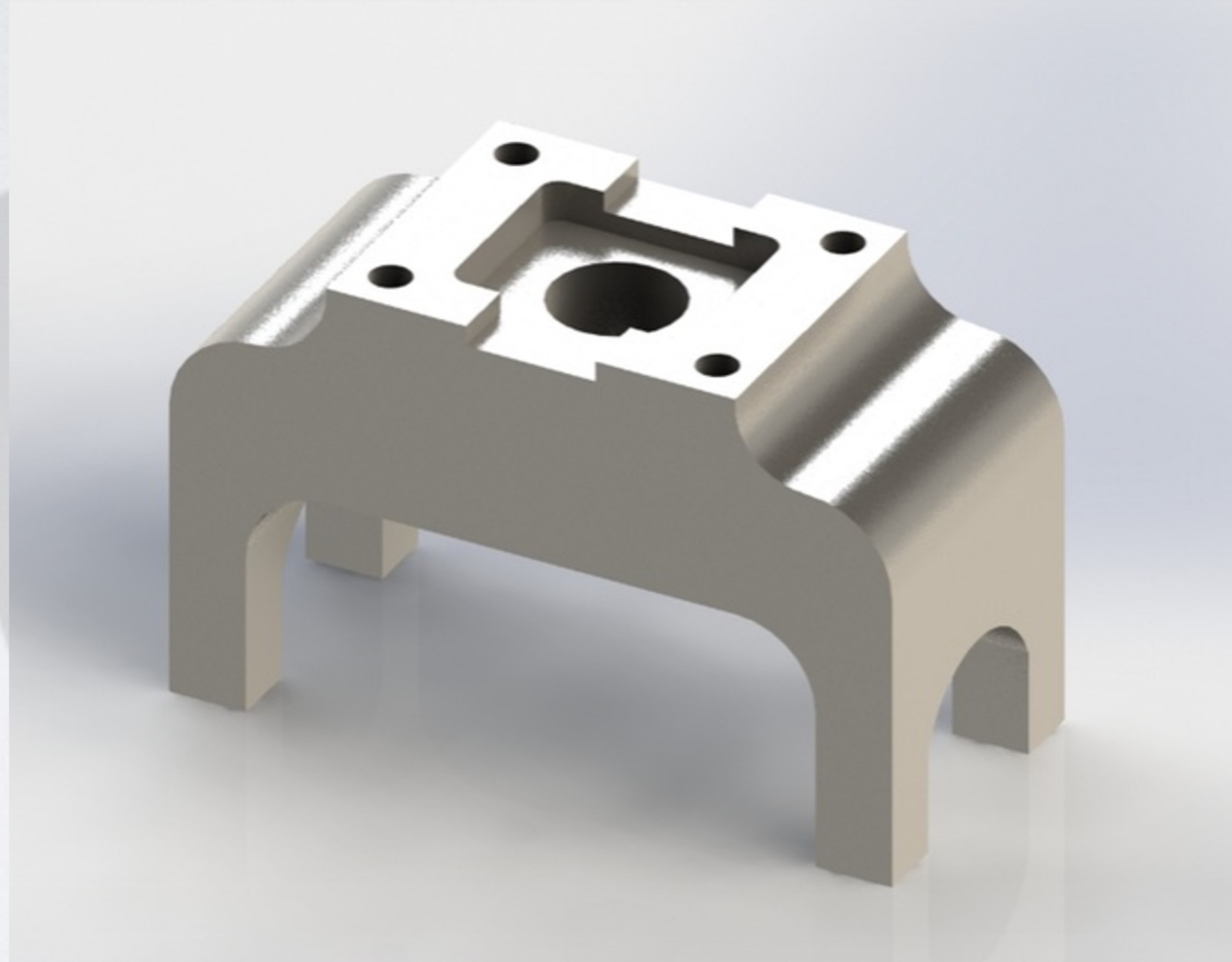
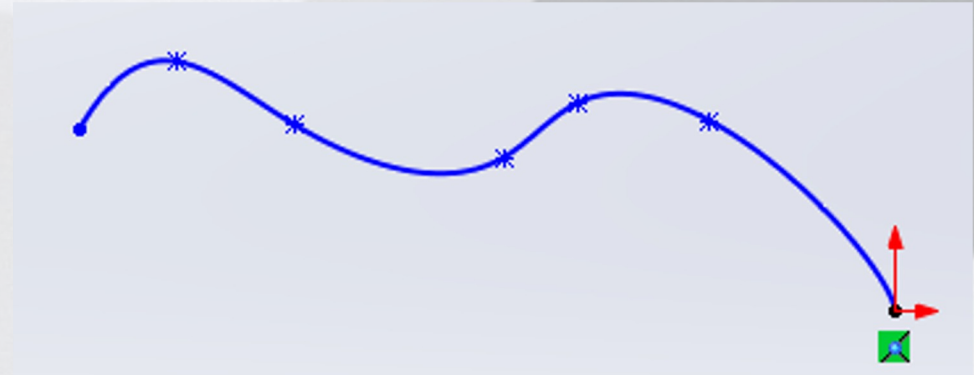
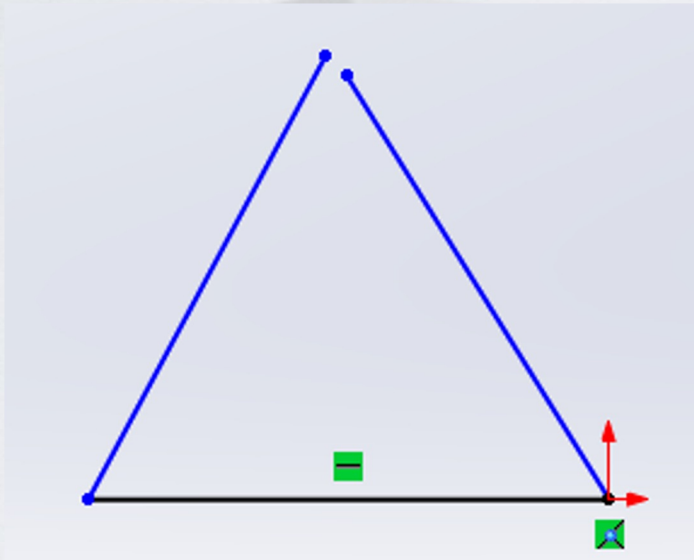


