

ME 119

ENGINEERING DRAWING AND GRAPHICS

CAD 3D SOLIDWORKS

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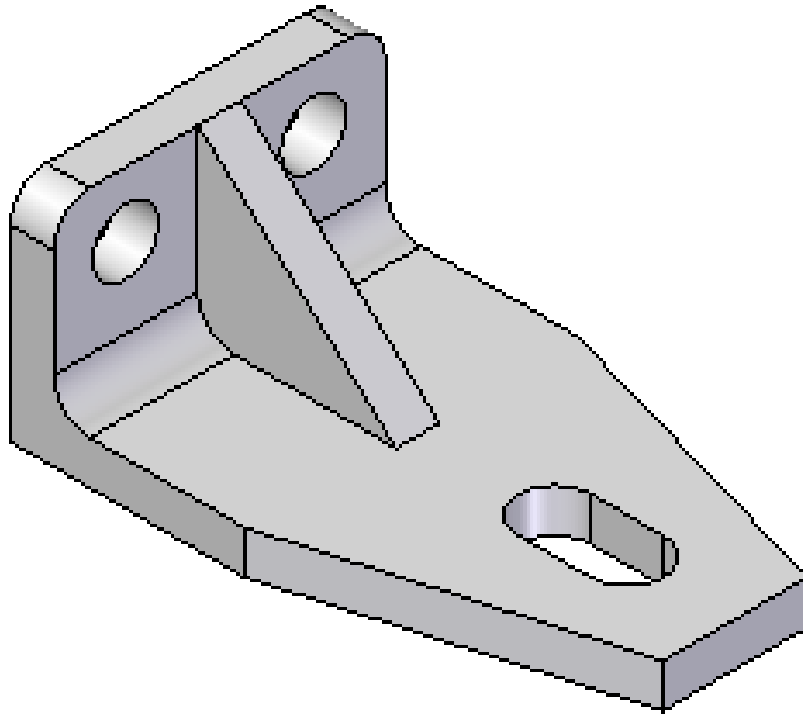


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ME119 Engineering Drawing
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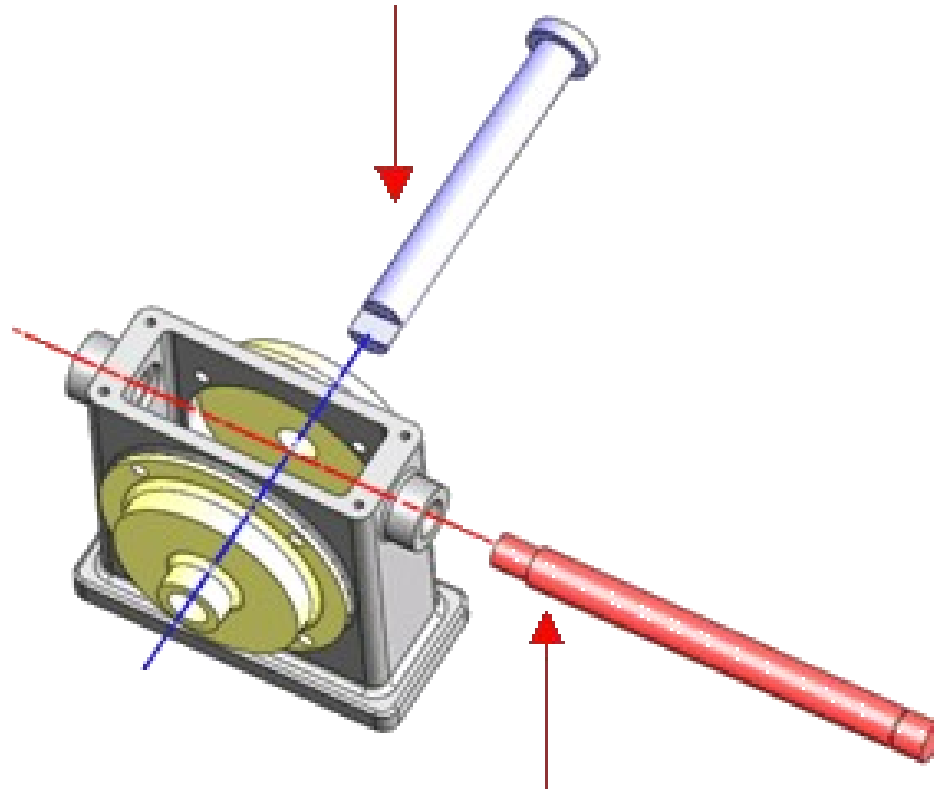
What is a Solid Model?

