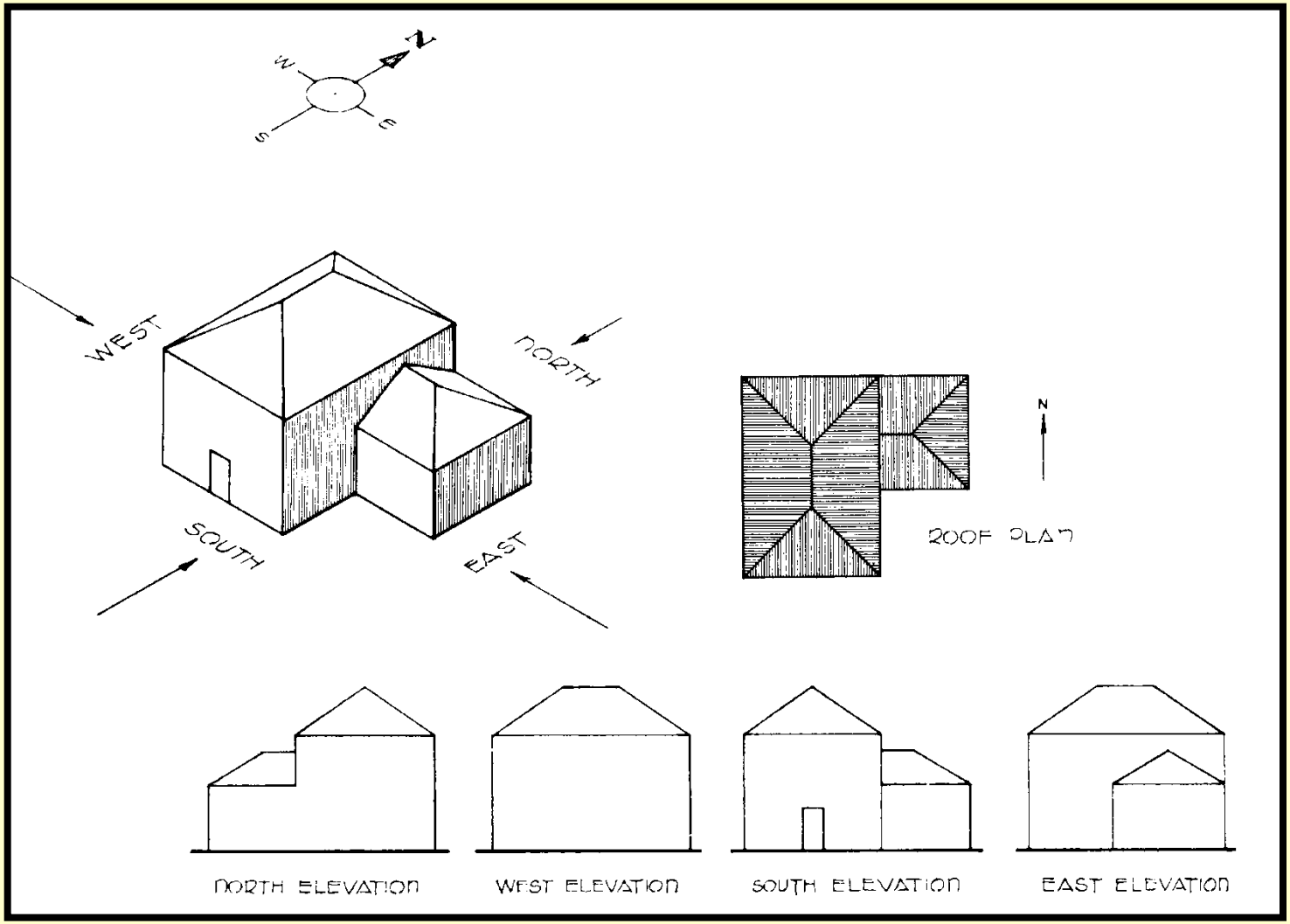


Six Principal Views (Third Angle)