More Modeling in Solidworks

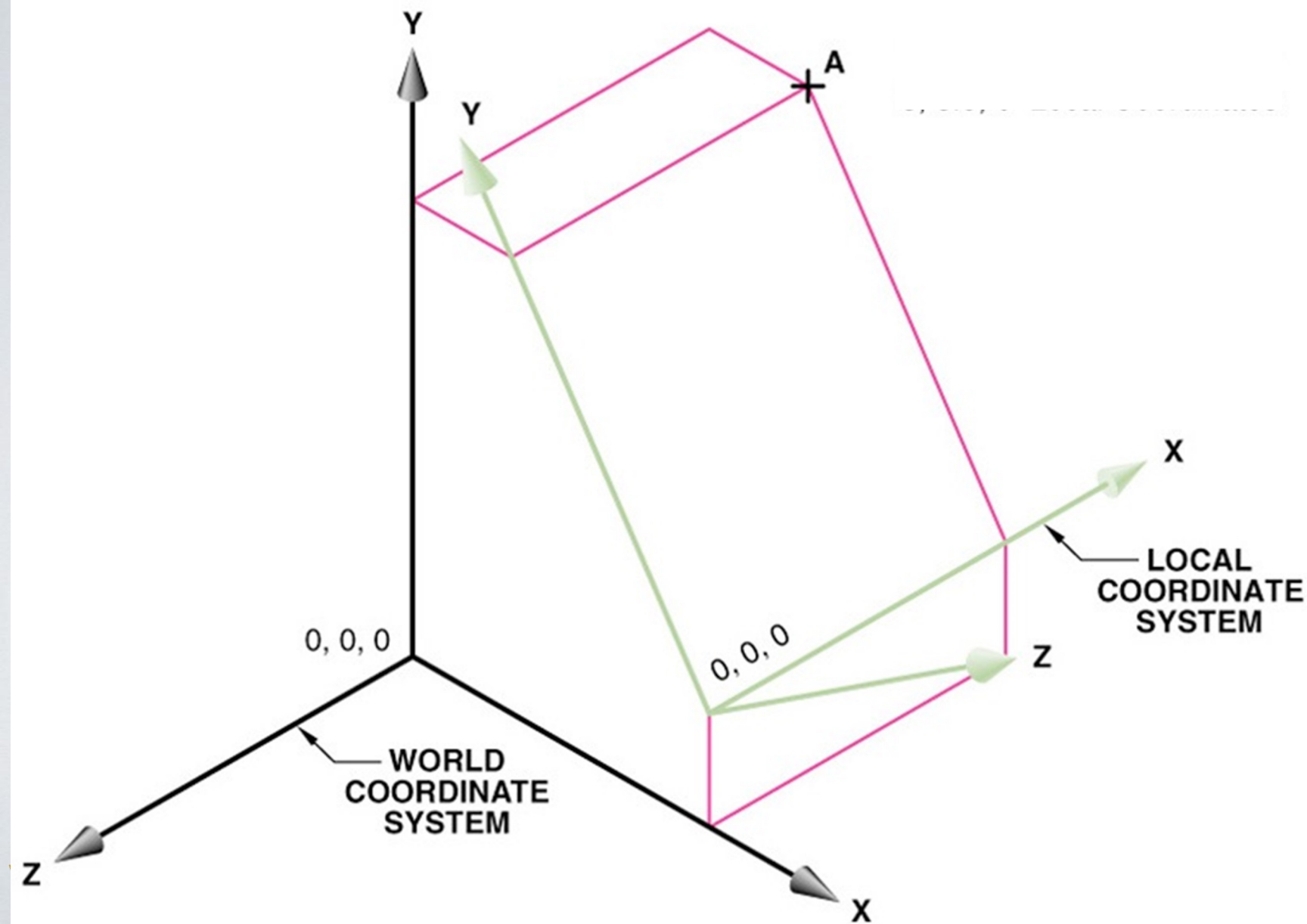


Refresher:

Do these sketches create 3D features in Solidworks?



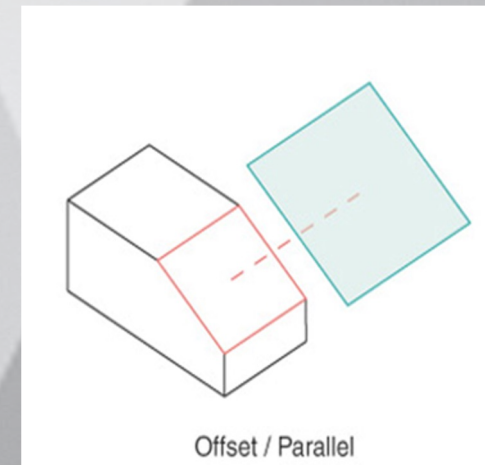
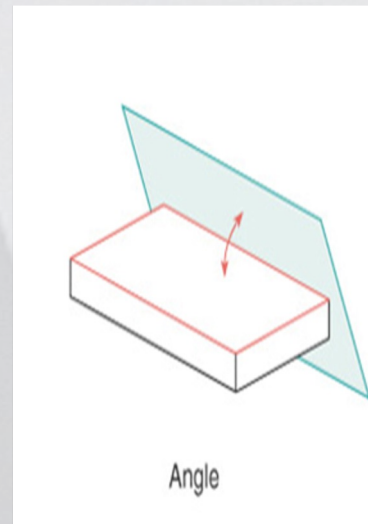
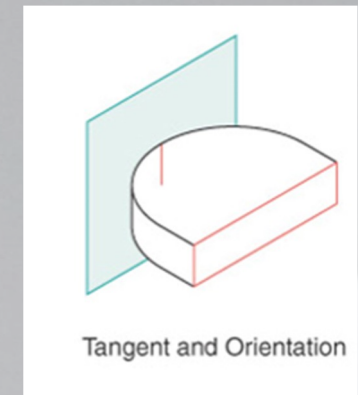
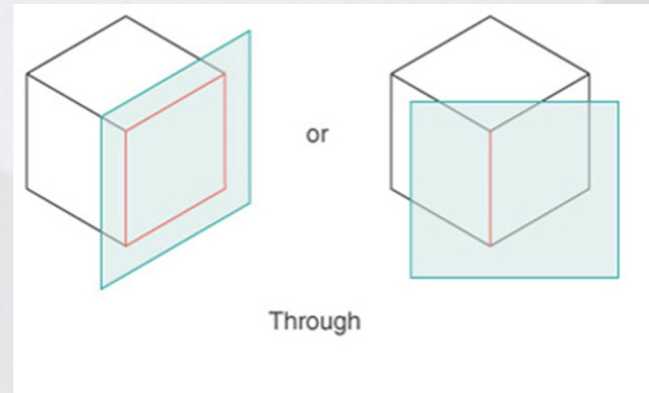
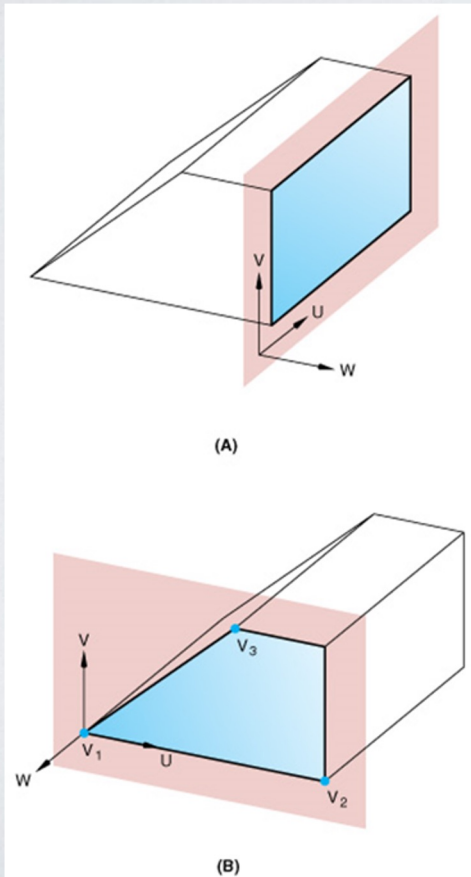
Coordinate Systems



- Local Coordinate Systems make geometry creation easier.
- Origin for LCS can be anywhere on model

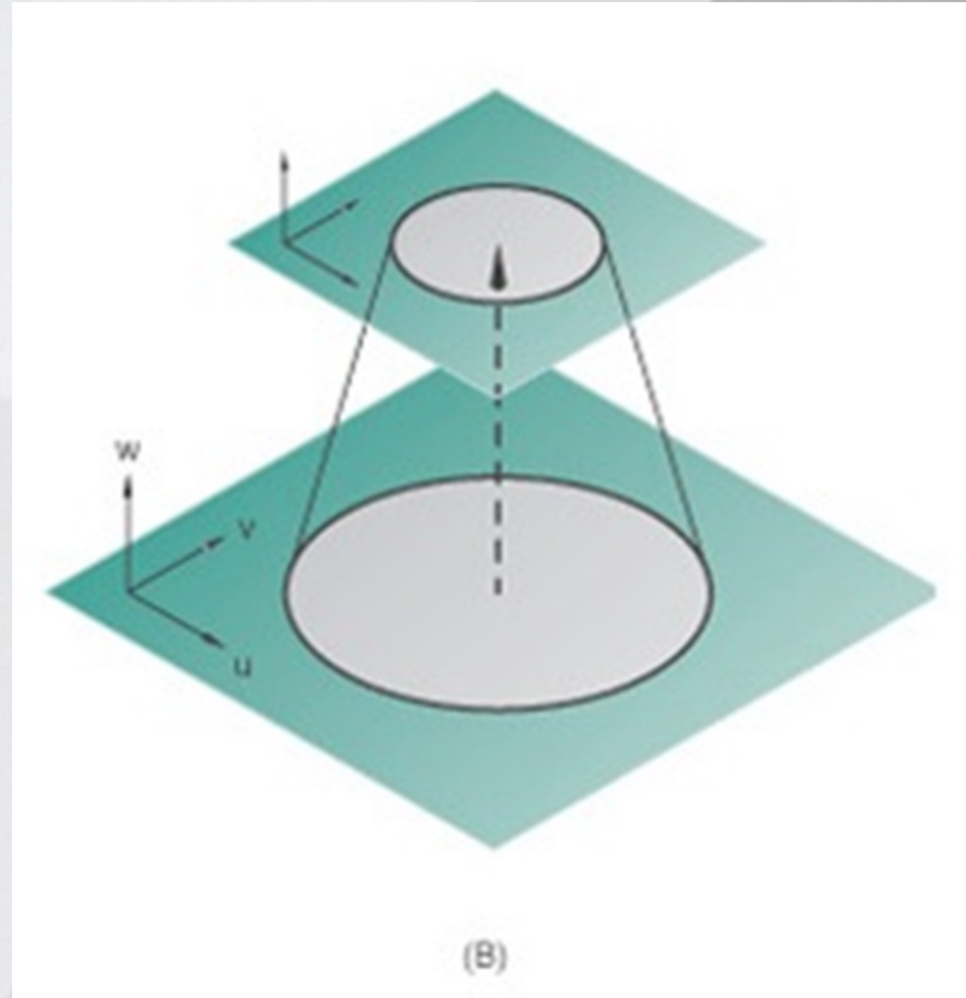
Workplanes

- o Canvas for drawing the construction geometry of a part (profile, construction lines, etc.)



