

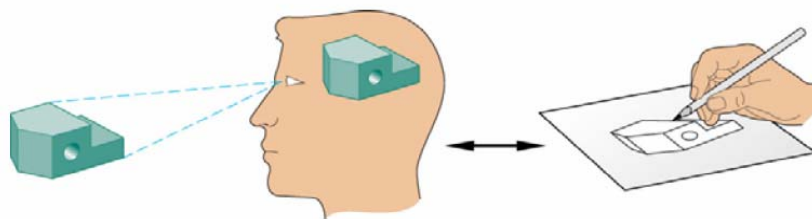


ME111 ENGINEERING GRAPHICS

SESSION 4: ORTHOGRAPHIC PROJECTION

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FACULTY OF ENGINEERING, THAMMASAT UNIVERSITY

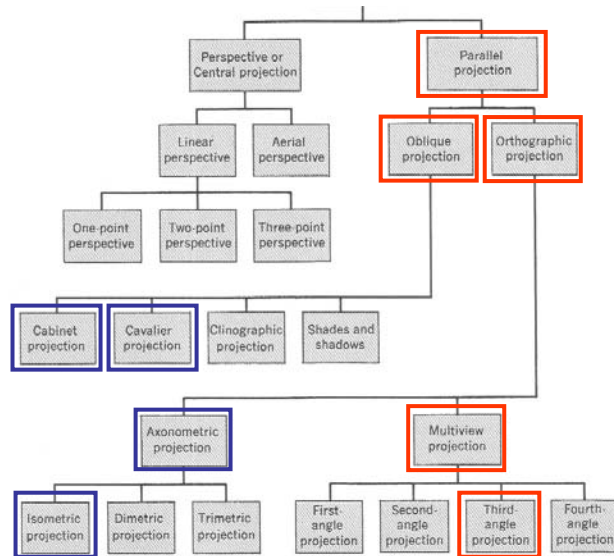
Projection



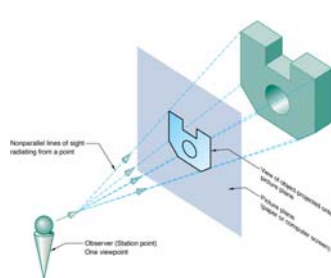
- Represent an object with drawings
- Real world is 3D whereas paper is 2D
- 3D → projection → 2D



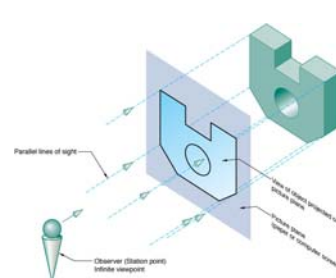
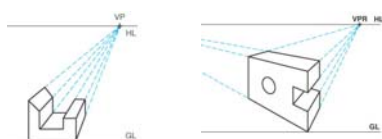
Types of Projection