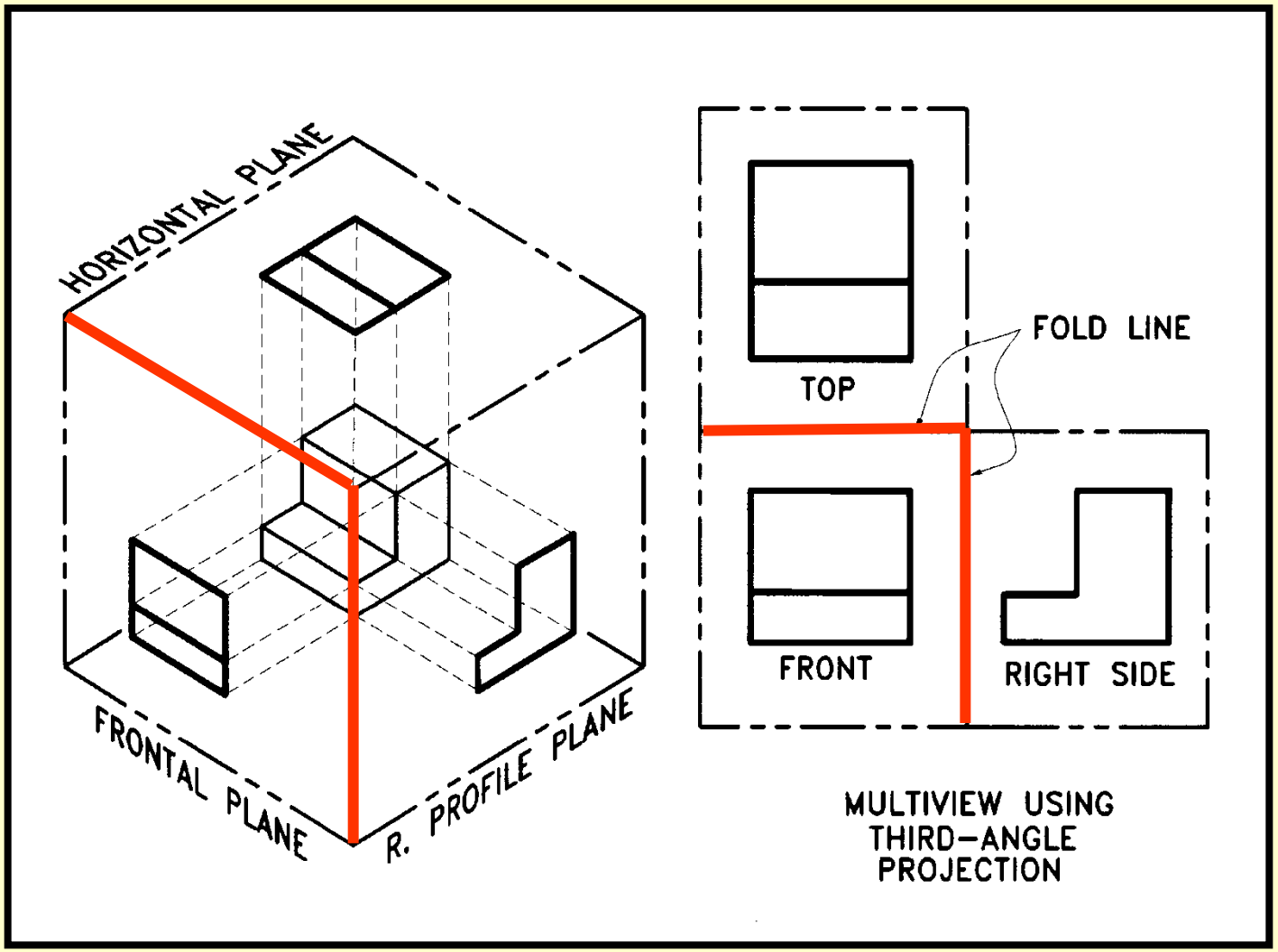




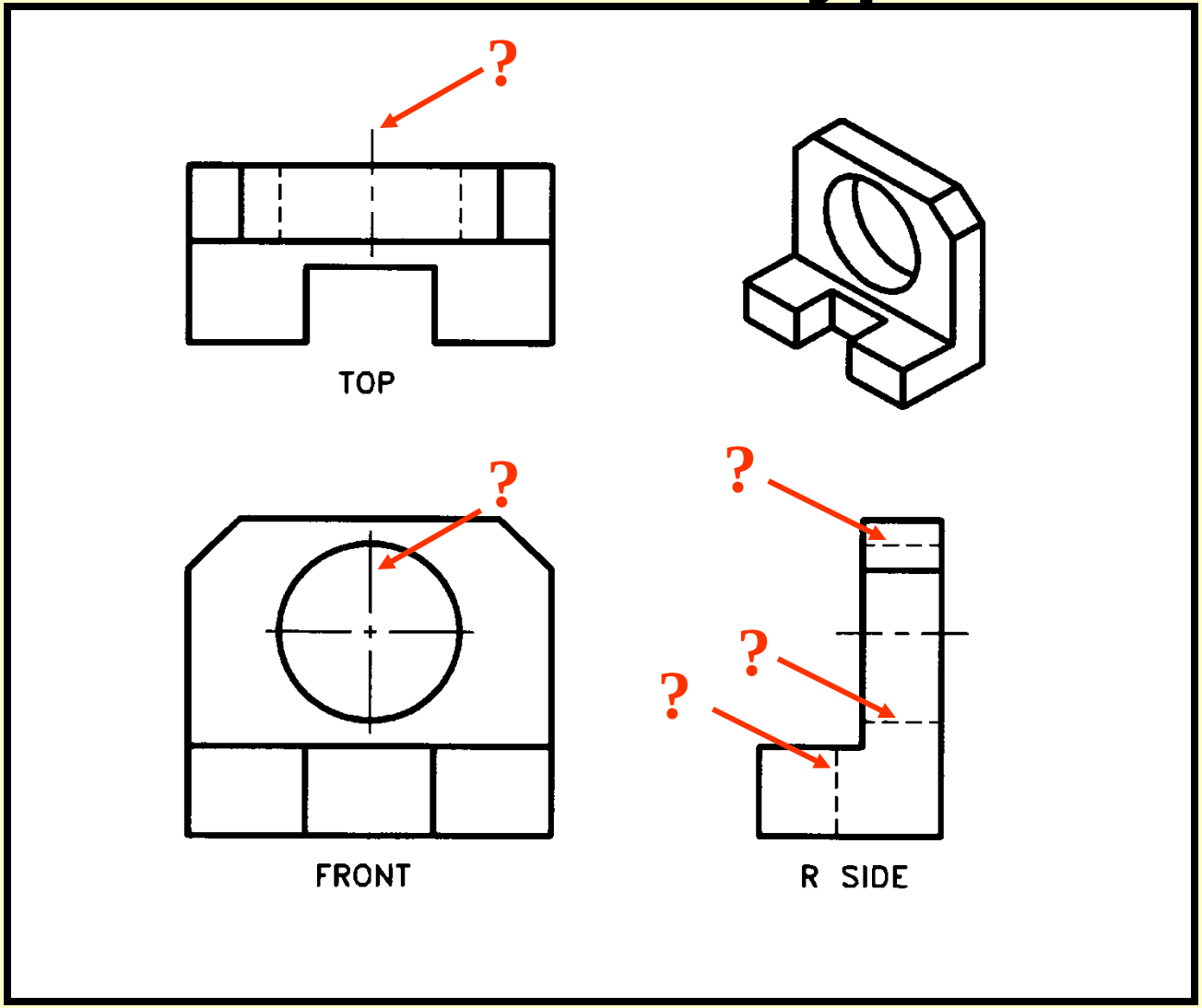
House Elevations (North, East etc.)



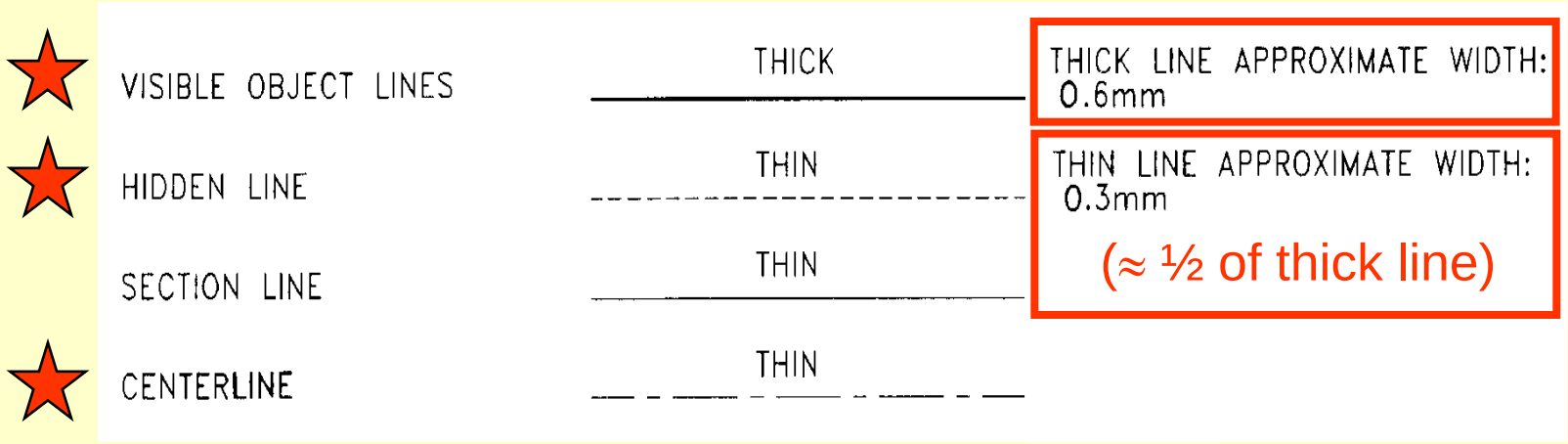
Three Primary Views (Third Angle)



Multiview Line Types



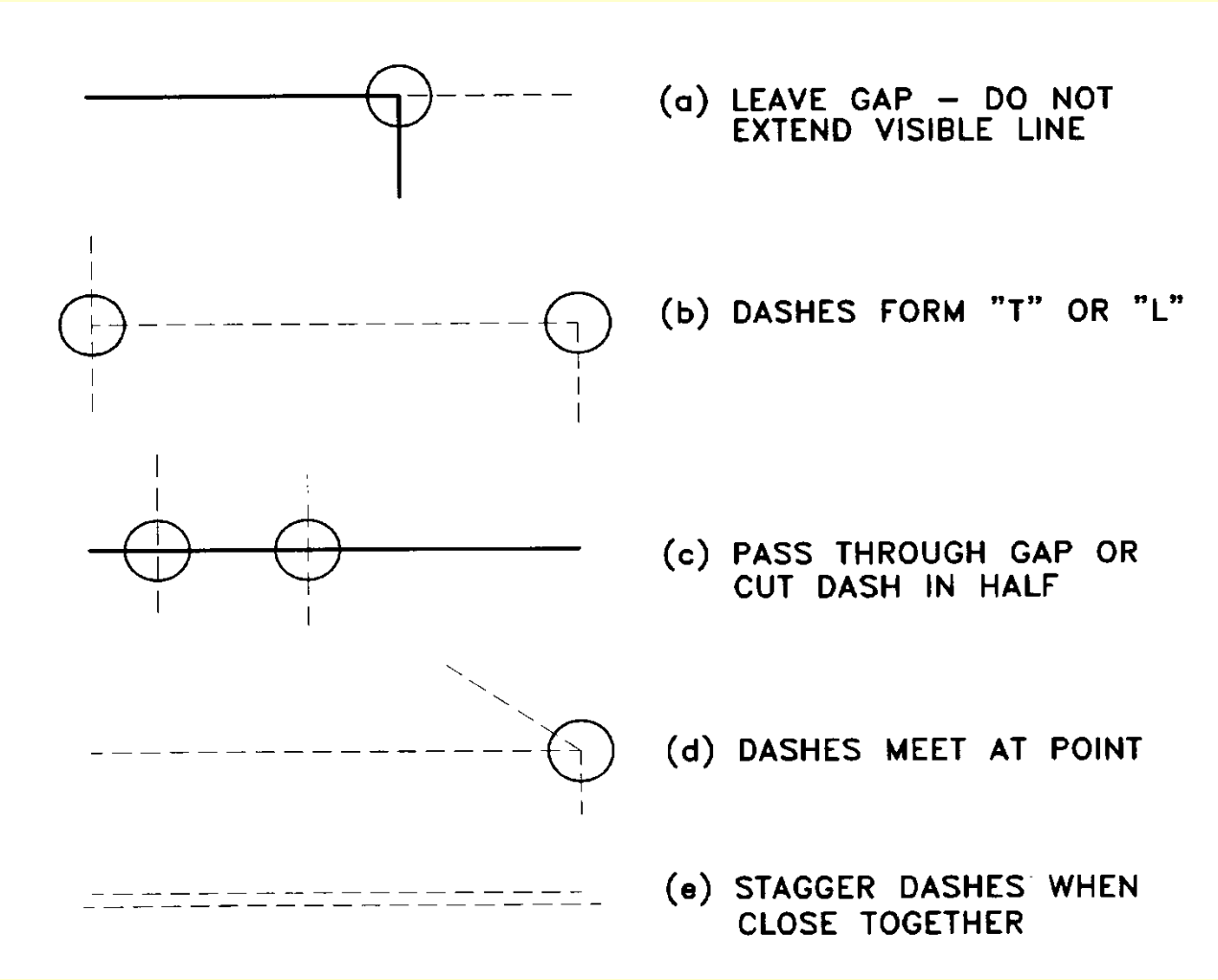
Linetype Standards (ASME Y14.2M-1992)



Precedence of lines:

Visible Lines > Hidden Lines > Centerlines

Hidden Line Conventions



- **evenly spaced dashes**
- **spaces ≈ 1/2 of dash length**
- **dashes commonly ≈ 1/8” long**