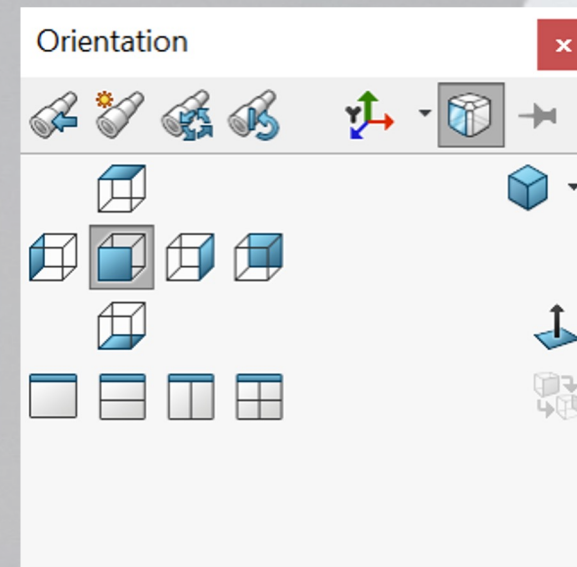
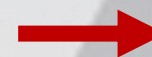
Blend Extrusion

- Loft: create a profile on the base plane, define the second plane (with a second profile) to which the initial profile will be extruded to



Other helpful Solidworks tools

- ◉ **Reference Geometry**>*Axis*
- ◉ **Linear Pattern**>*Linear Pattern* or *Circular Pattern*
- ◉ Hold down the **center button of your mouse** to rotate your part
- ◉ Press **Space Bar** on keyboard to get this
 - Allows you to easily orient the part being modeled



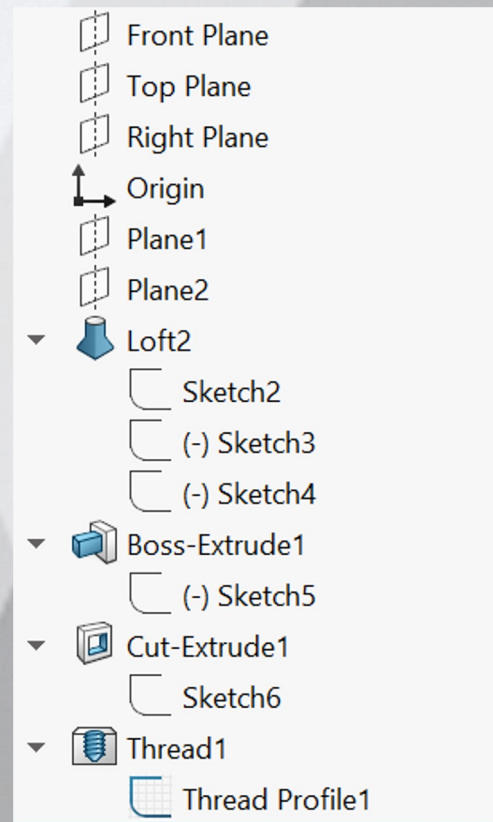
Constraint-based Modeling

- Collection of features

- Ex: Extrude, Extruded cut, Revolve, Fillet/Round, Chamfer, Sweep, Loft, etc.

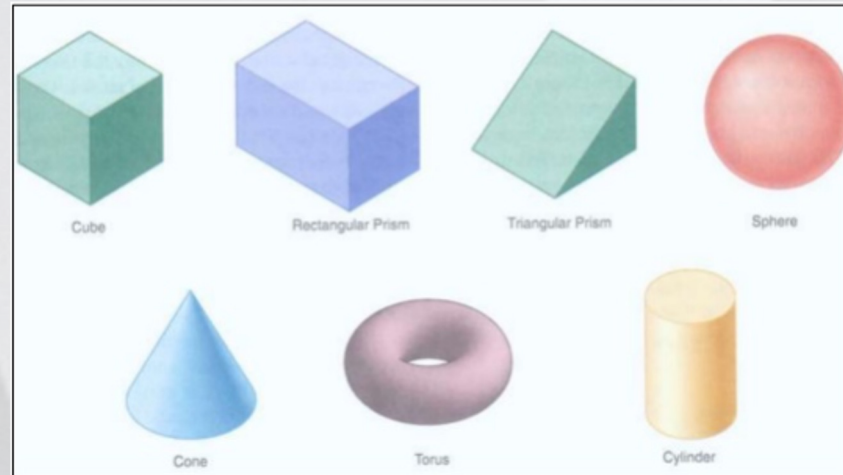
- Parts Tree

- Pay attention to the parent/child relationship between a feature and its sketch



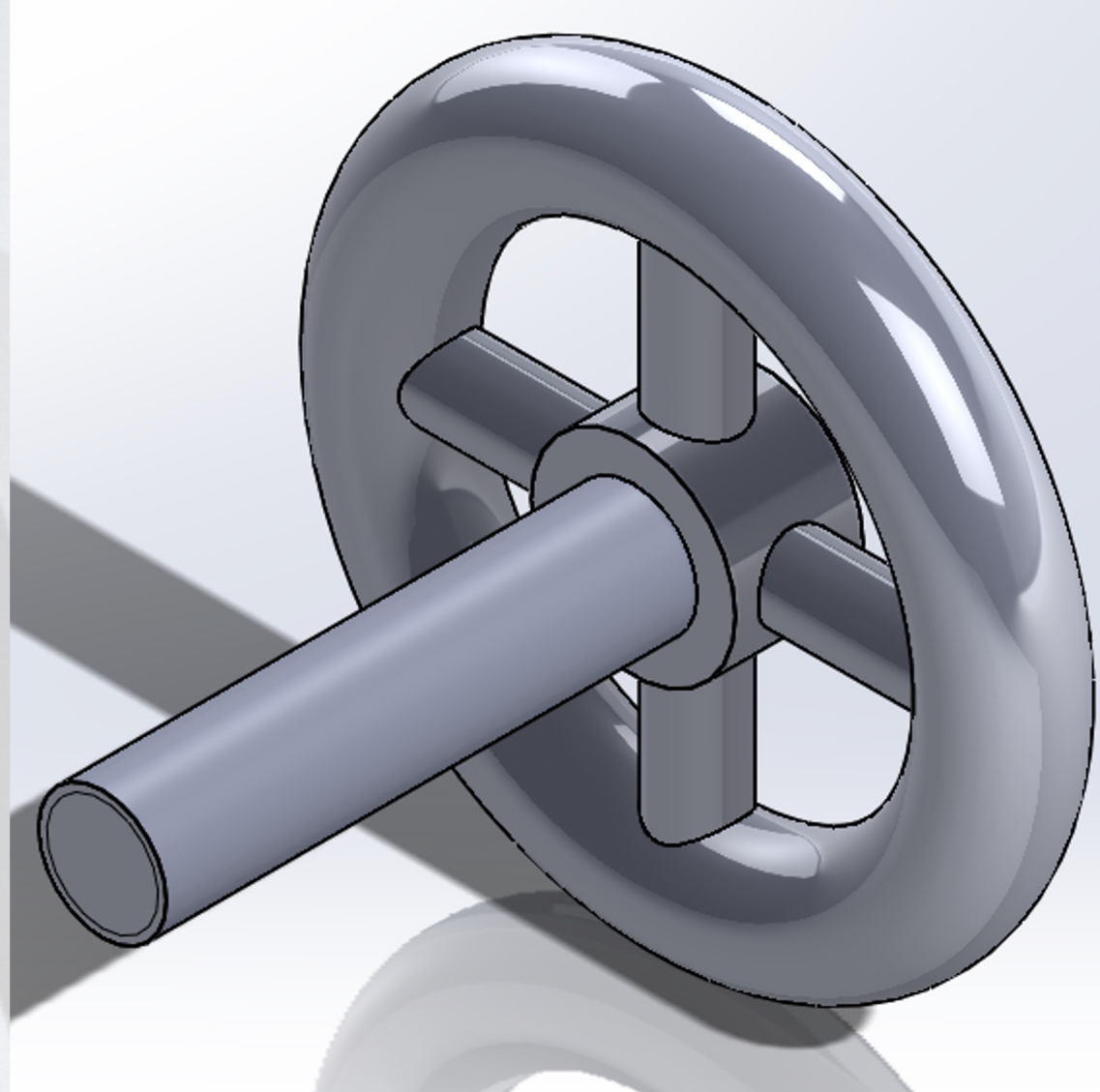
Solid Primitives

- Almost every object can be decomposed into its most fundamental, 3-dimensional geometries
- Solidworks can only create a limited set of 3D objects