Solid Model is a three dimensional representation of the geometry that defines the shape and size of the object from inside as well as outside.



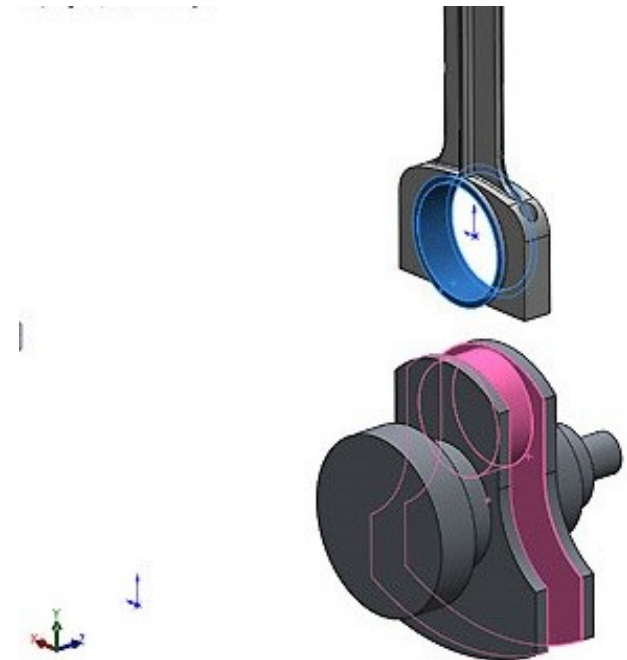
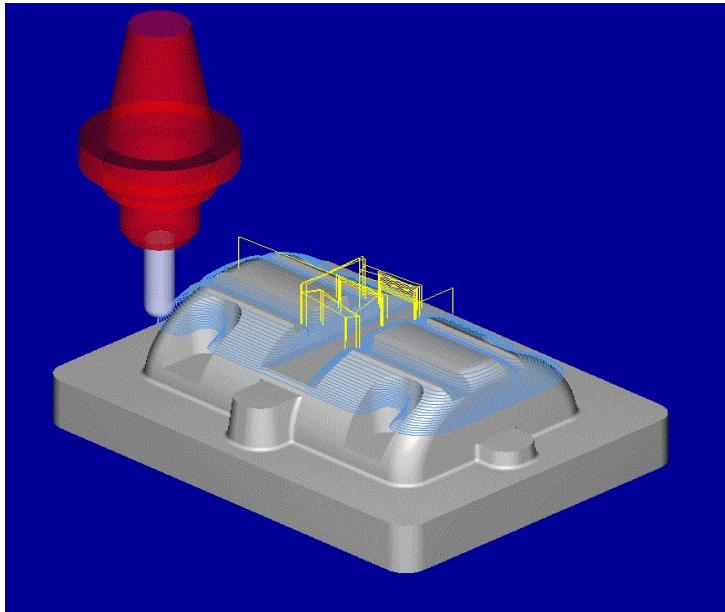
Why Solid Modeling?

- To visualise complicated parts and assembly with ease.
- To make accurate detailing in assembly which are difficult and time consuming.