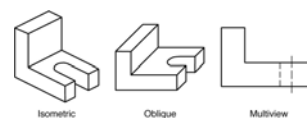
Types of Projection



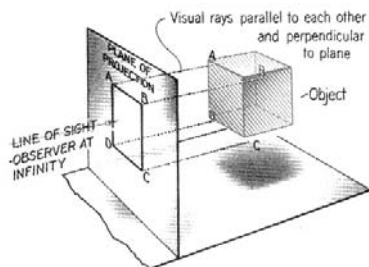
Perspective



Parallel

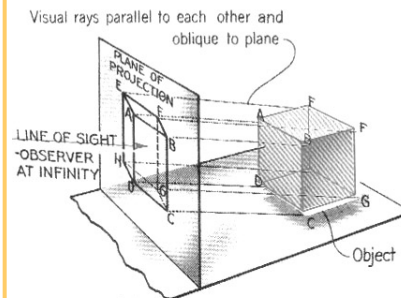


Orthographic vs. Oblique



Orthographic

L.S. perpendicular to plane

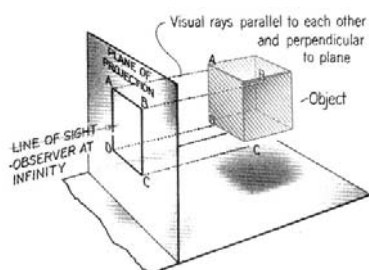


Oblique

L.S. oblique to plane

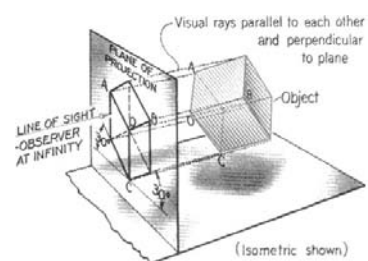


Orthographic Projection



Multiview

Face align with plane

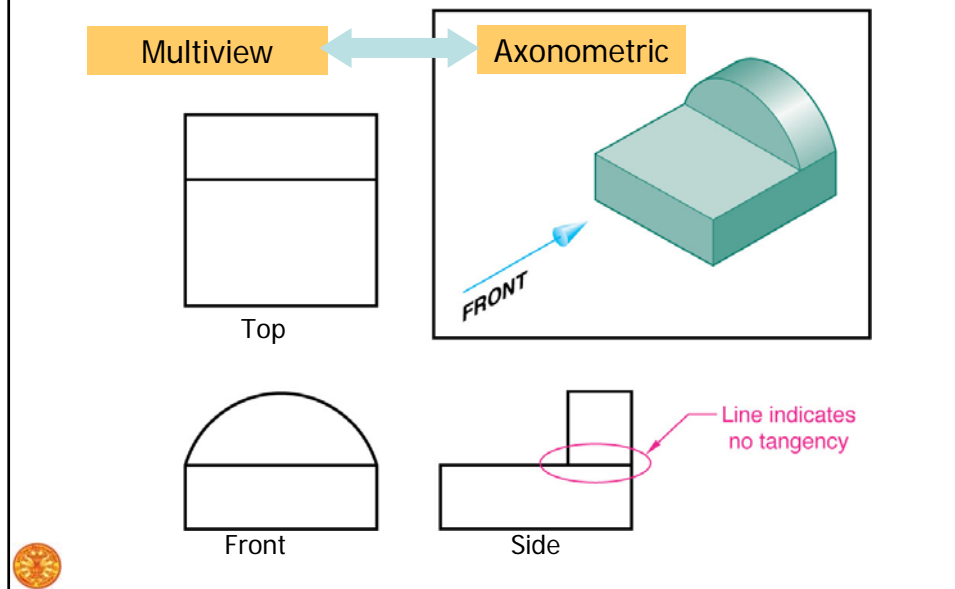


Axonometric

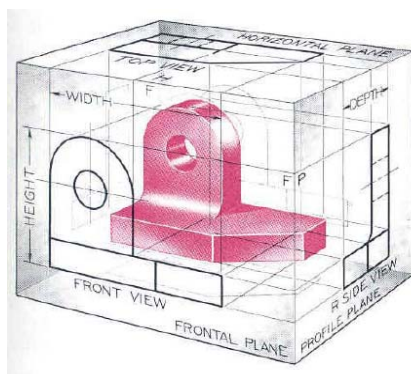
Edge align with plane:
Isometric, Dimetric,
Trimetric.



Multiview vs. Axonometric Projection



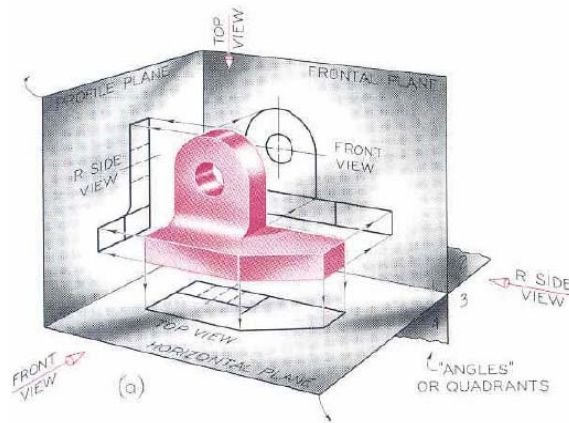
Multiview Projection – 3rd Angle System



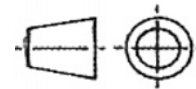
- Object behind plane
- View is formed by projecting back to the image plane
- Used in U.S.A., Ca, UK, TH etc.