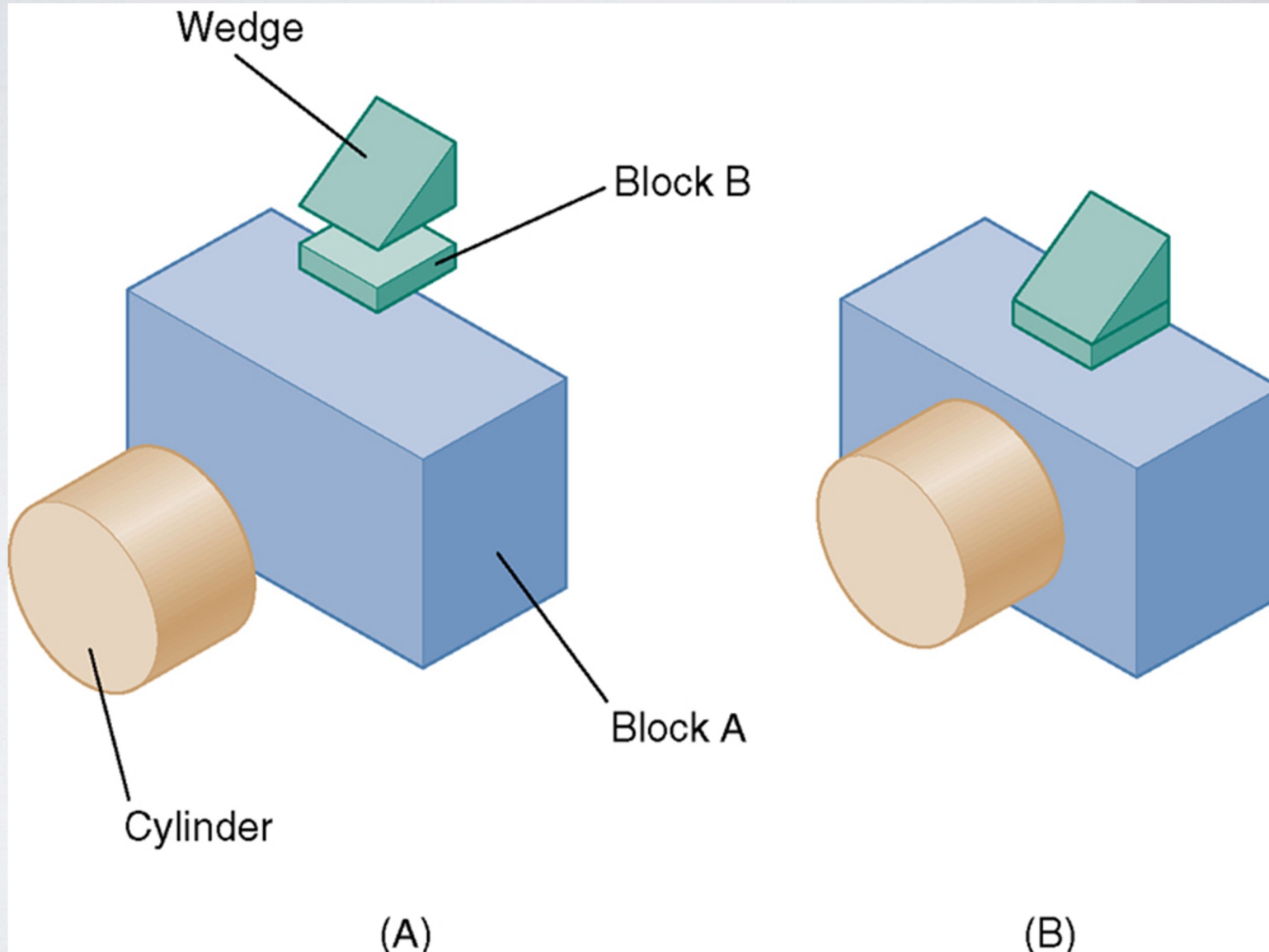


- Combine these to make a complex object!

What are the fundamental 3D geometries of this part?

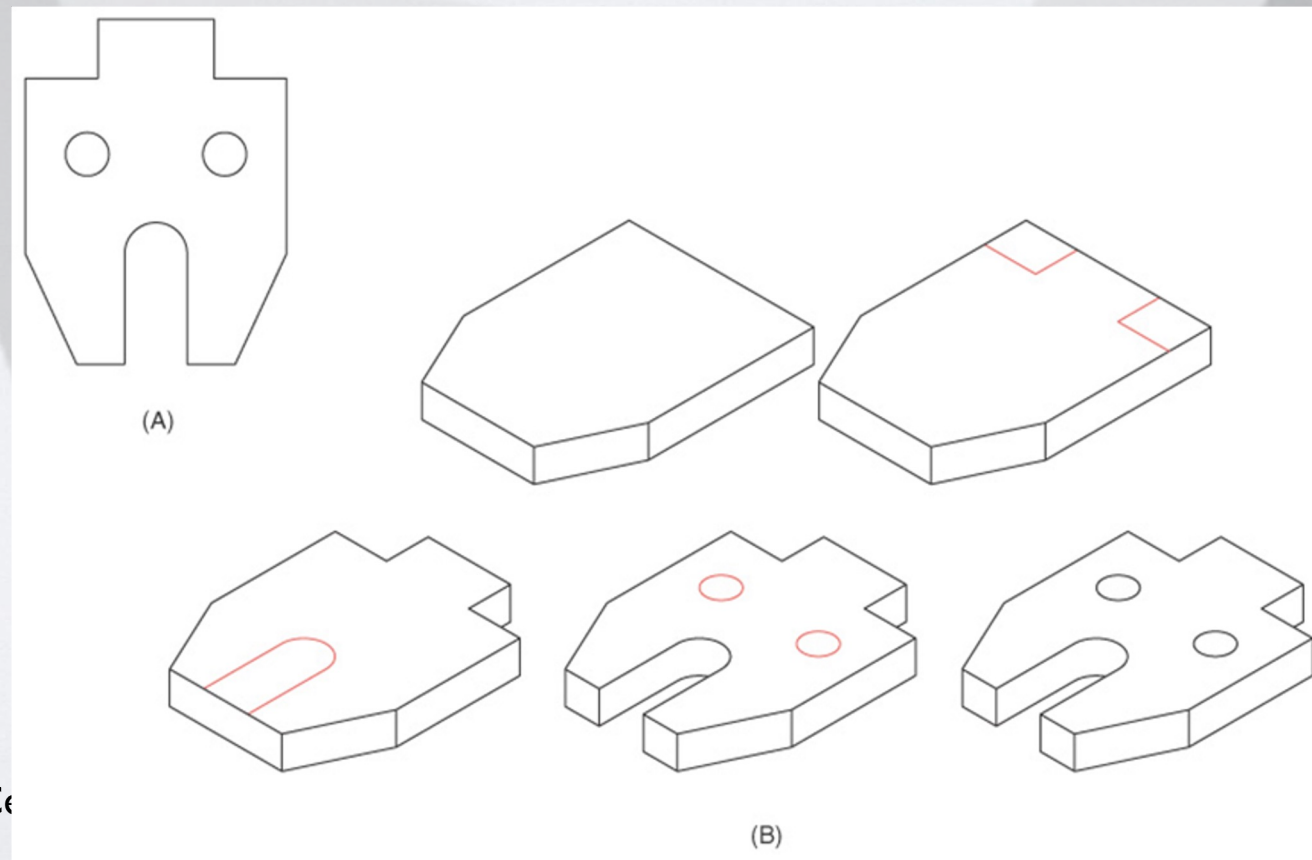


Make this part...