Hidden lines

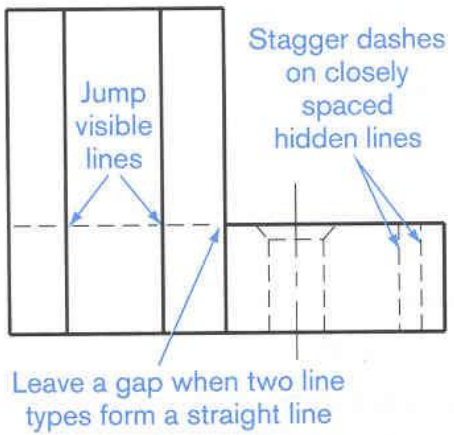


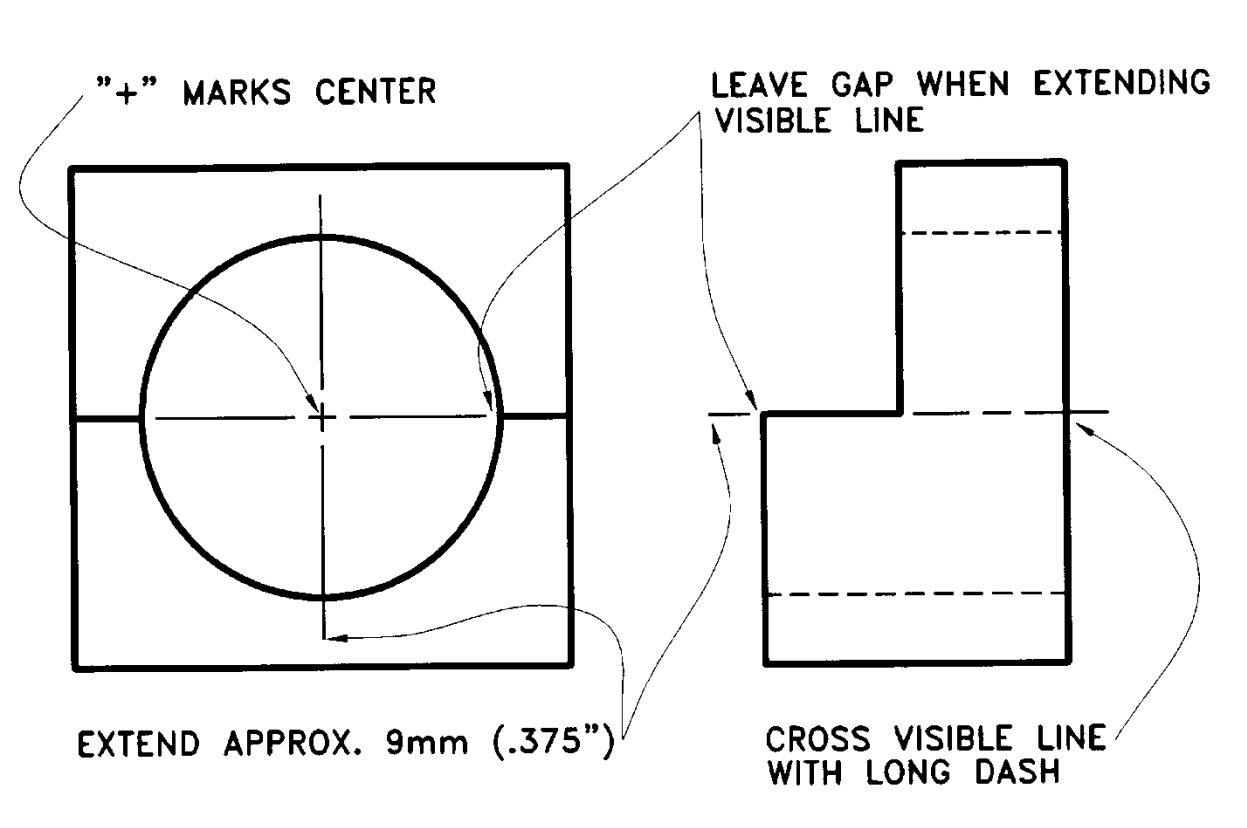
FIGURE 4.58
Proper hidden line technique makes hidden lines unambiguous to the reader.

Standard hidden lines conform to drawing standards to eliminate ambiguity for the reader, as illustrated in Figure 4.58. Hidden lines should do the following:

- Form neat intersections with the edge of the object and other hidden lines.
- Jump across lines (edges) that they do not intersect on the object itself. (This is a convention observed in sketches, but may not be implemented in CAD drawings.)
- Not extend another line of a different linetype. Any two lines of different linetypes should never join to form a single straight line. Leave a visible gap in your sketch (about 1/16 inch) anytime two different lines would join to form a straight line.

Centerline Conventions

- to show circle/arc center or axis of symmetry
- long lines separated by dash and two gaps
- dashes commonly ≈ 1/8” long



Centerlines

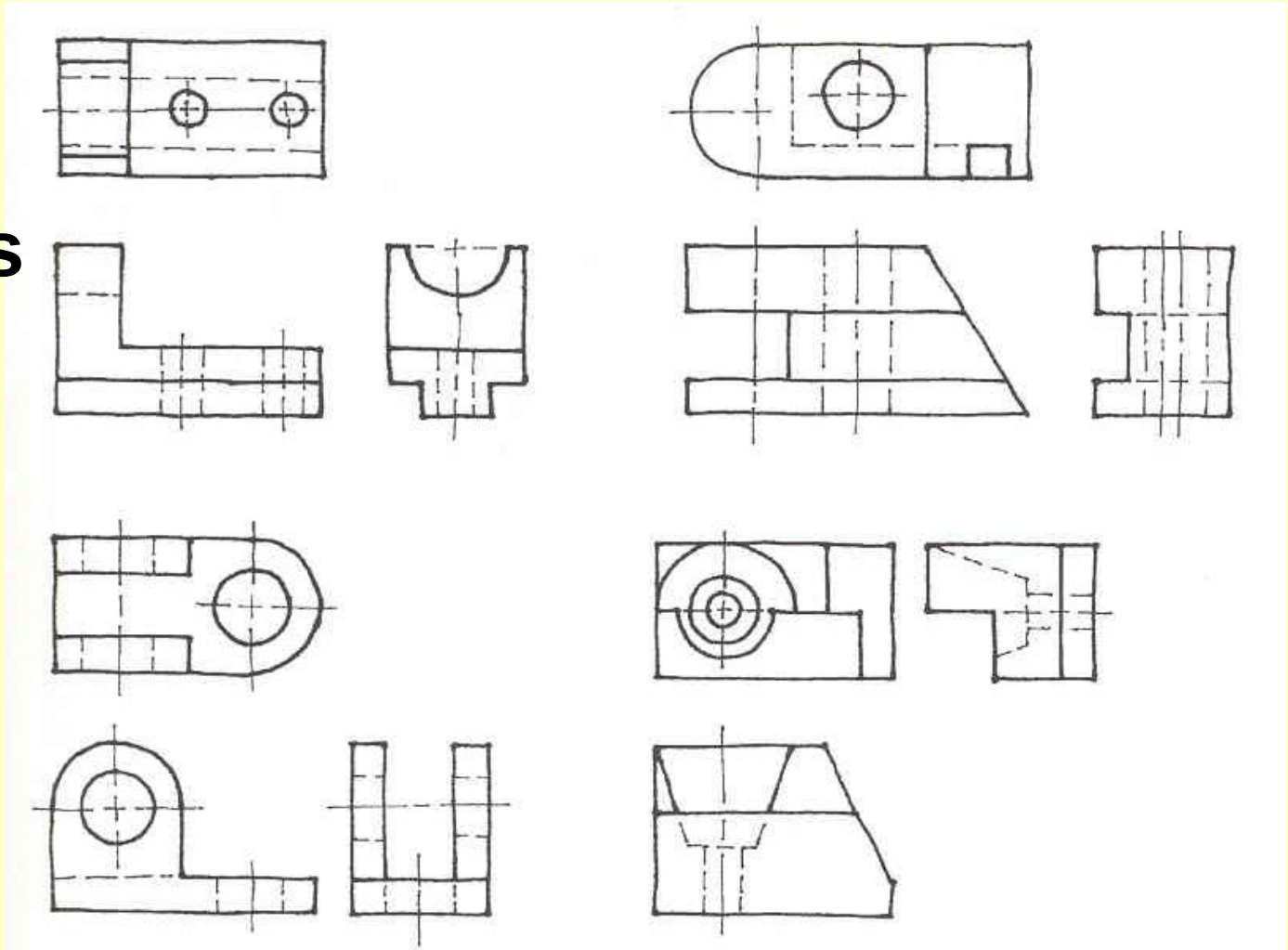


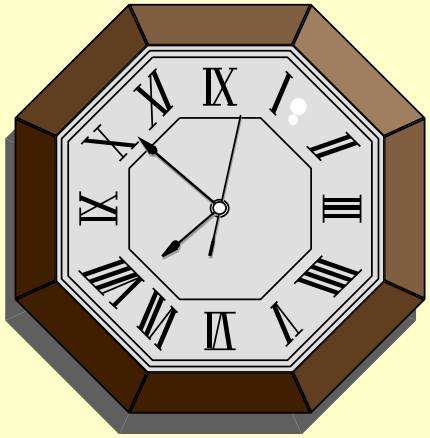
FIGURE 4.59
Proper centerline practice.