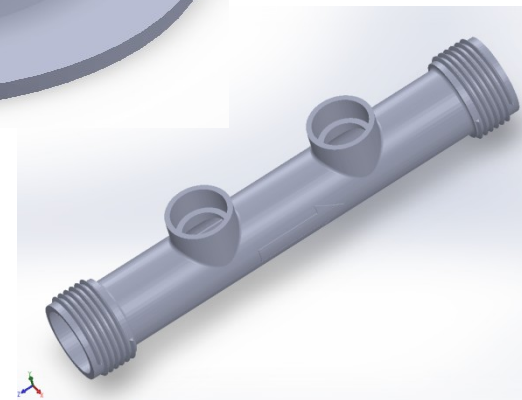
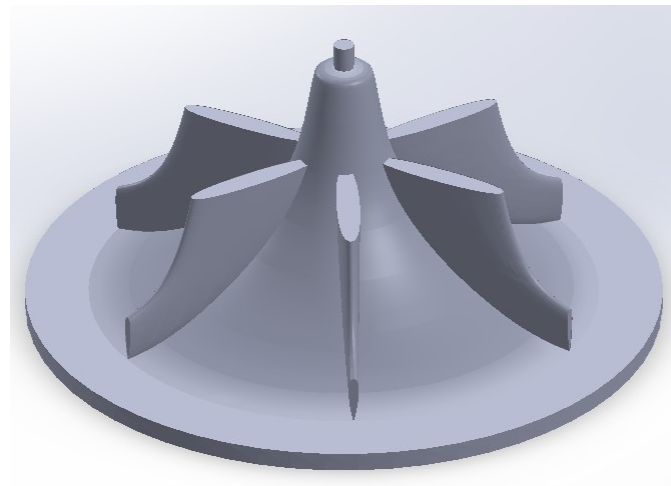
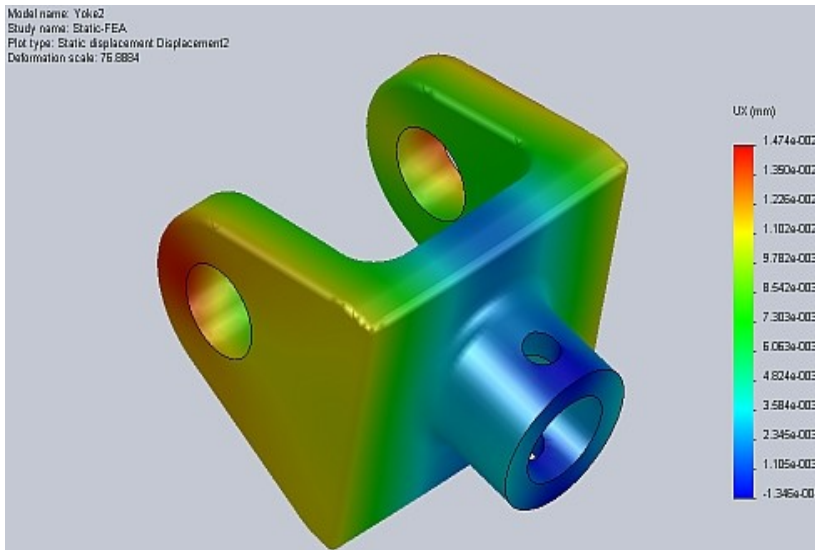
Why Solid Modeling?

- Tool path generation for manufacturing.
- To check interference. For example, checking the obstructions in the motion of moving parts.



Why Solid Modeling?

- Finite Element Analysis: stress-strain analysis, displacement analysis, vibration/frequency analysis, temperature distribution.
- Rapid prototyping and 3D printing.



SOLIDWORKS

SOLIDWORKS is a computer aided design software which is used to make parts, assemblies, and drawings.

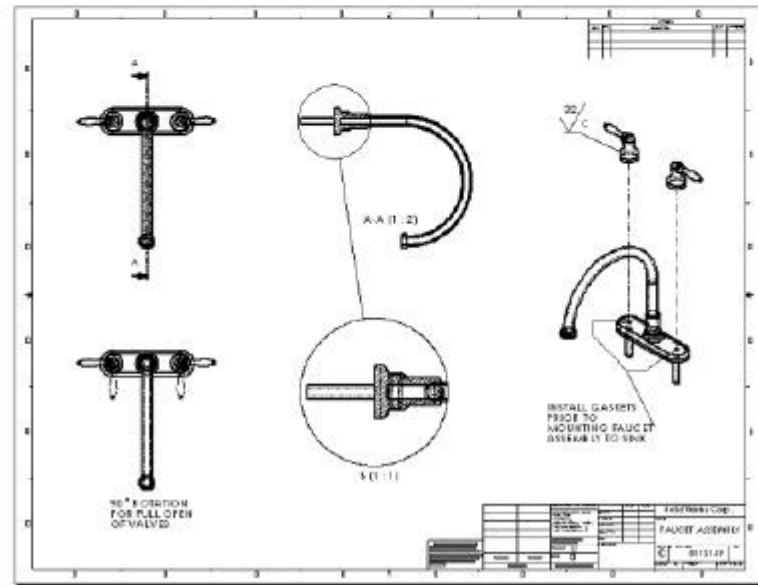


SOLIDWORKS 3D part



SOLIDWORKS 3D assembly

Type	Function	Data File
Part	3-D Object	*.SLDPRT
Assembly	Many Parts	*.SLDASM
Drawing	Multi-views	*.SLDDRW