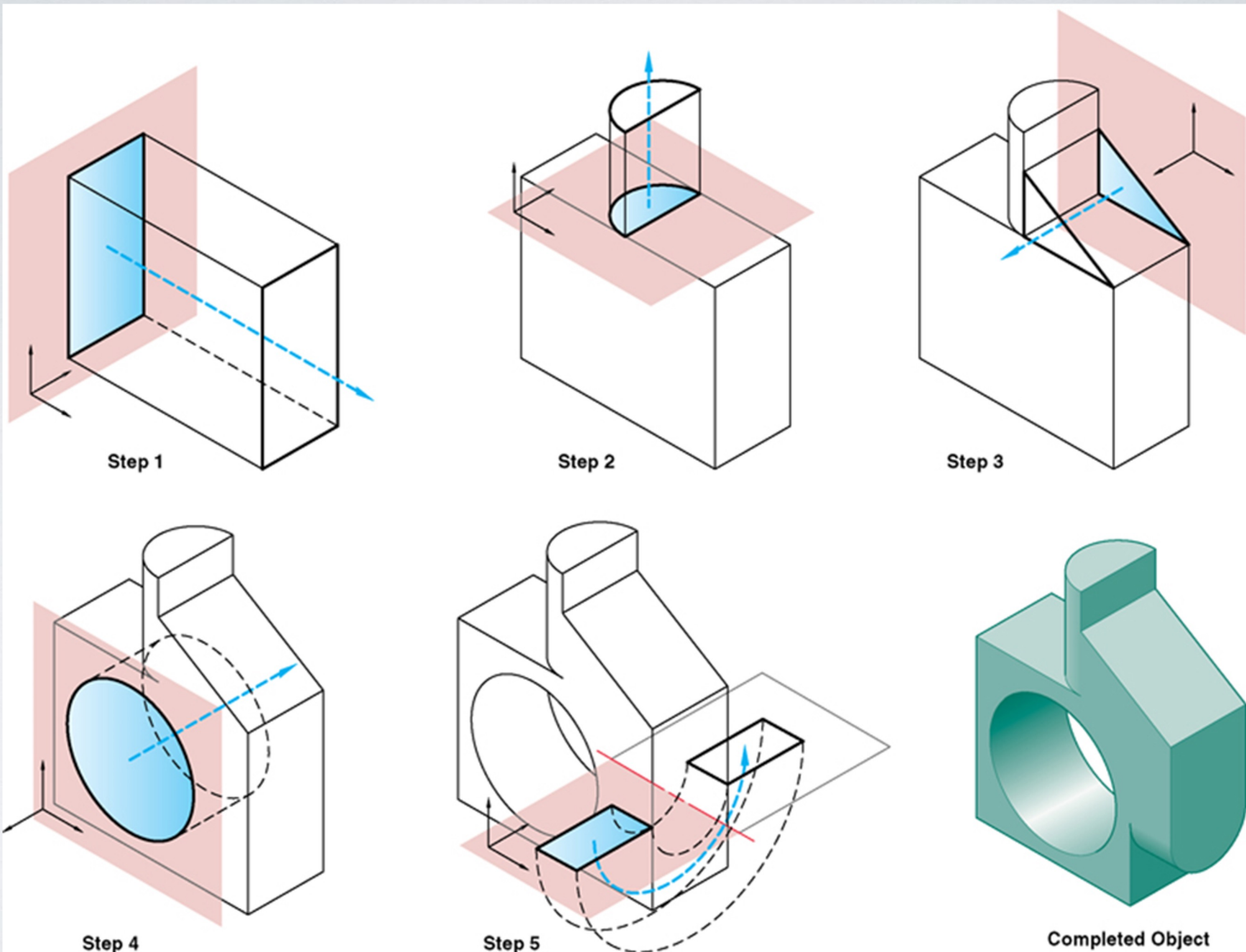
Feature Definition

- The order in which a part's features are added to it is important!
- Look for major features first.

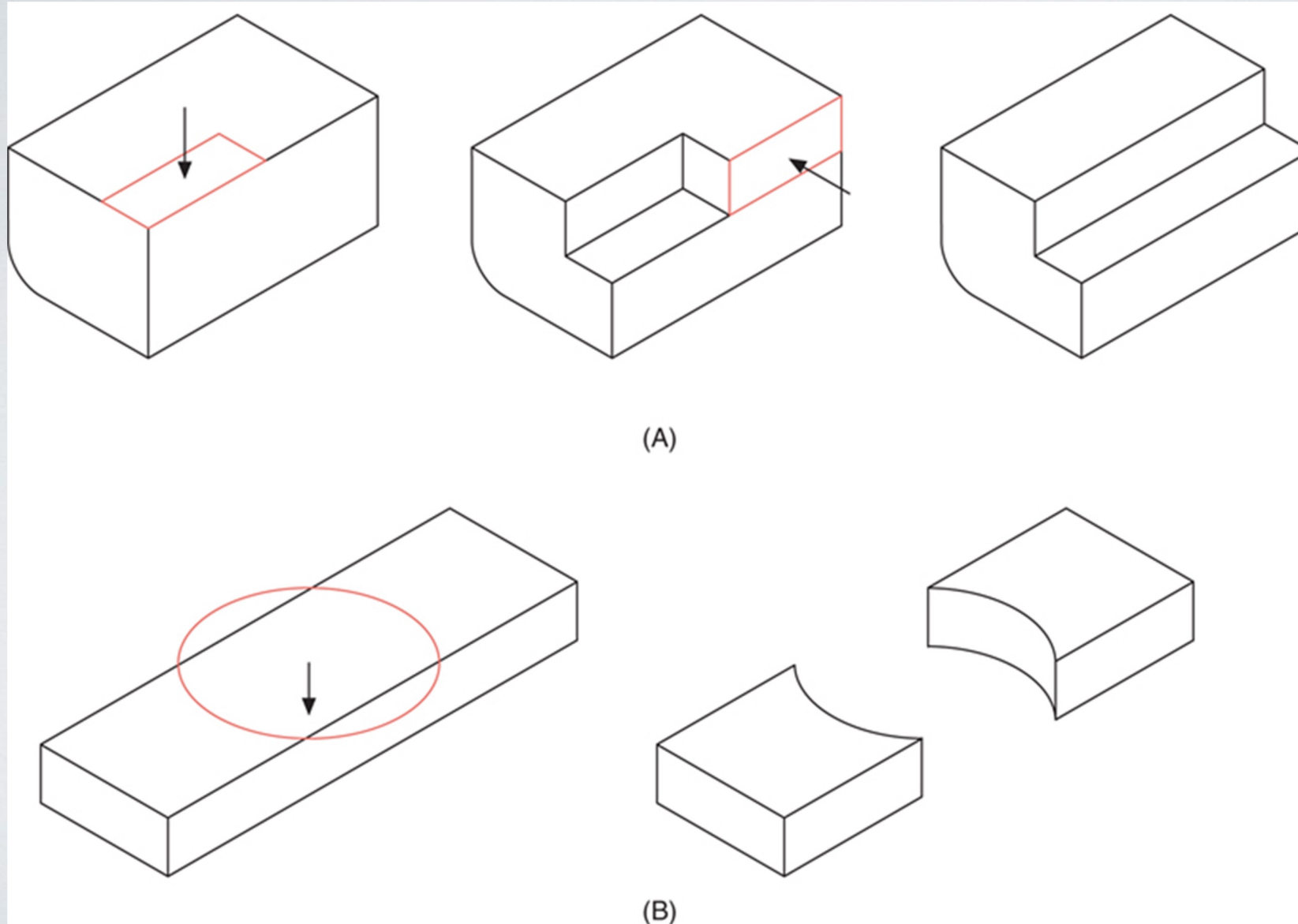


How would you model this part?





Feature Definition- How not to do it

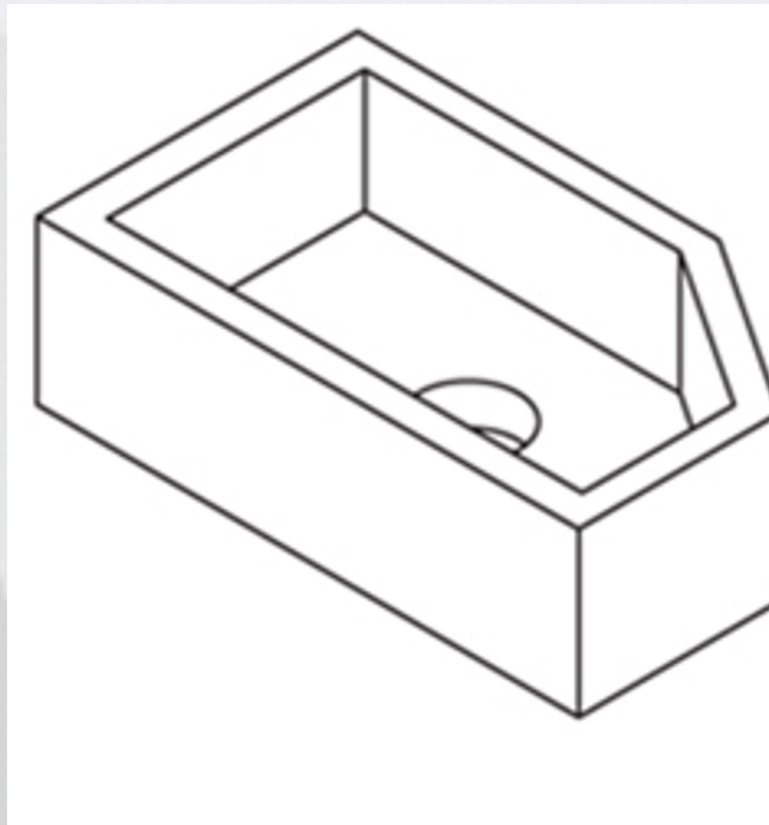


← Too many steps!