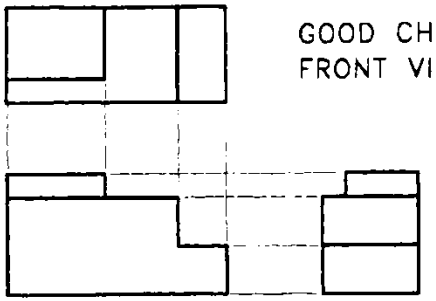
Producing a Multiview Sketch

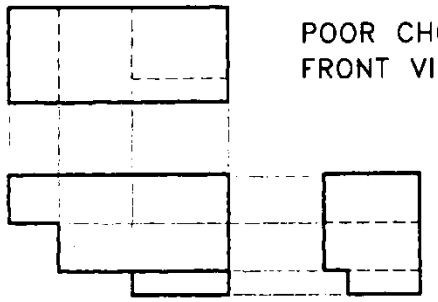
- **Select Front View**
- **Align View Bounding Boxes**
- **Sketch Features**
  - **True Shapes Remain**
  - **Project Between Views**
  - **Label Vertices if Needed**

Select Front View

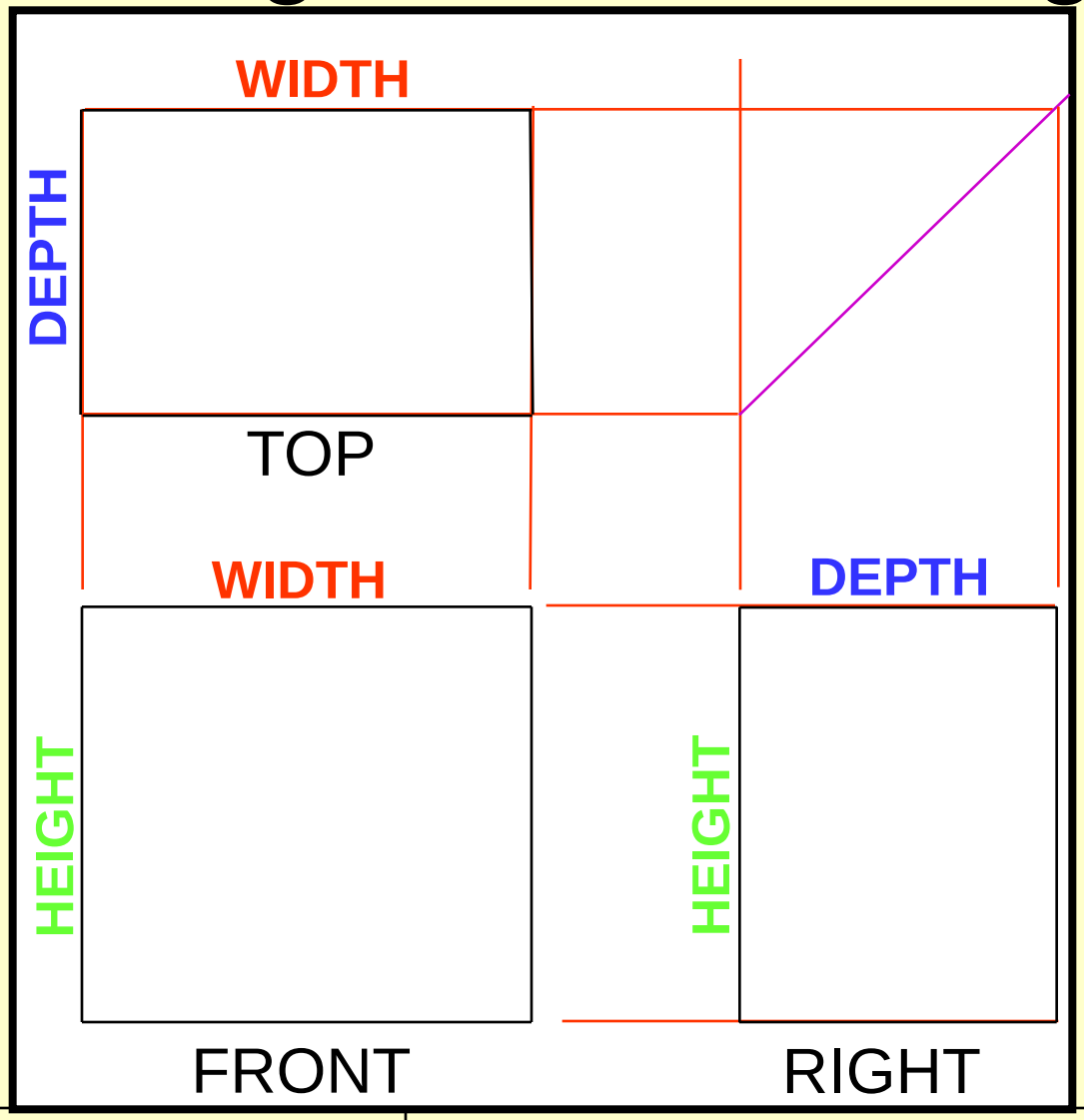
- **Universally Used -- Clock Face**
- **Shows Most Characteristic Shape -- the "U" shape of a horse shoe.**
- **Generates Fewest Number of Hidden Lines for Entire Drawing**