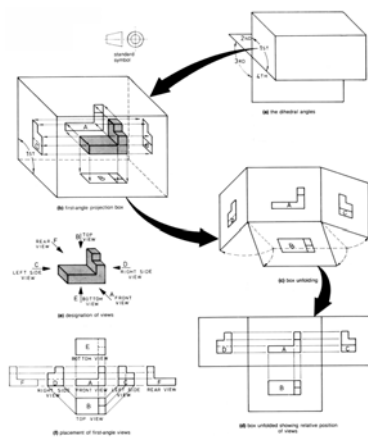
Multiview Projection – 3rd Angle System



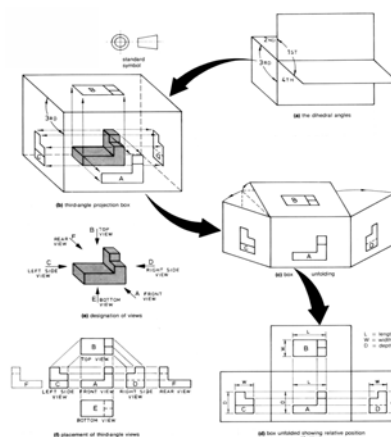
➤ Object in front of plane



1st and 3rd Angle Systems



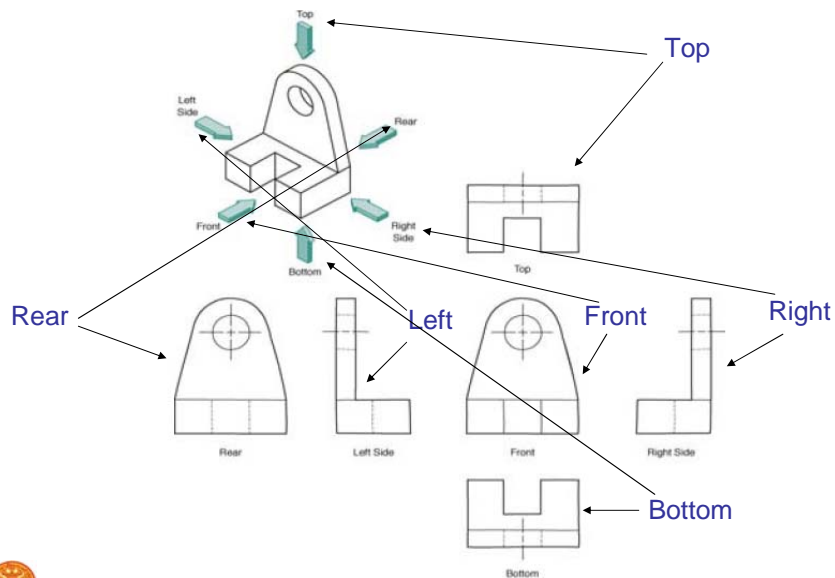
1st angle



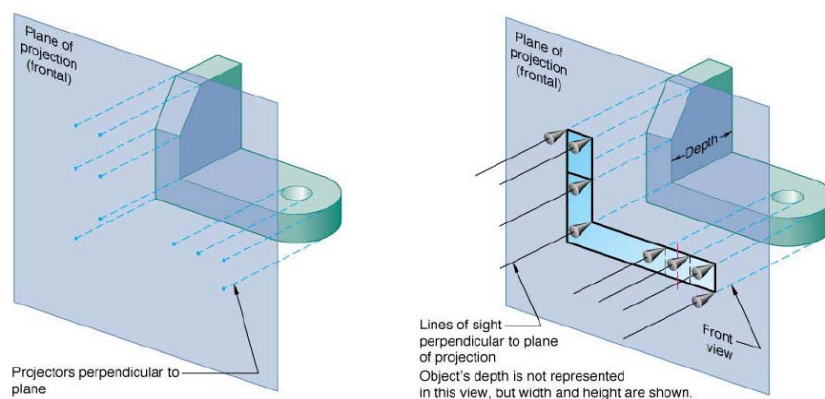
3rd angle



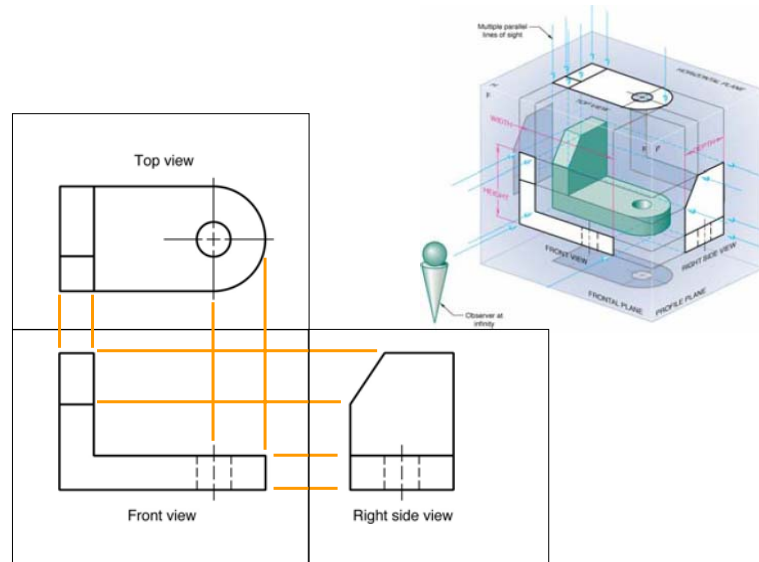