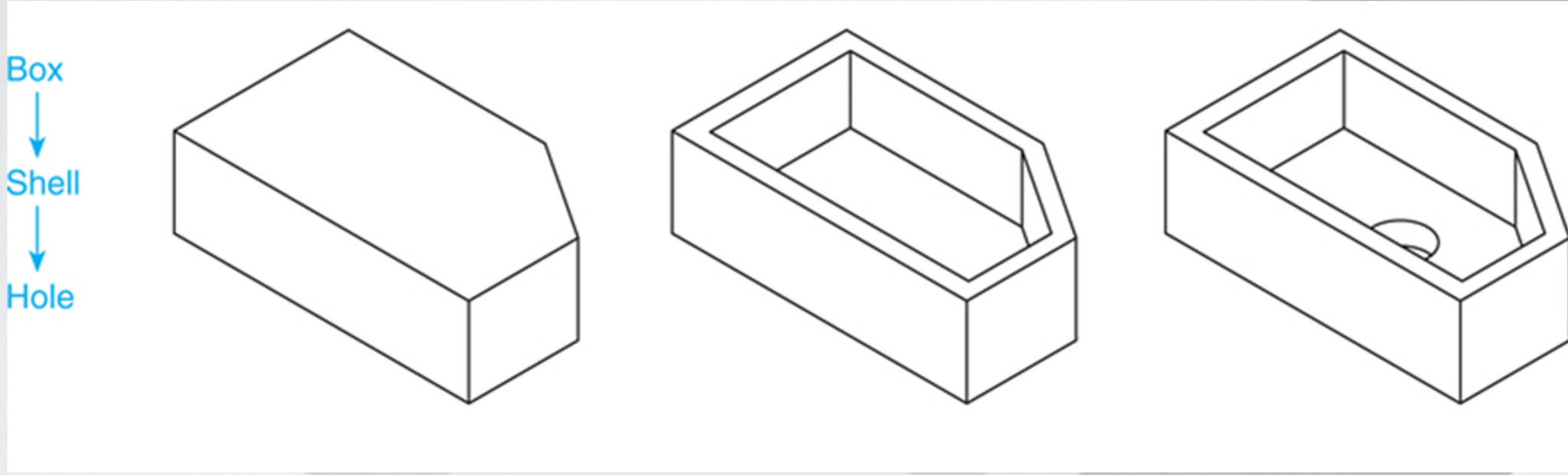
← Don't make two parts from one!

Try this...

- Model this hollowed out, angled, box with a hole in it.



It looks something like...



Break Time...get up and move!



Alexander the Great: *grants
Diogenes a wish*
Diogenes:

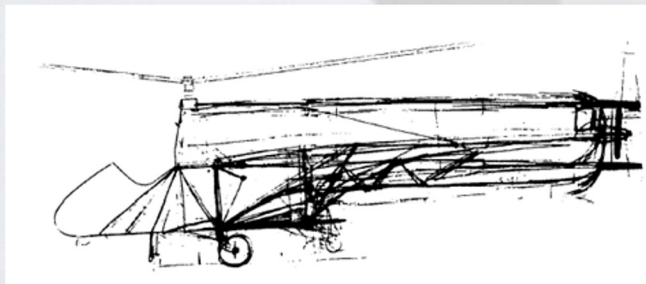


Technical Drawings

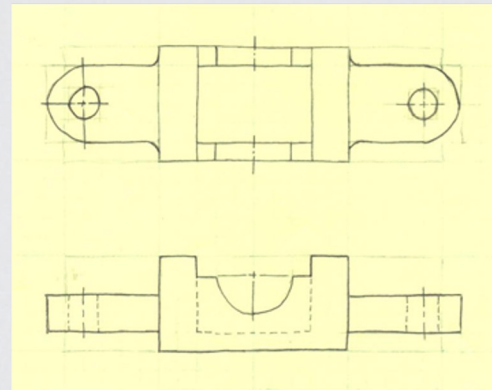
*rough draft of product that highlights its main features