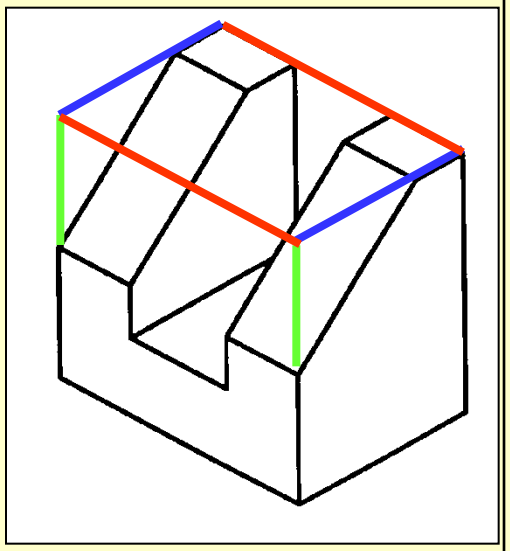






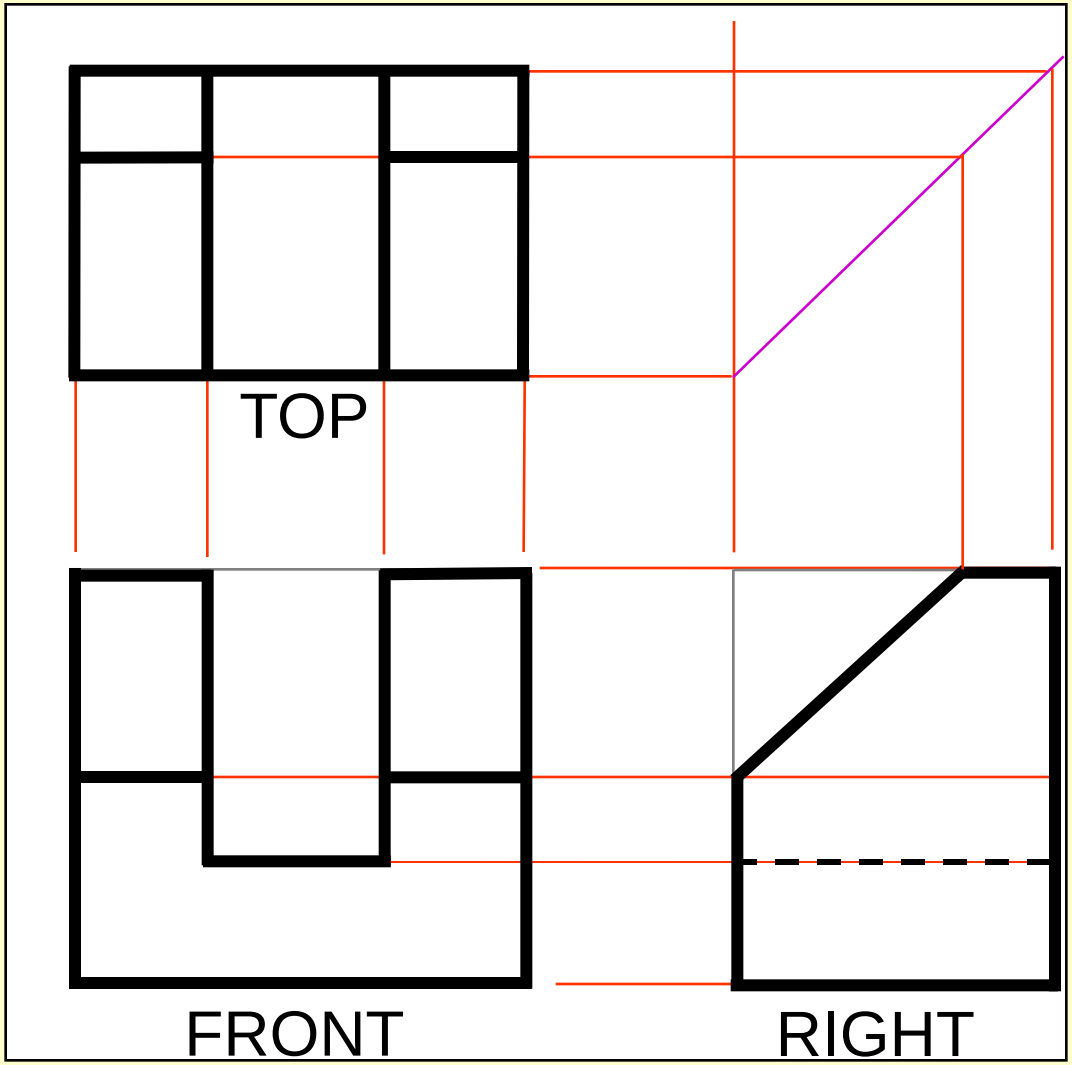
Align View Bounding Boxes

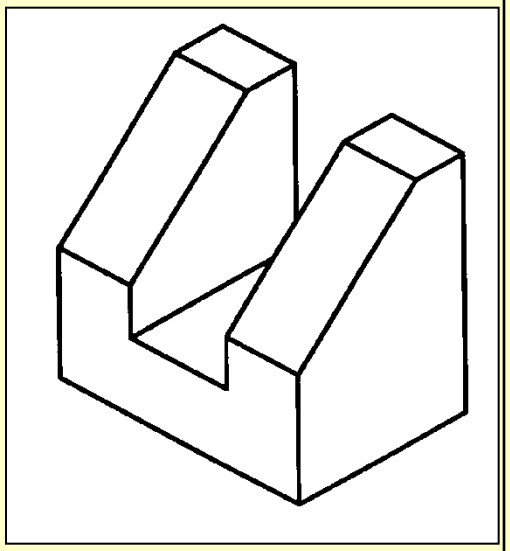




Miter line at 45°

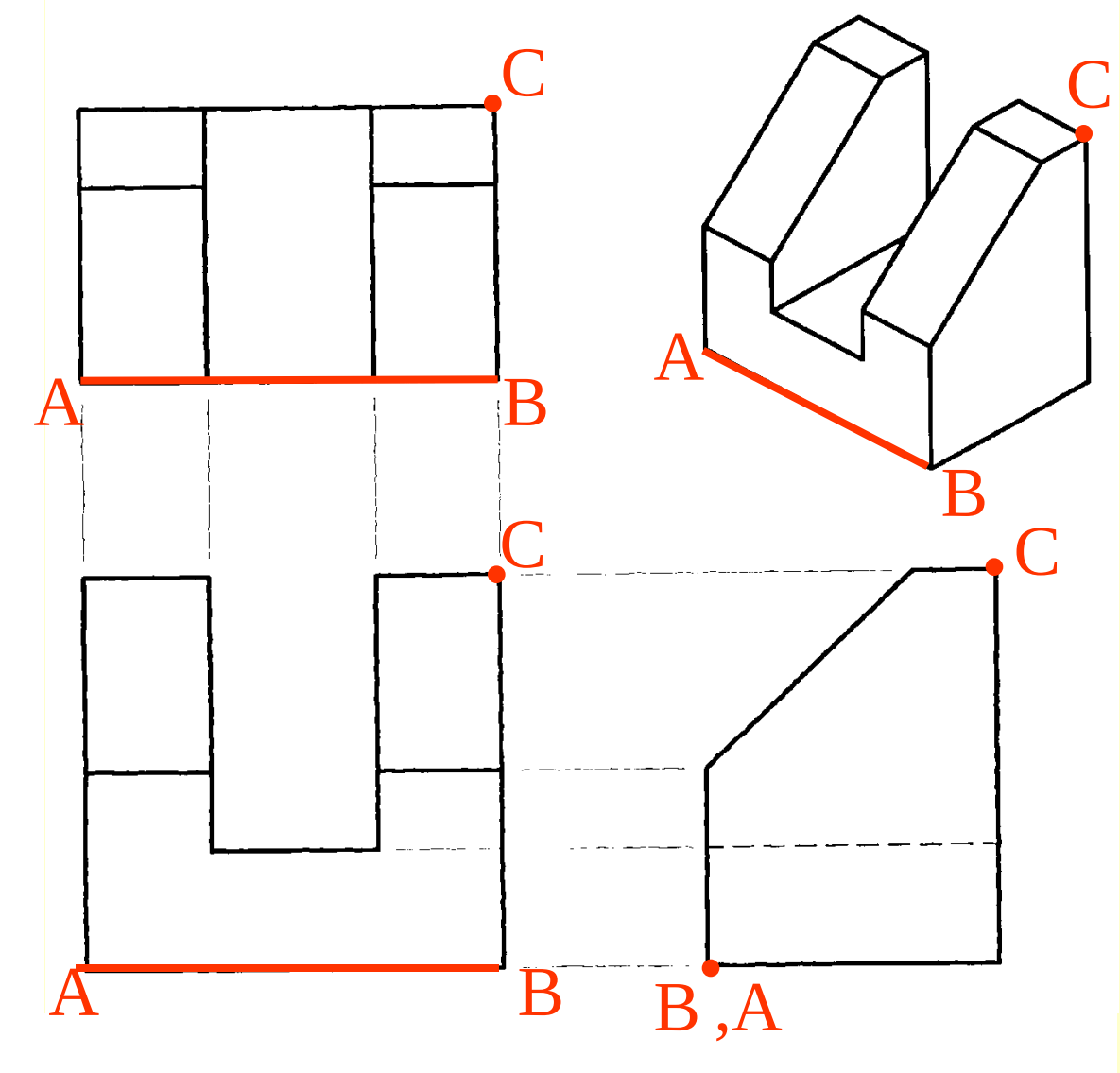
Sketch Features – View Projection



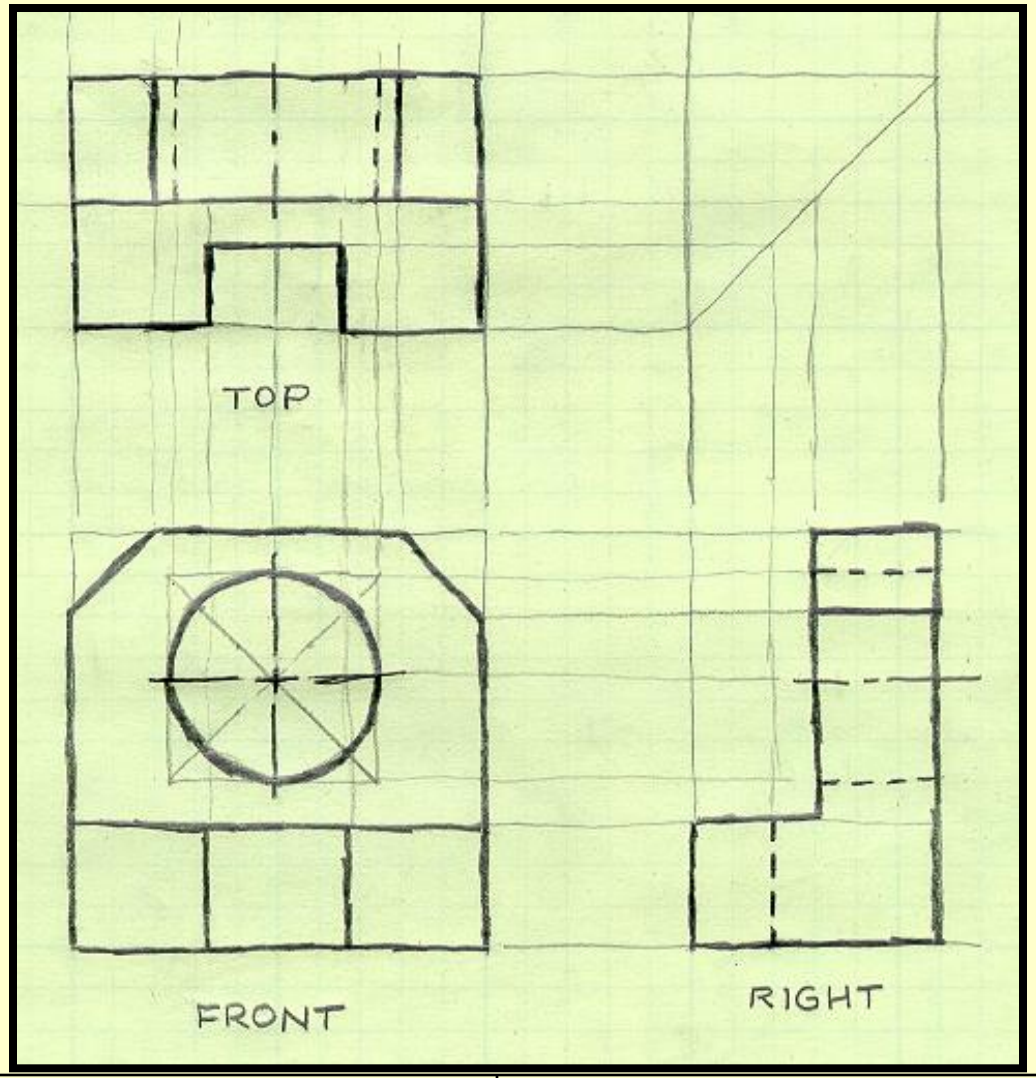


Miter line at 45°

Labeling Vertices

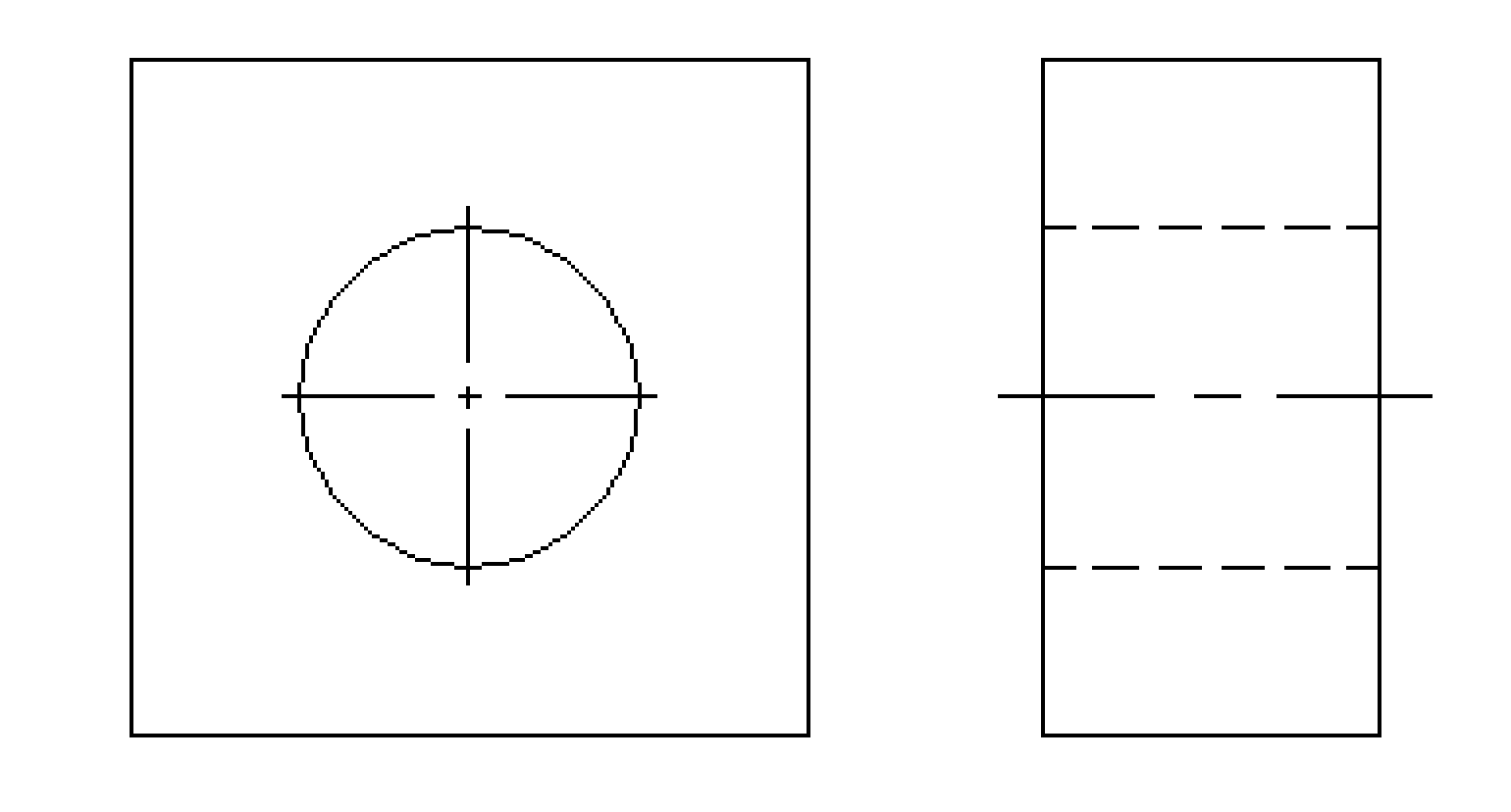