Views of an Object



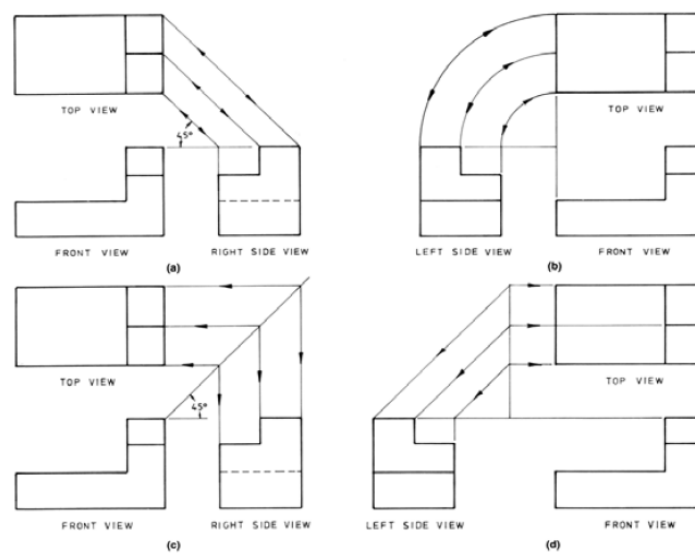
Plane of Projection



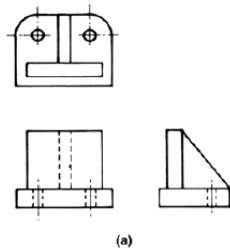
Relationship of Orthogonal Views



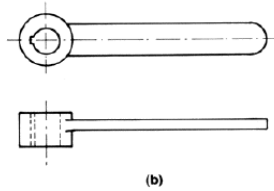
Projection between Views



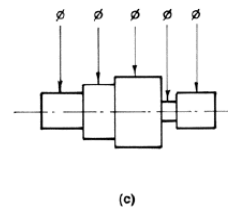
Number of Views



3 Views:
top, front, and side