SOLIDWORKS 2D drawing generated from 3D model

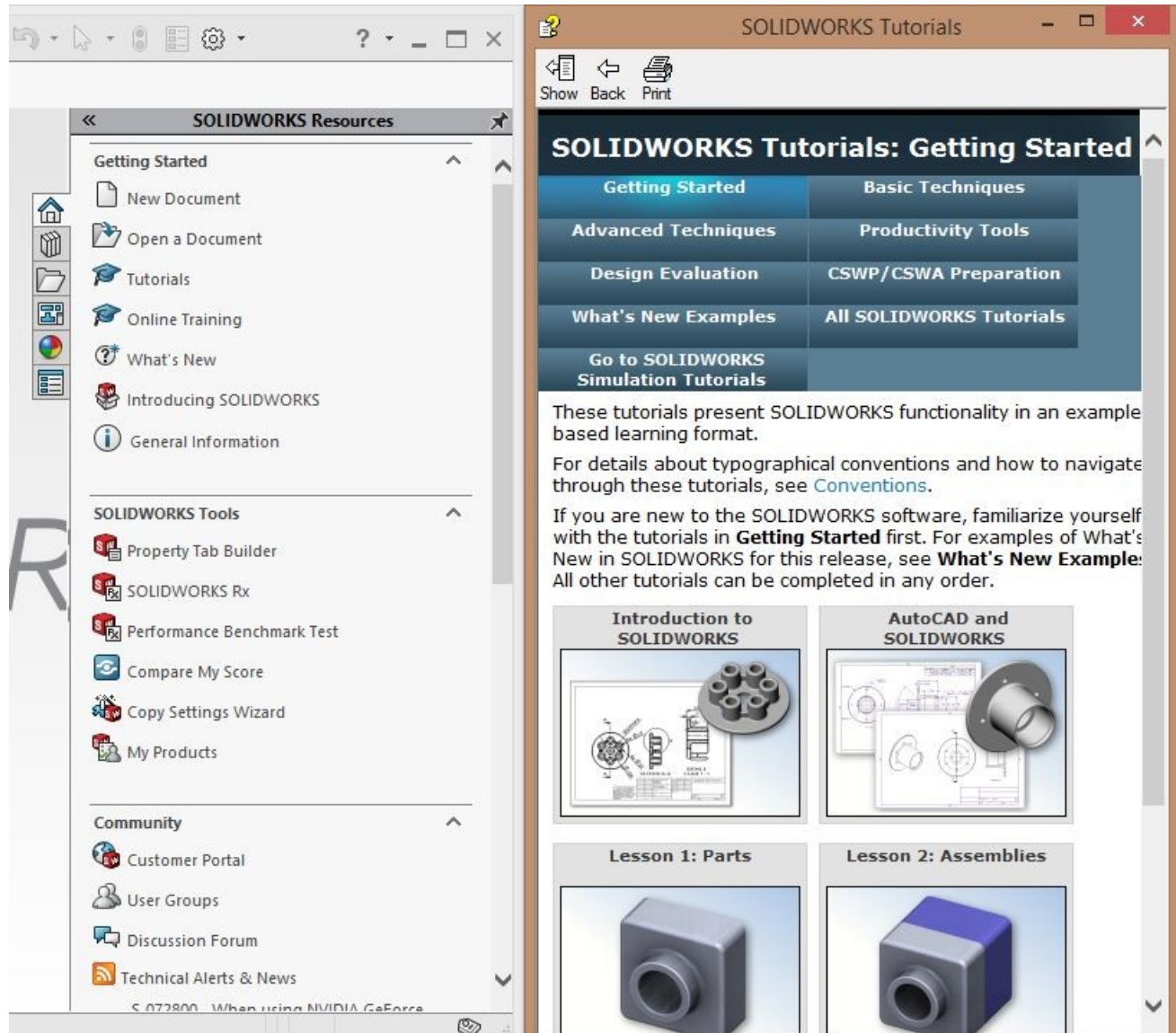


SOLIDWORKS: Starting up



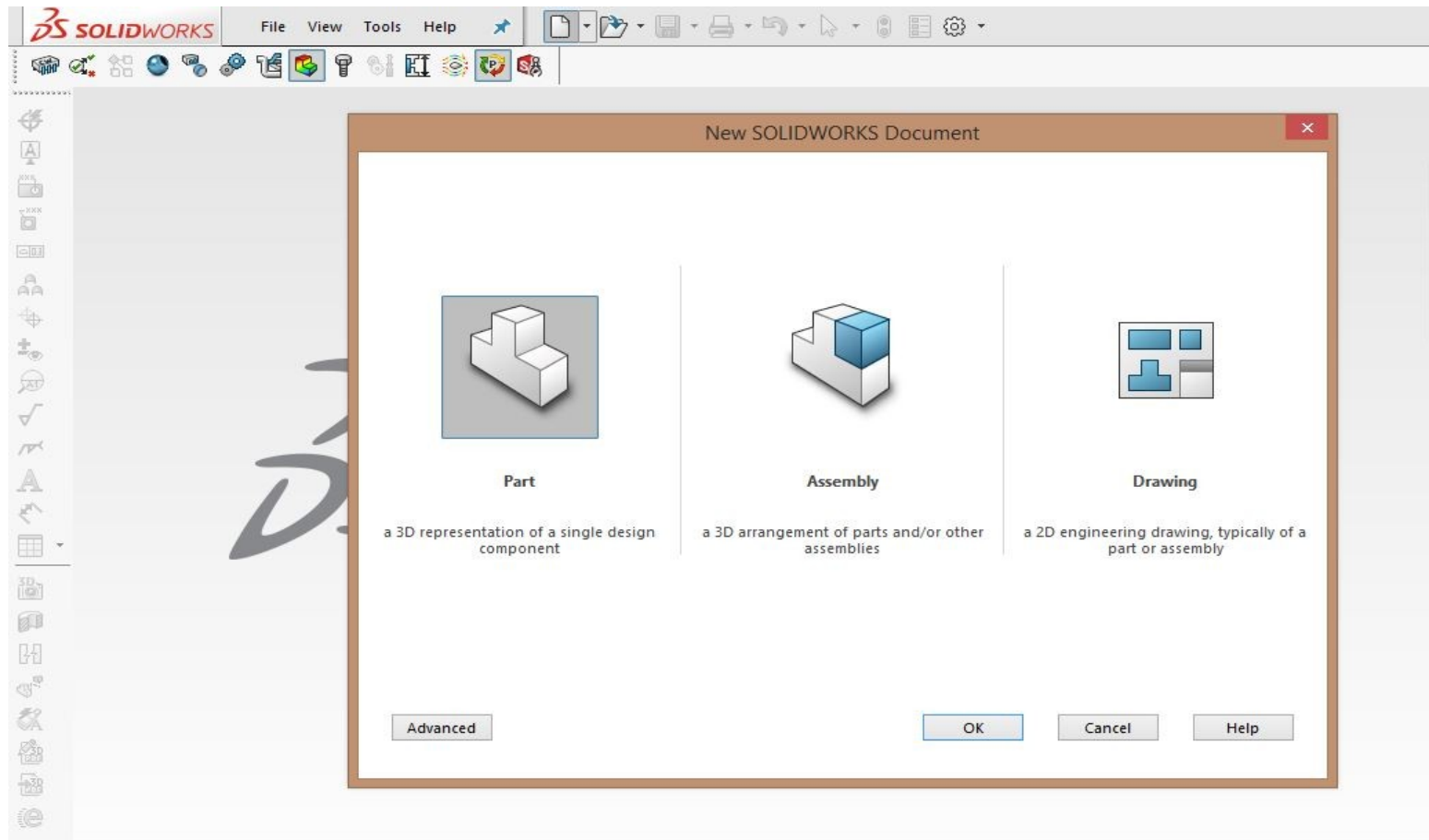