Multiview Characteristics

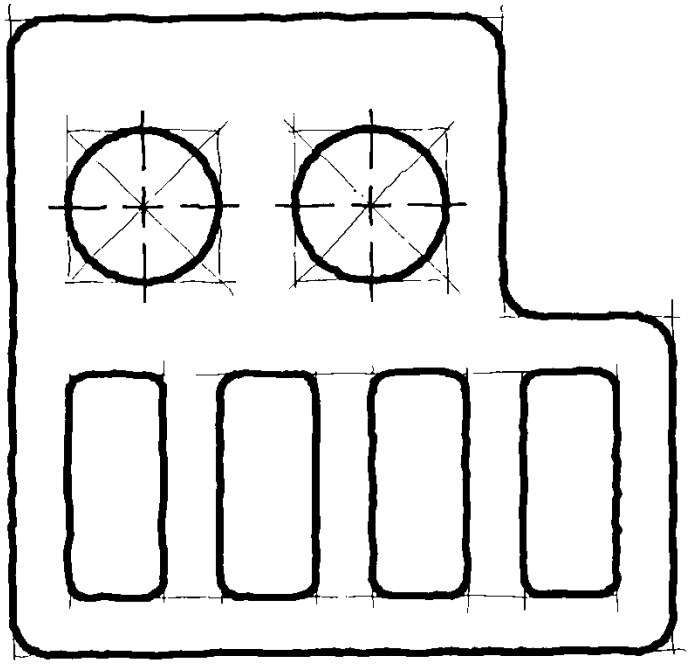


- multi-view
- true shapes
- orientation
- 1st vs. 3rd angle
- bounding boxes
- constr. lines to project/transfer features
- miter line
- hidden lines
- center/symmetry lines
- line precedence

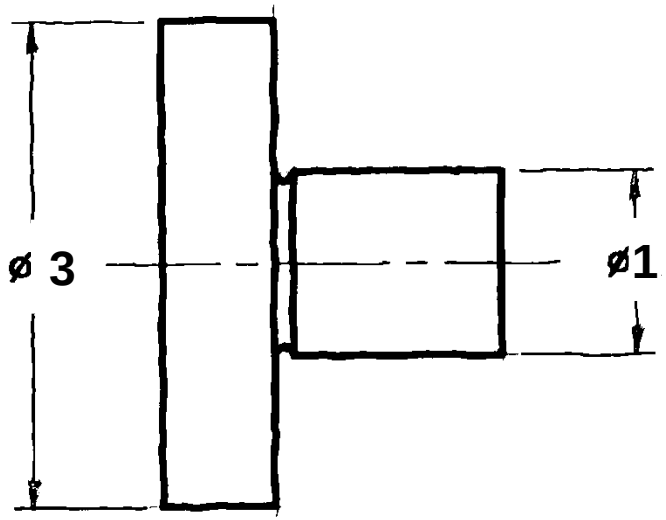
Two View Sketch – Some objects only need two views.