Less Detail
Less Structure

Design
Sketching

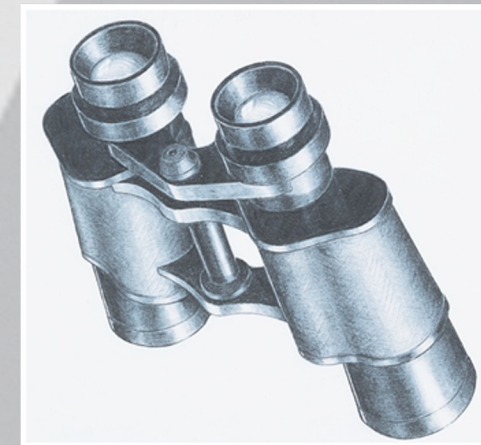


Freehand Technical
Drawing



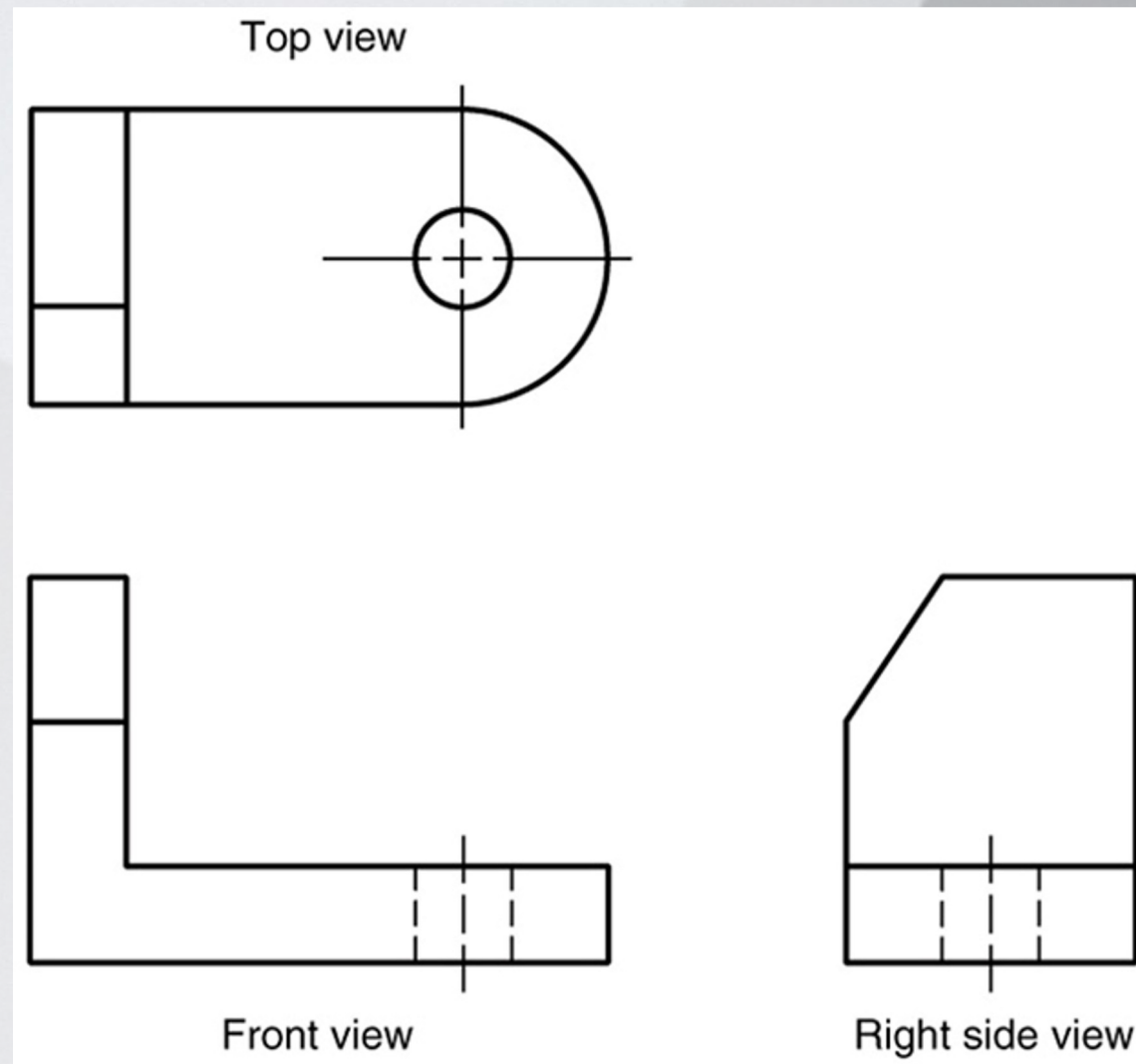
More Detail
More Structure

Freehand Technical
Illustration



Multiview Drawings

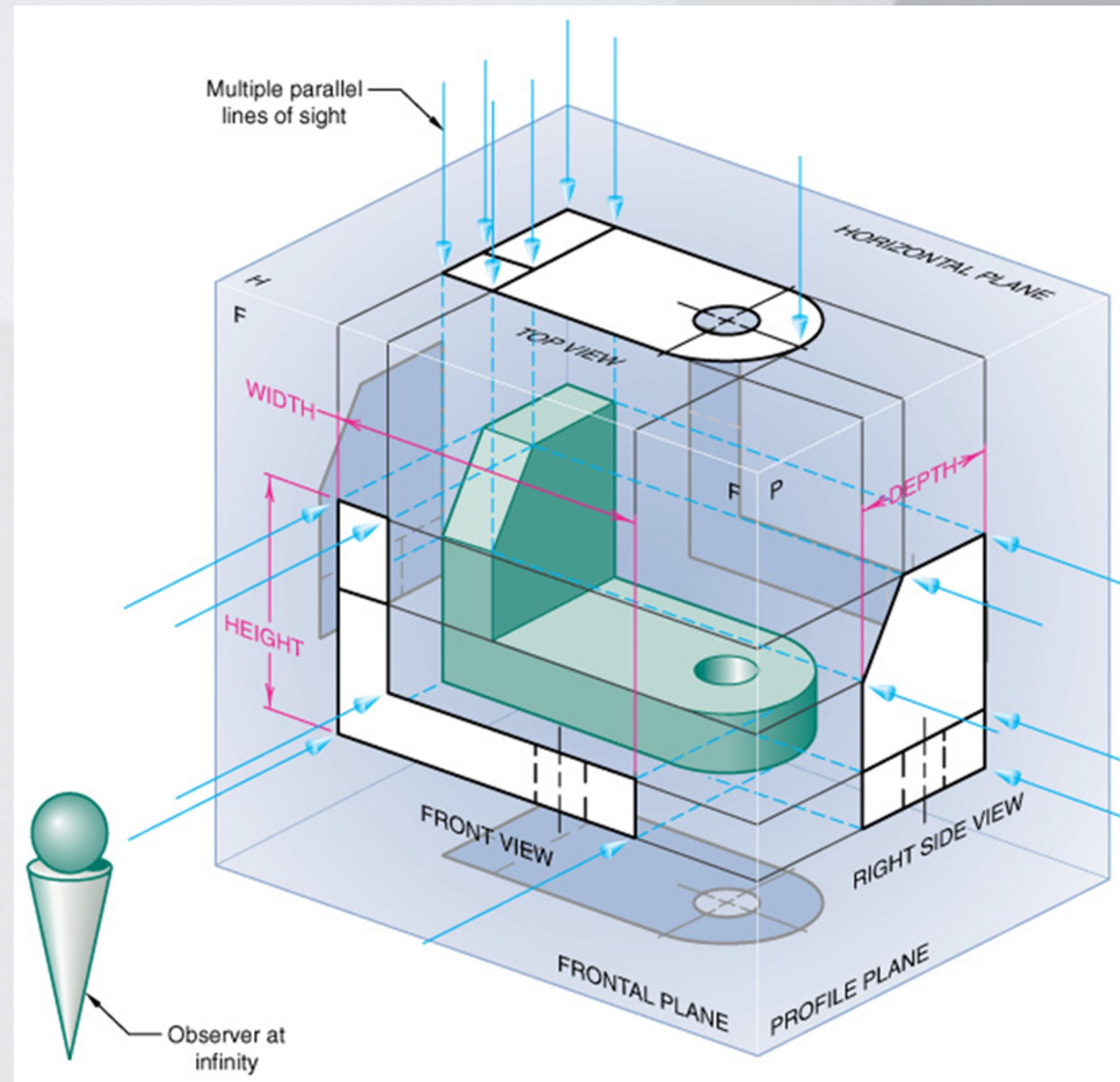
- 2-Dimensional
- Generally, three parallel projections (principle) are used.



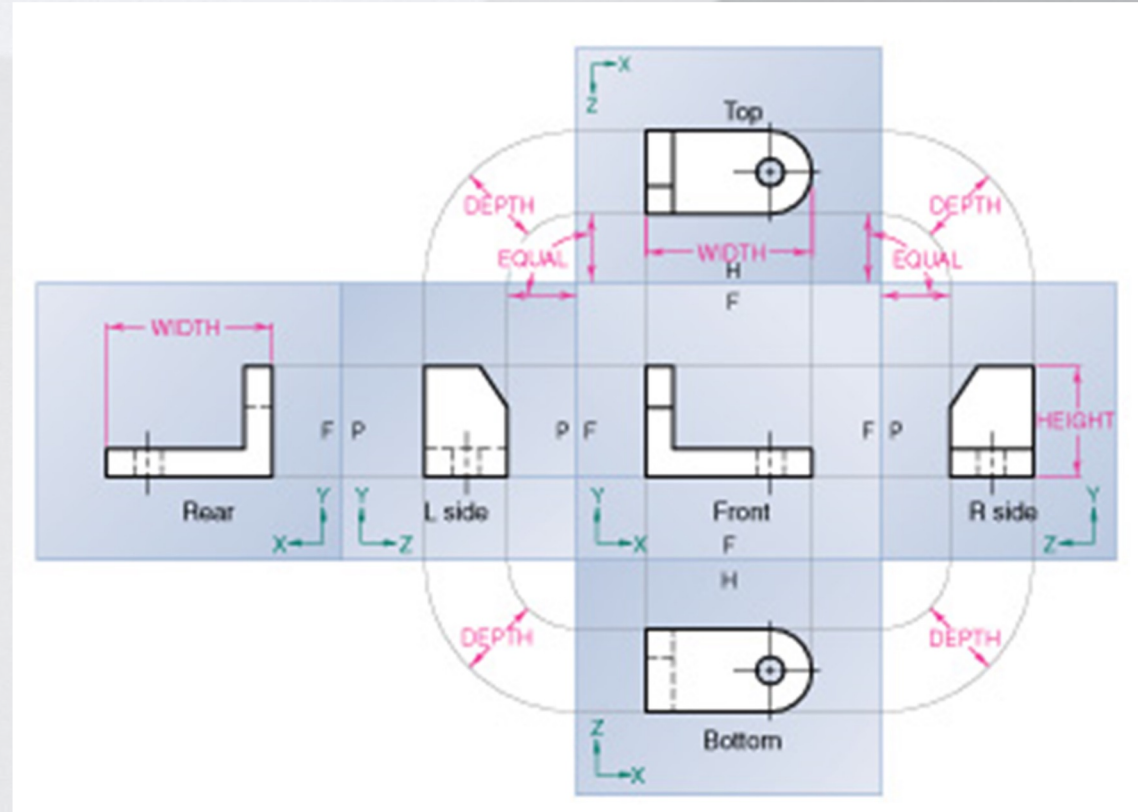
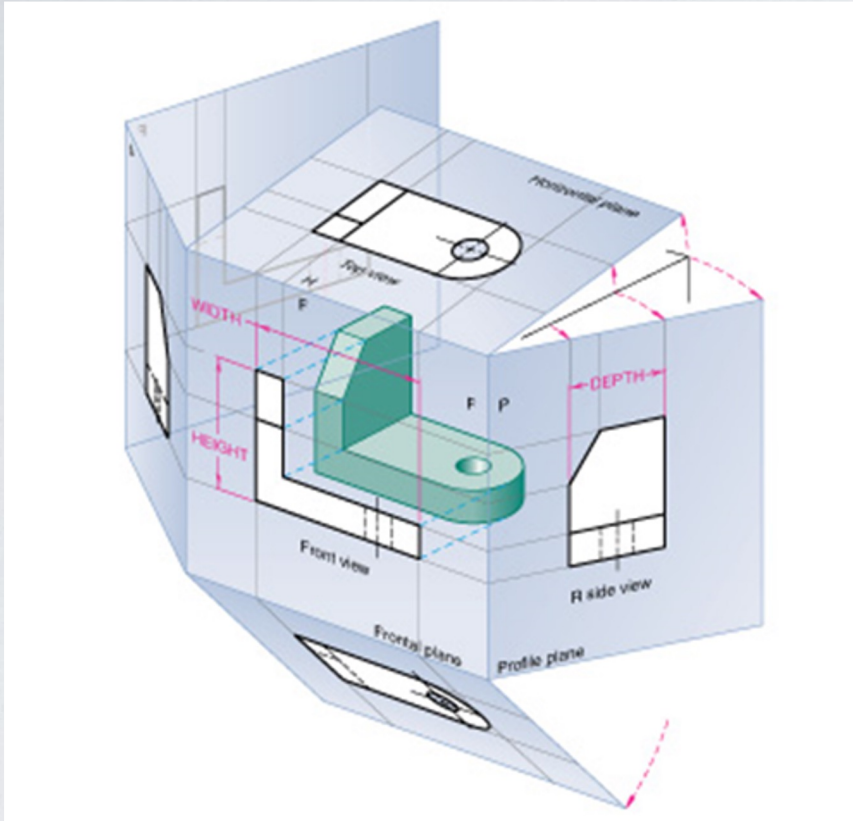
Projected Views