SOLIDWORKS: Help

Inbuilt
Solidworks
2016 tutorials



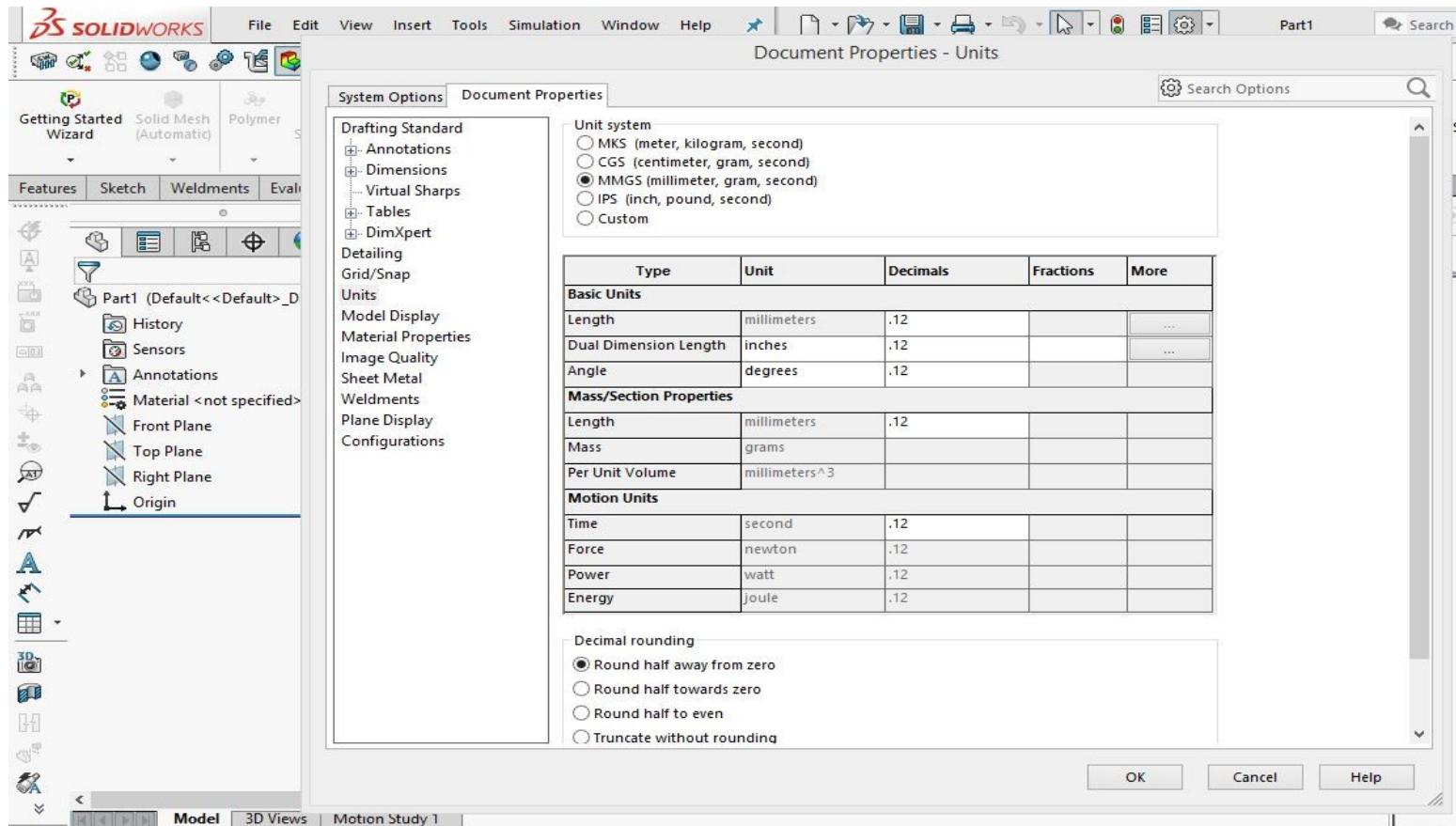
SOLIDWORKS: Part modeling

Menu: New  Part OR New Document  Part