One View Sketches – Some objects can be fully described with only one view

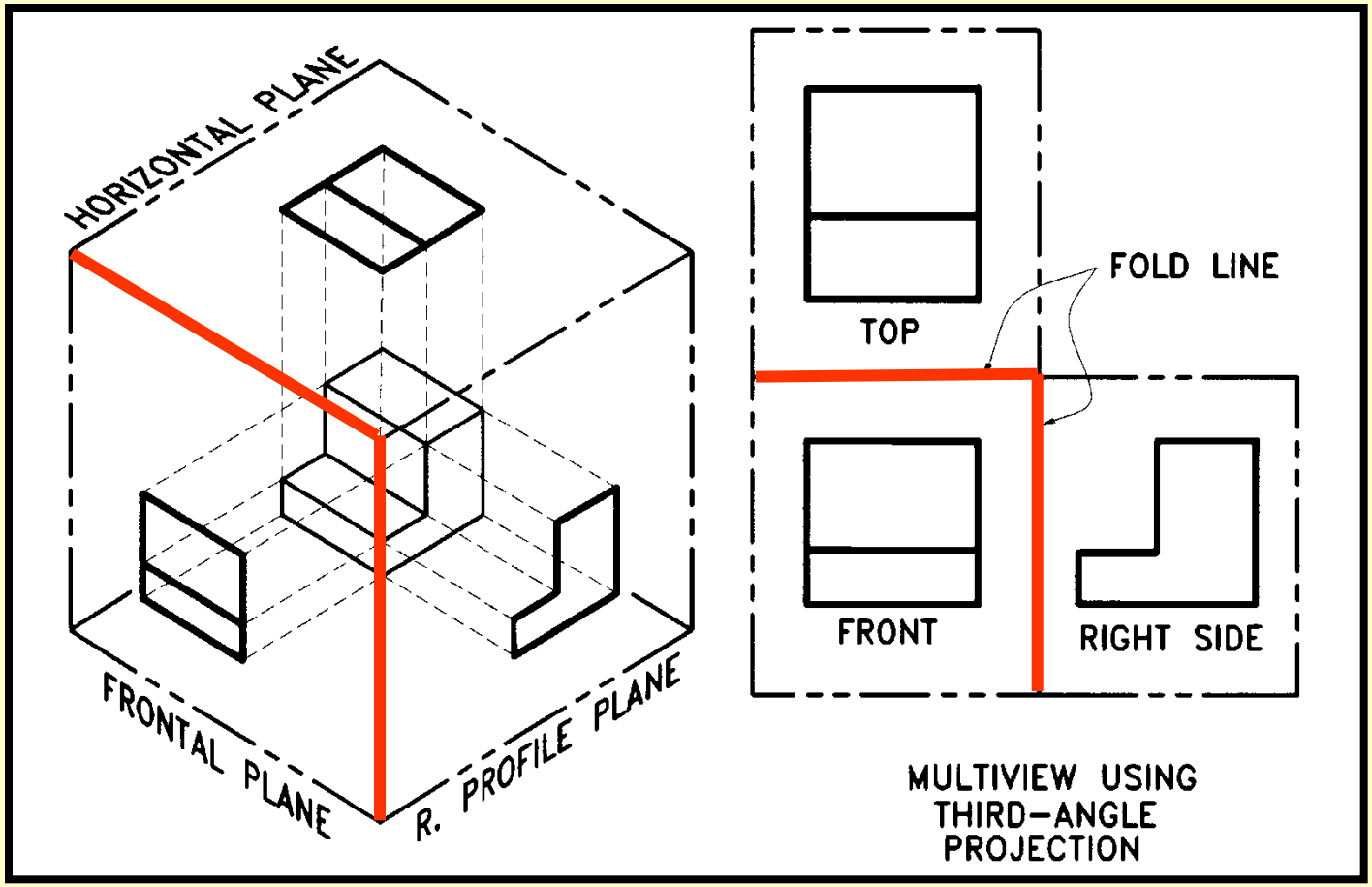


GASKET MATL: 0.15 BRASS

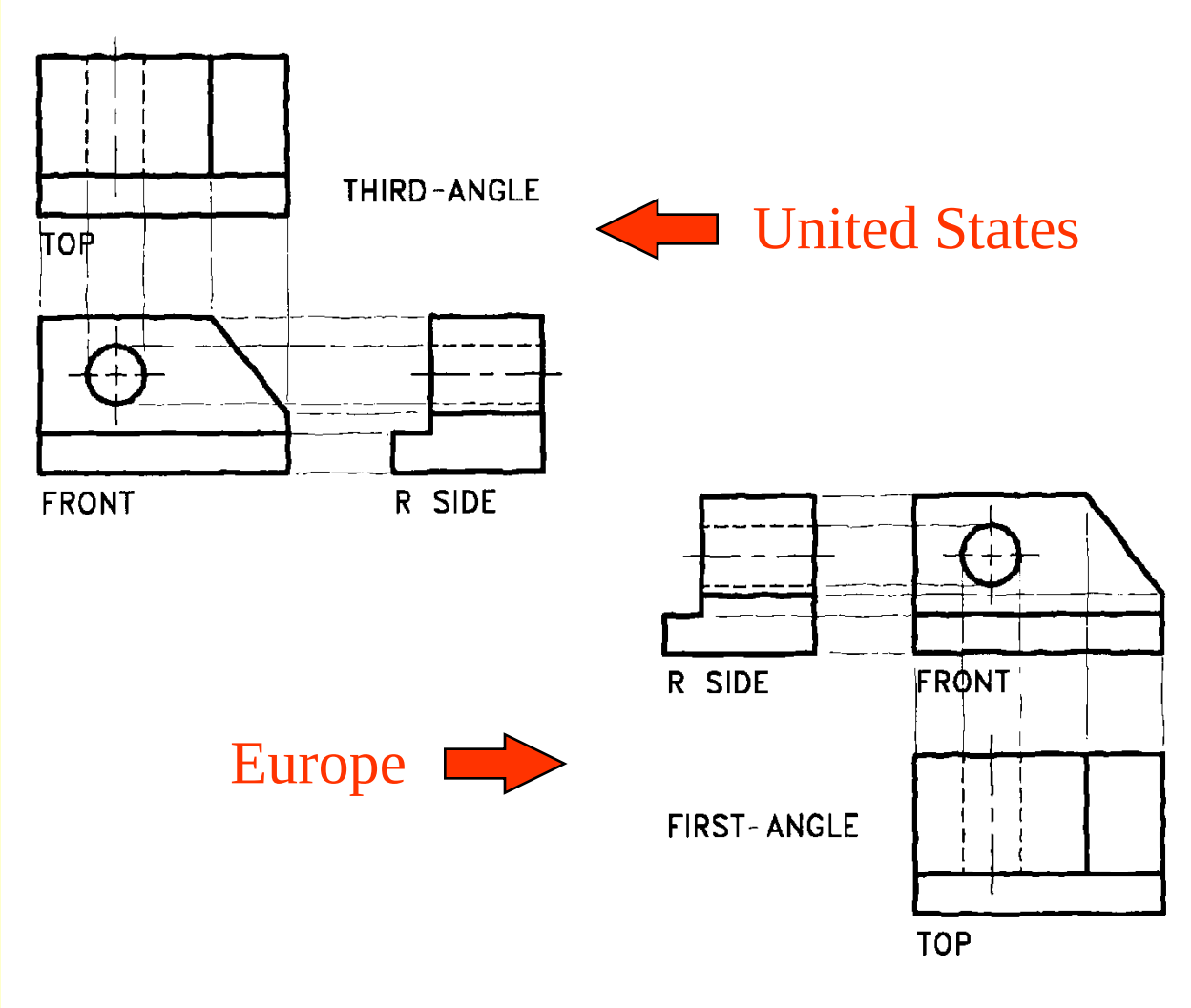


UNDERCUT R0.05

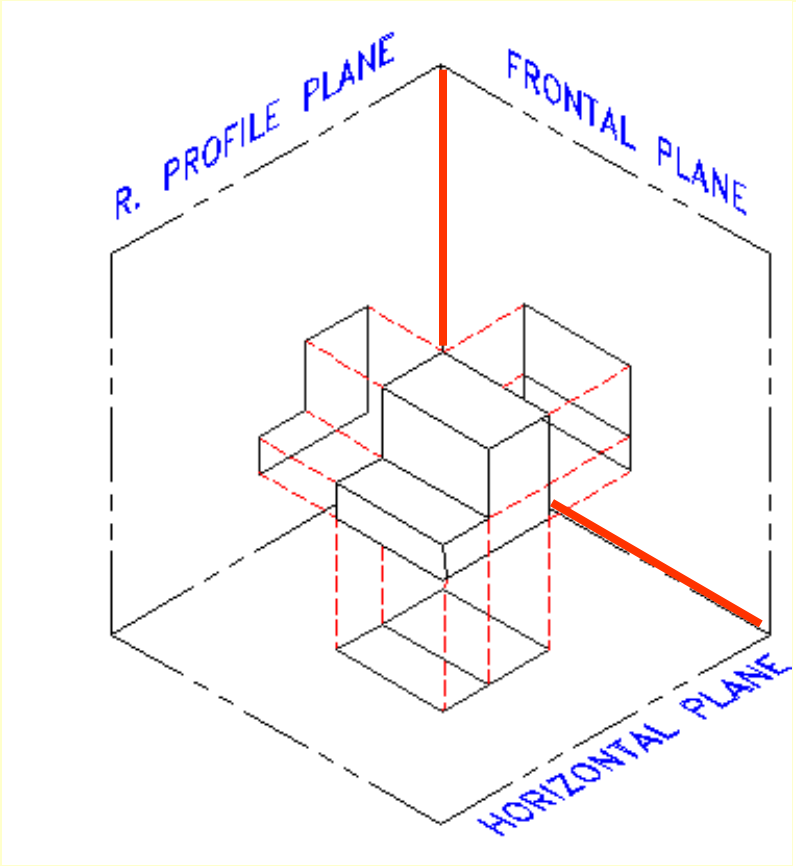
Recall Slide 6:
Three Primary Views (Third Angle)

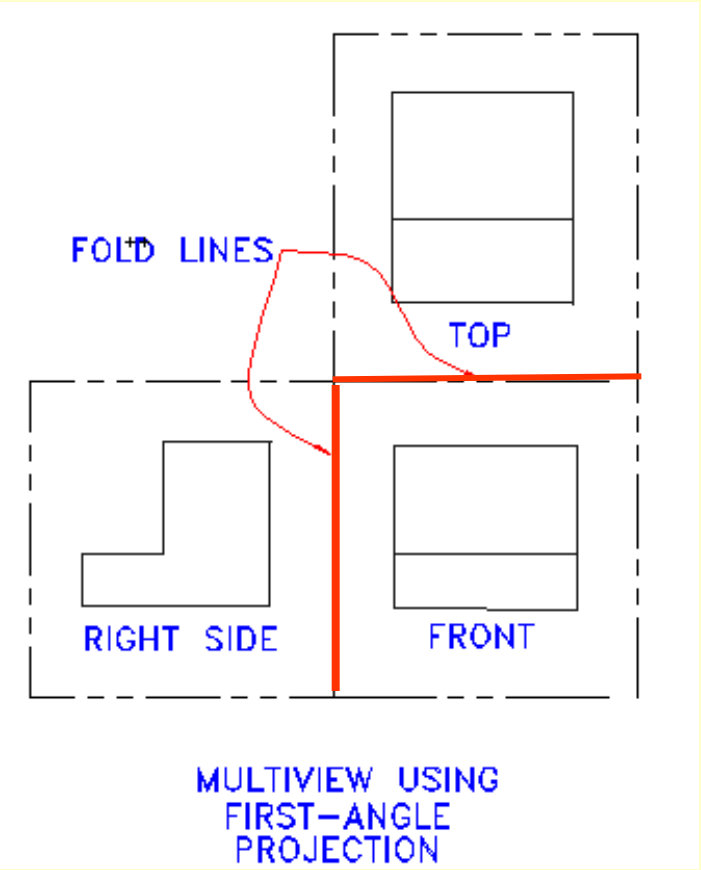


Third- and First-Angle Projection



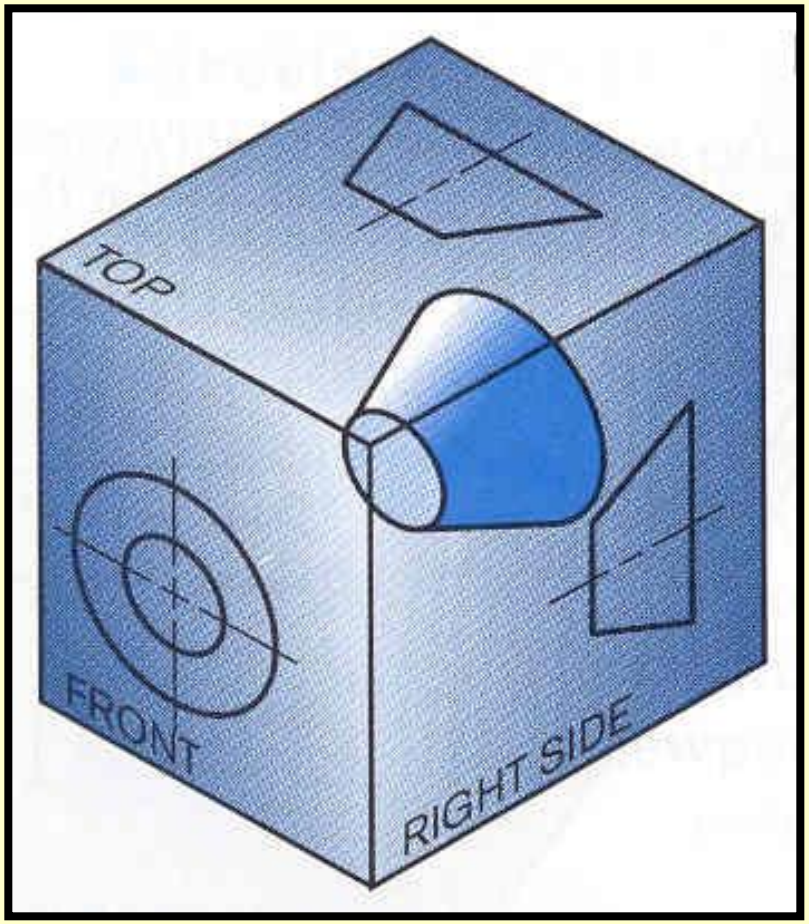
Projection Planes (First Angle)