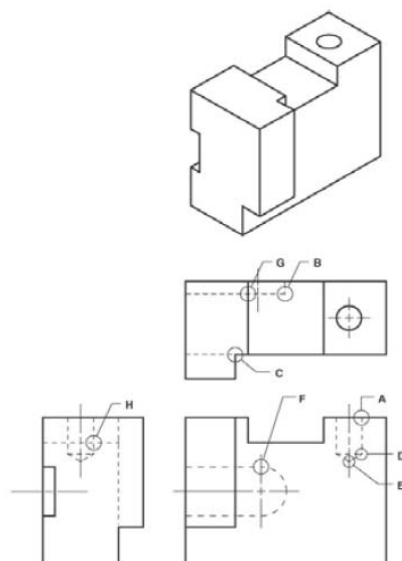
2 Views:
top, and front



1 View:
top (or front) &
diameters



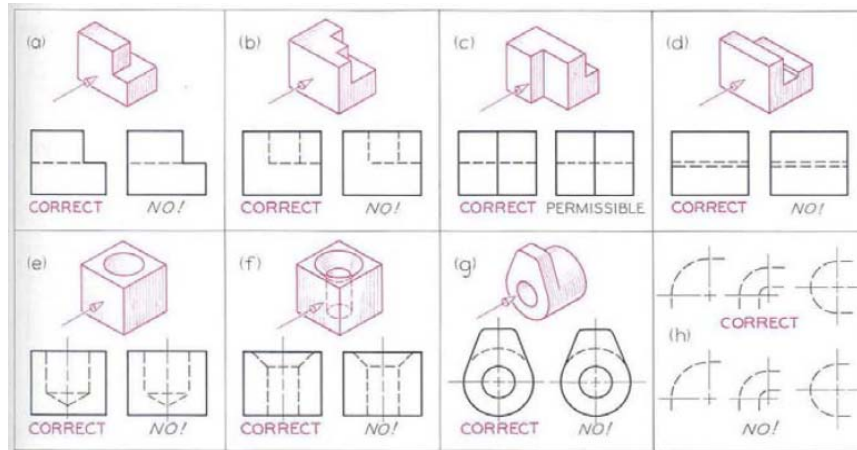
Hidden Lines



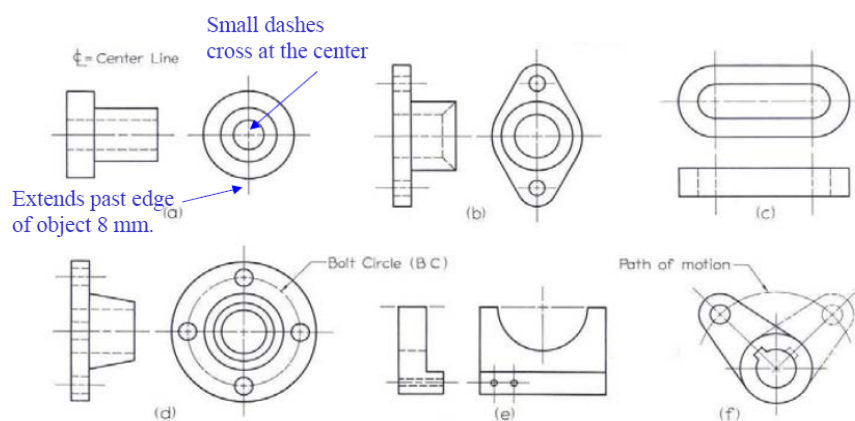
CORRECT	INCORRECT
A No space	
B Join corners	
C Space	
D Join	
E Join	
F Start arc on center line	
G Do not intersect solid line	
H Do not intersect	