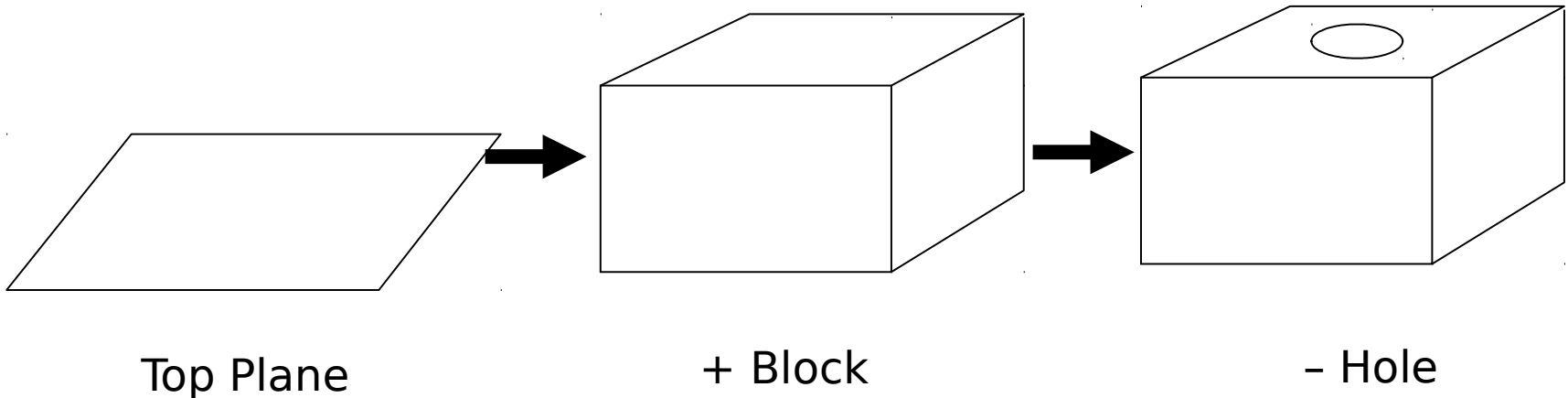


SOLIDWORKS: Setting up Units

Menu: Tools  Options  Document Properties  Units



SOLIDWORKS: Part creation



2D sketch

- Select a plane
- Sketch the geometry
- Dimension the geometry
- Use relation and dimensions to fully constrain the sketch (blue to black).