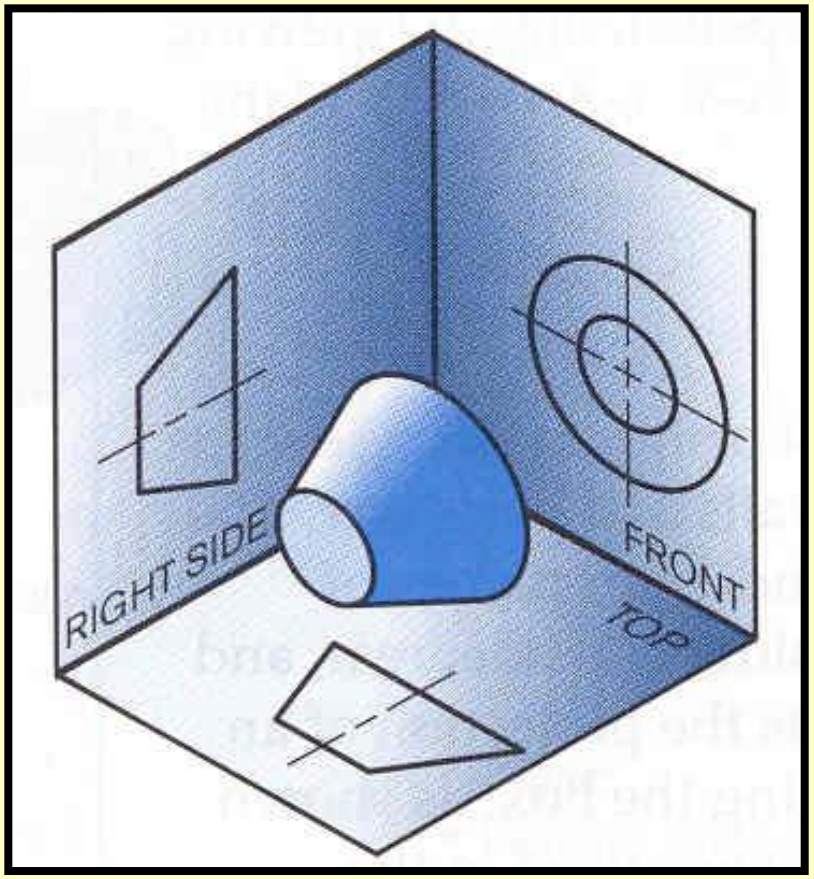




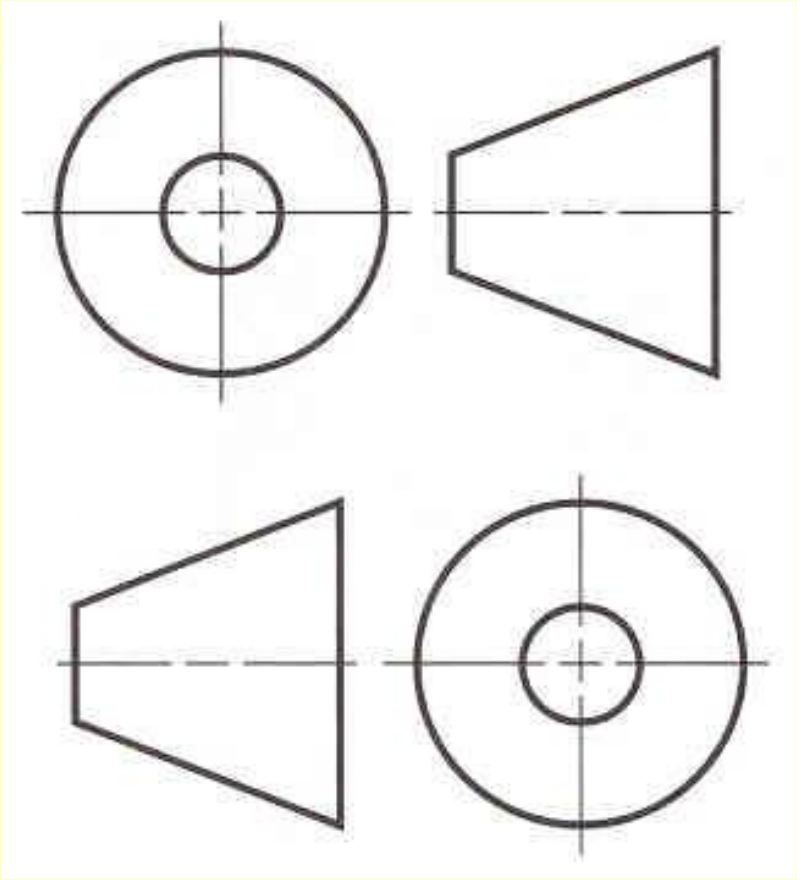
WRONG! Top View should be beneath Front view

Truncated Cone





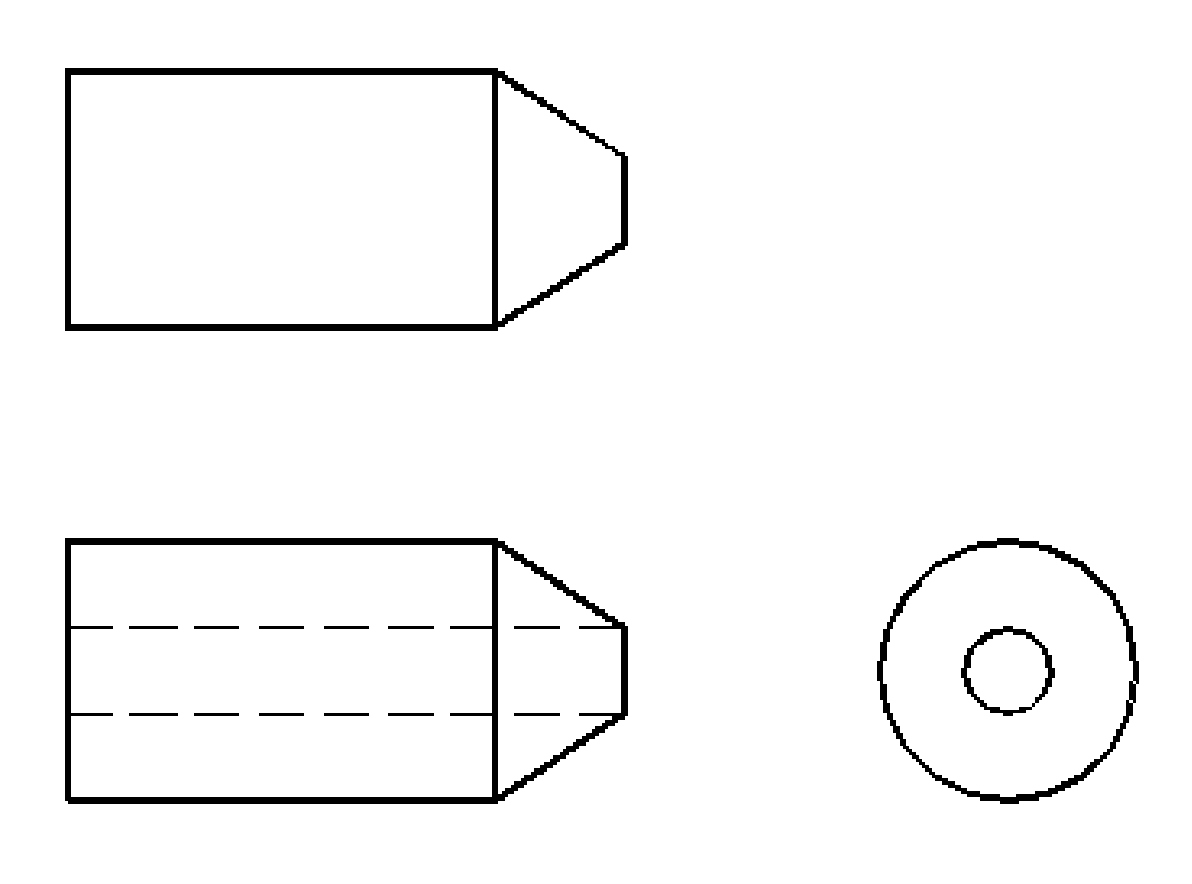
Symbol Added to Drawing



third angle

first angle

Missing Line #1



Missing Line #2