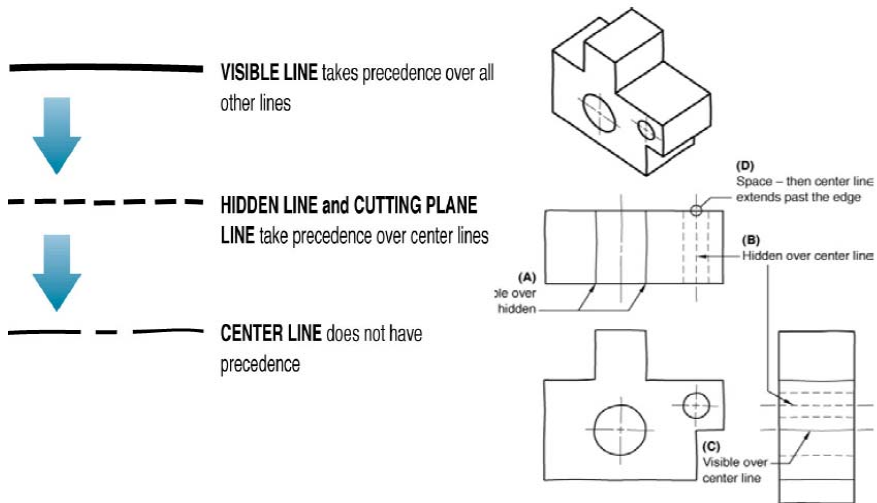
Hidden Lines



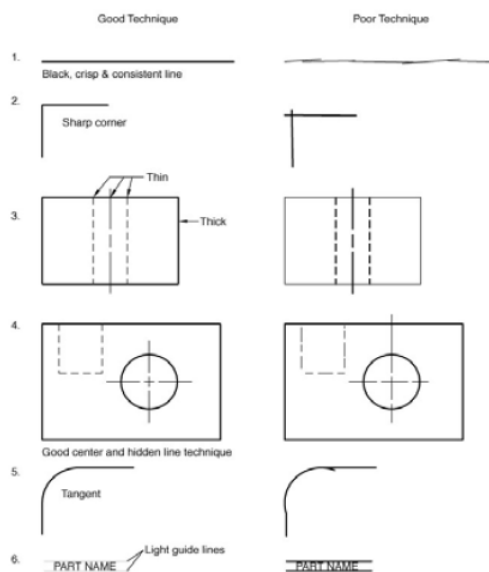
Centerlines



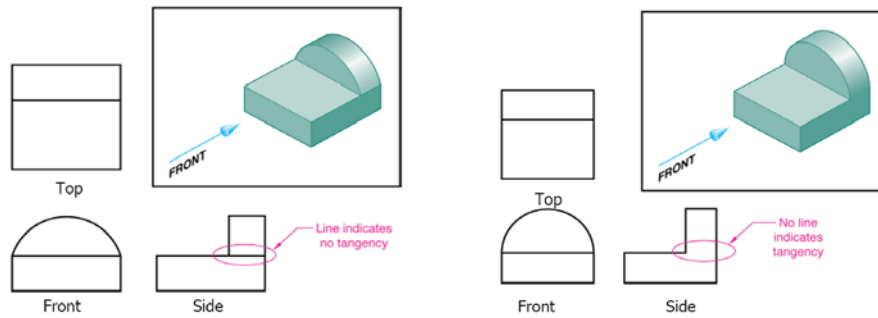
Precedence of Lines



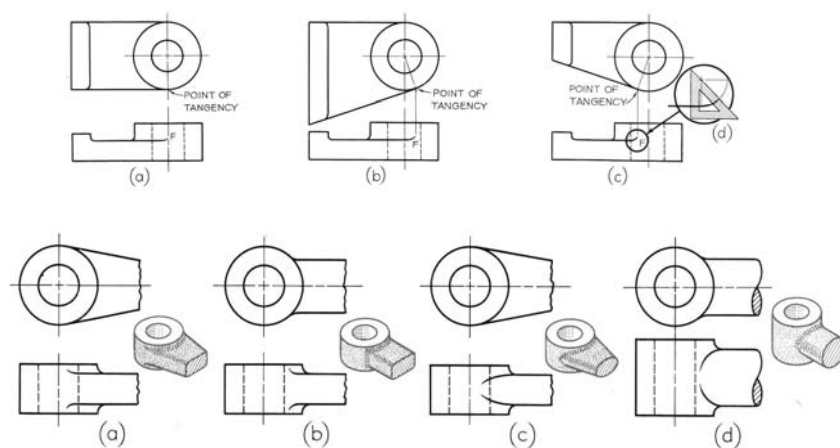
Good vs. Poor



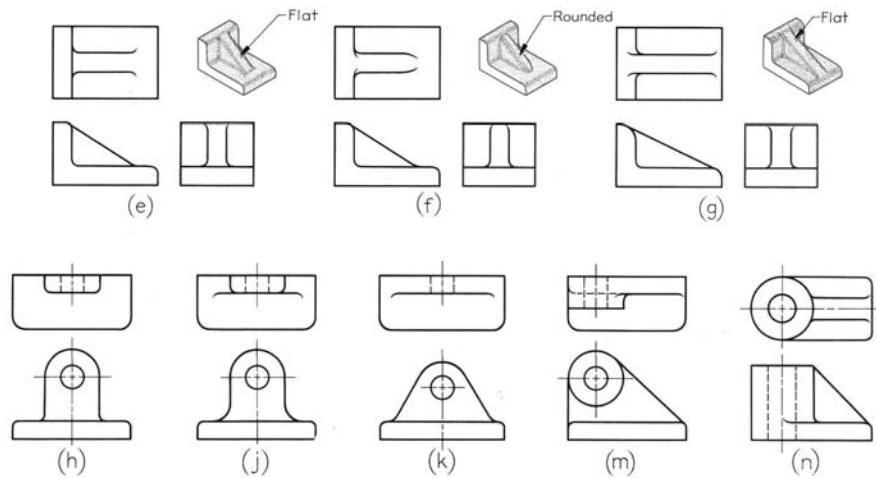
Edge vs. Tangency



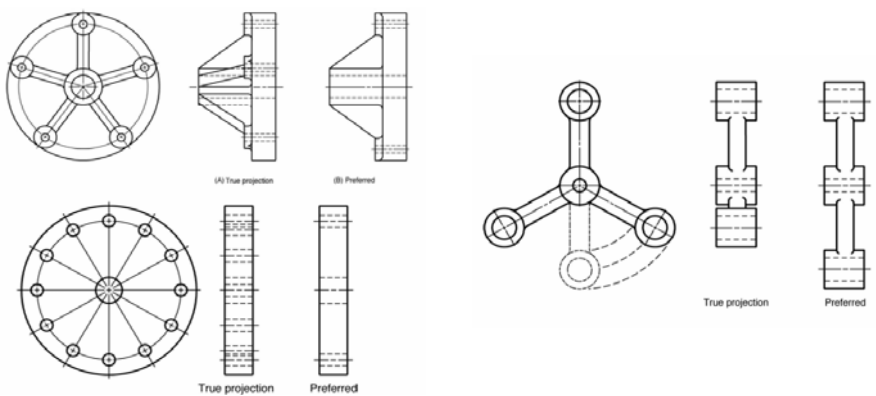
Tangency



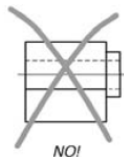
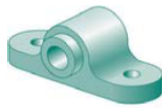
Fillets and Rounds



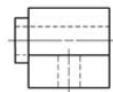
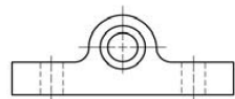
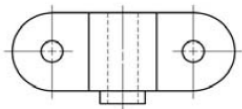
Revolution Convention



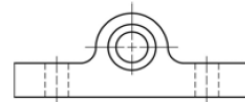
Do Not !



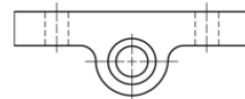
NO!



Redundant



Natural Position



Unnatural Position
No!

Unnatural



Example