○ Six total views of a part:

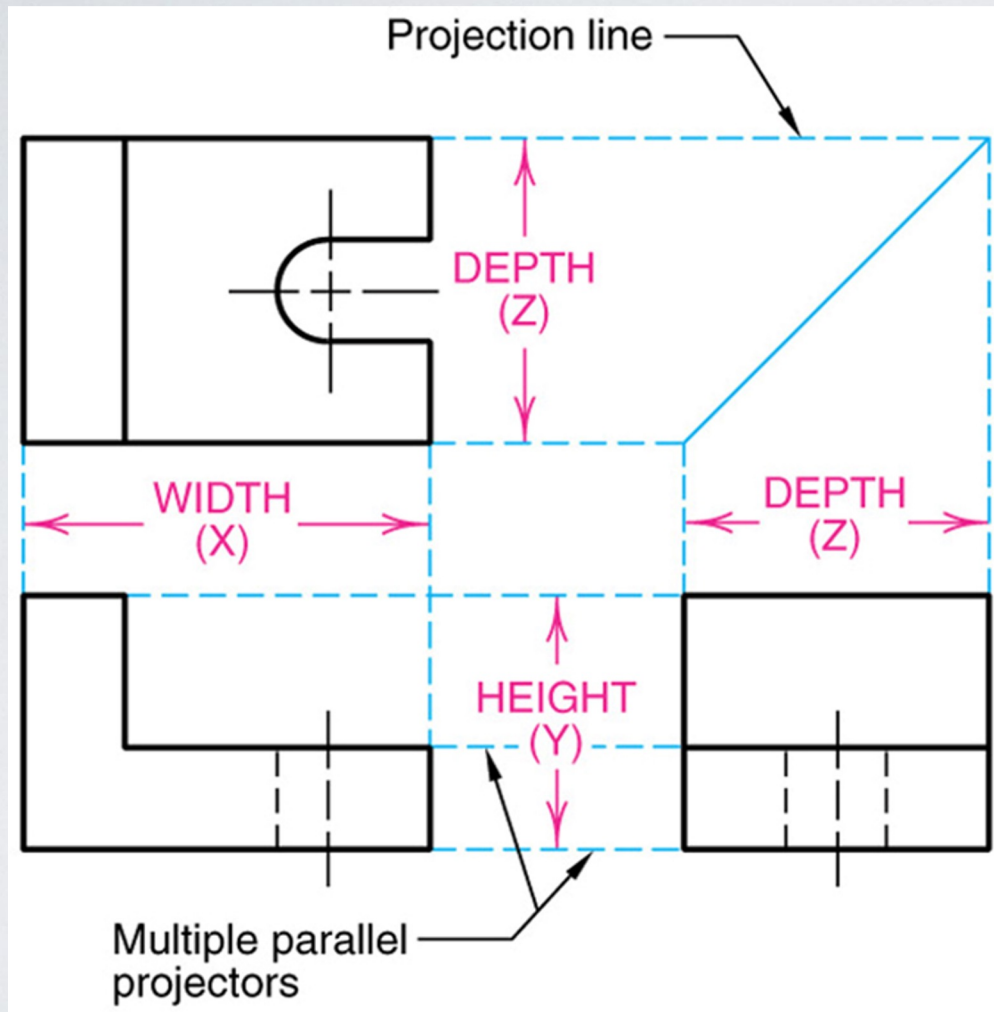
- Front
- Top
- Right
- Left
- Back
- Bottom



To help visualize...



Adjacent Views



Note: all necessary information to model a part is given in its technical drawing.

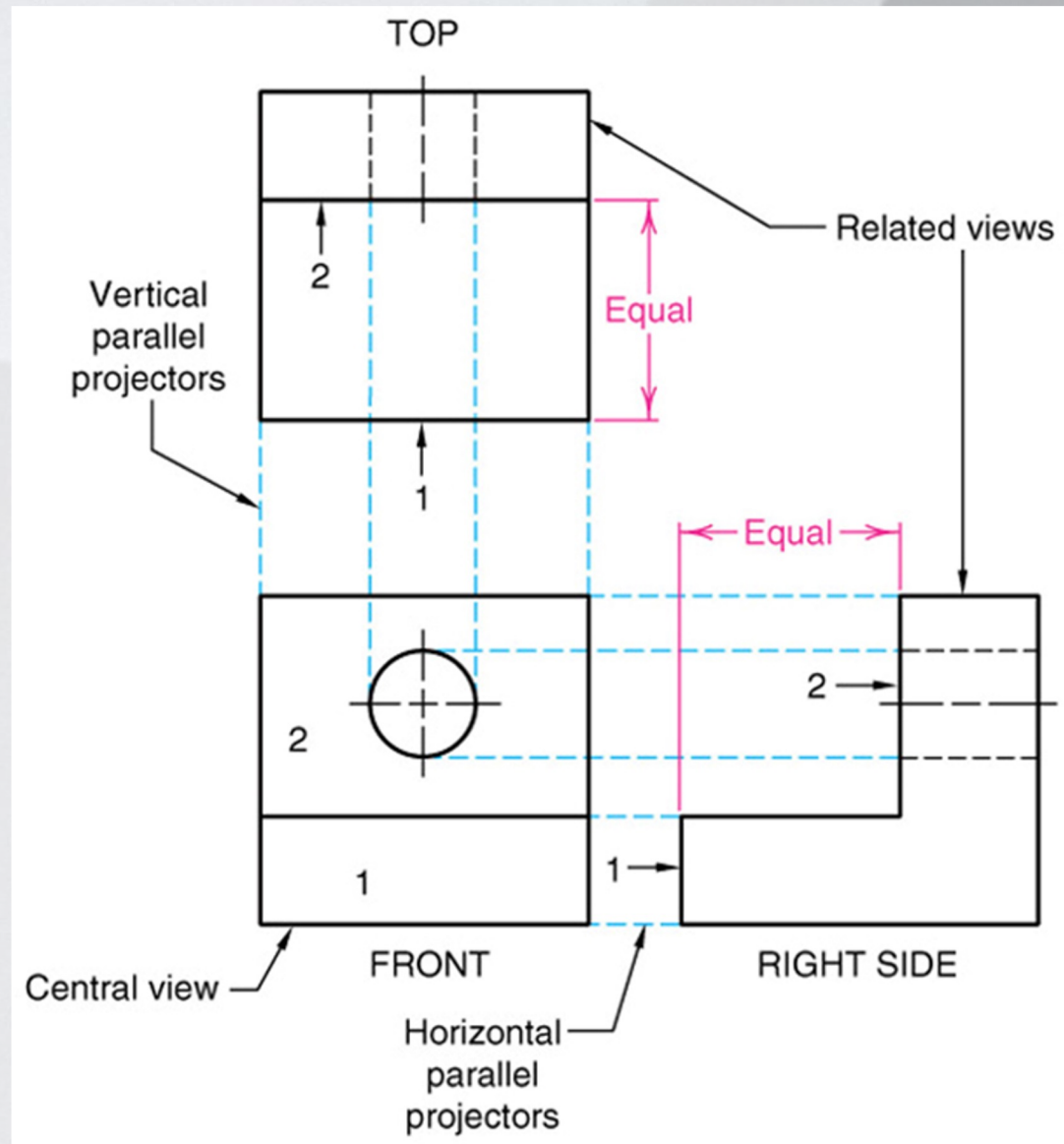
*Do the math to find the dimension of a feature that is not directly given to you.



Take a closer look...

- Orthographic Projection Rule 1:
Every point or feature in one view must be aligned on a parallel projector in any adjacent view.

- Note the projection lines located on the right and top views that represent the hole on the front view.



Activity

- o Model these parts of the Vise in Solidworks ***All measurements are in inches***
 - Pin
 - Grip
 - Jaw
 - Shaft
 - Base (Hint: utilize a revolute extrusion)
 - Wheel (Hint: utilize a revolute extrusion)

Note: Think about the part's main features and how to best model them. In what order should you model these features?