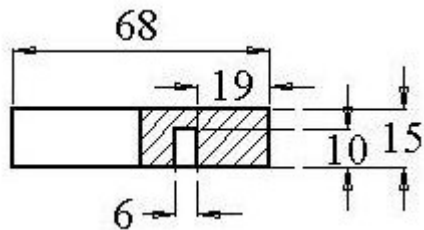
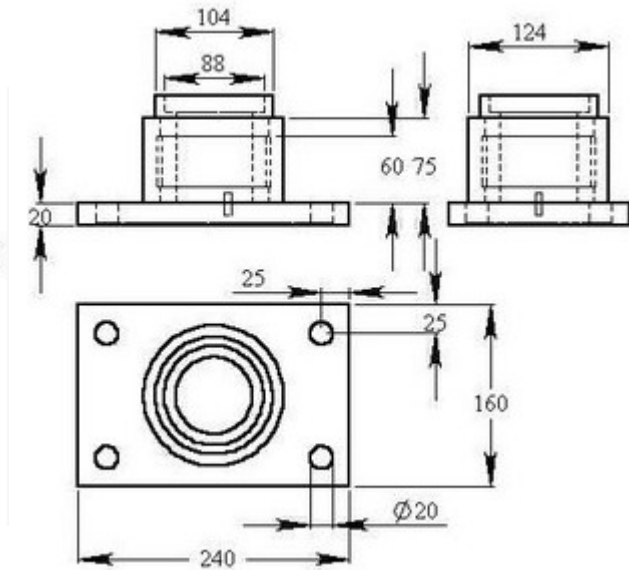
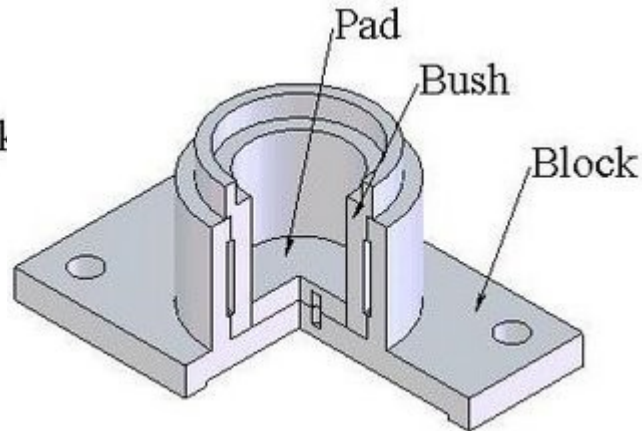
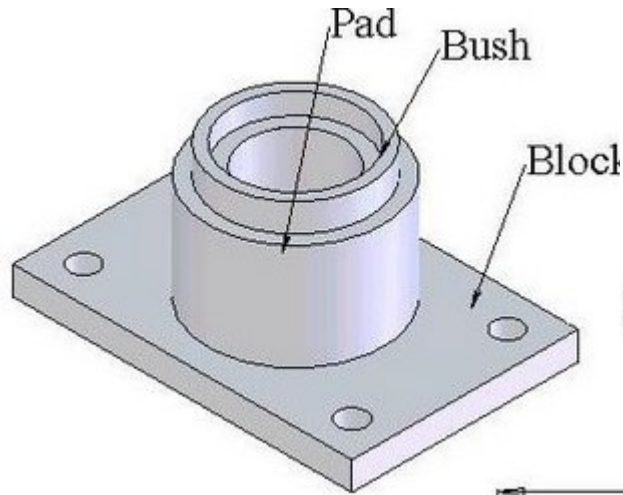
2D to 3D

- Select the sketch
- Select the feature to be created
- Define feature variables

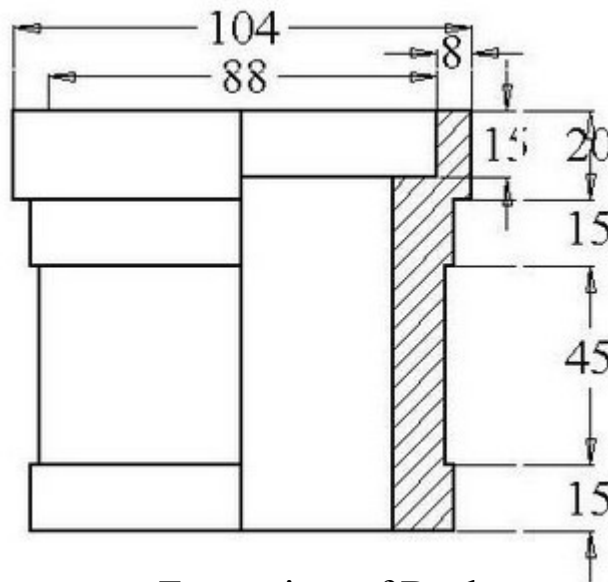


SOLIDWORKS: Parts & Assembly

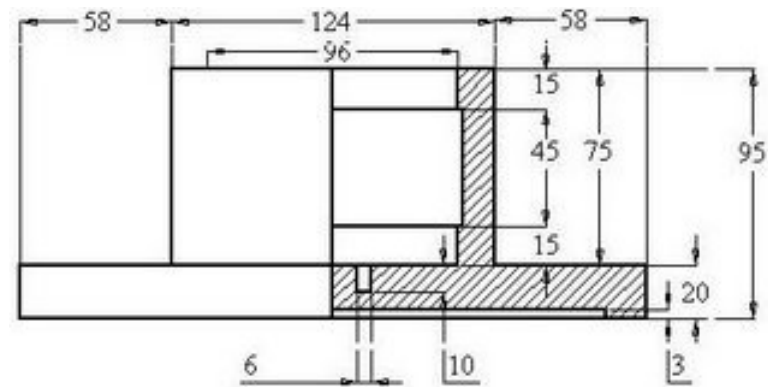
Foot Step Bearing



Front view of Pad



Front view of Bush



Front view of Block

