

FTC CAD/3D Printing EnginEERING Drawings

BY ERROR 404: TEAM NAME NOT FOUND

I have an object....

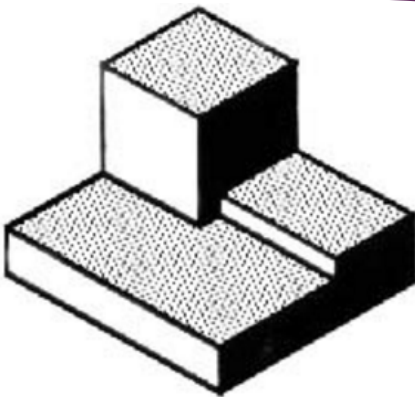


Figure 1 - A Machined Block.

What info is important to describe this machined block?

- Dimensions
- Materials
- Finish (ie: polished, rough,...)
- Coloring
- Special instructions (welding, glue,...)

Isometric view

- ▶ Advantages of an isometric view:
 - ▶ Can show a lot of info on one drawing.
 - ▶ Easier for readers to visualize the object
- ▶ Object's vertical lines are drawn vertically, and the horizontal lines in the width and depth planes are shown at 30 degrees to the horizontal
- ▶ The lines parallel to the three axes are at their true (scale) lengths.
- ▶ Lines that are not parallel to these axes will not be of their true length.
- ▶ Disadvantages:
 - ▶ Details on back side can't be clearly seen

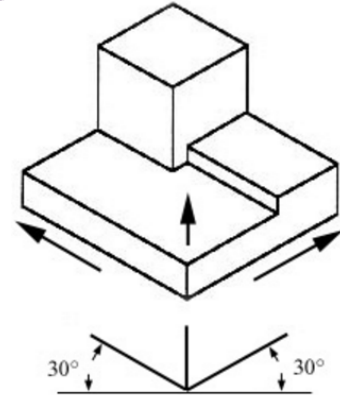
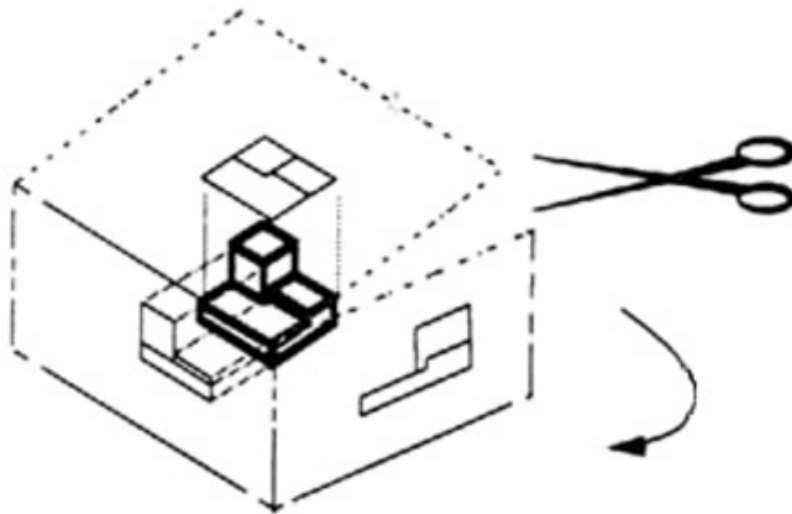


Figure 2 - An Isometric Drawing.

Orthographic or Multiview Drawing



Orthographic or Multiview Drawing

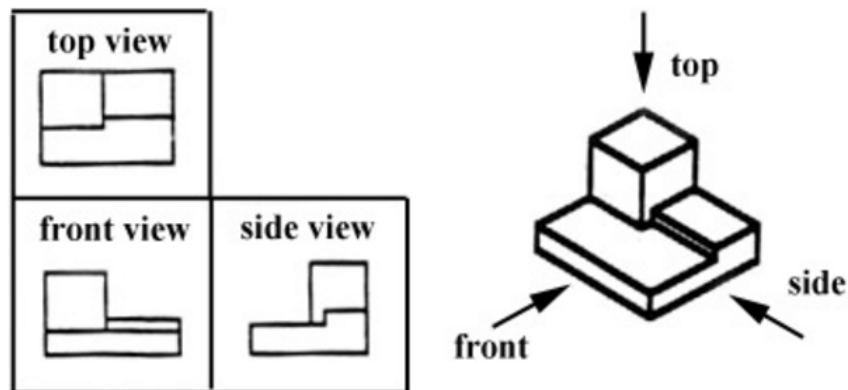
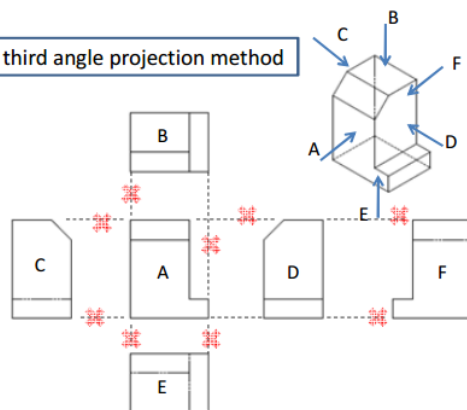


Figure 5 - A multiview drawing and its explanation.

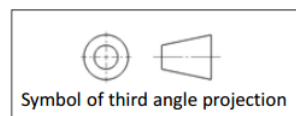
Views

- Orthographic projection

third angle projection method



A: front view (principal view)
 B: top view
 C: left side view
 D: right side view
 E: bottom view
 F: rear view



Orthographic or Multiview Drawings

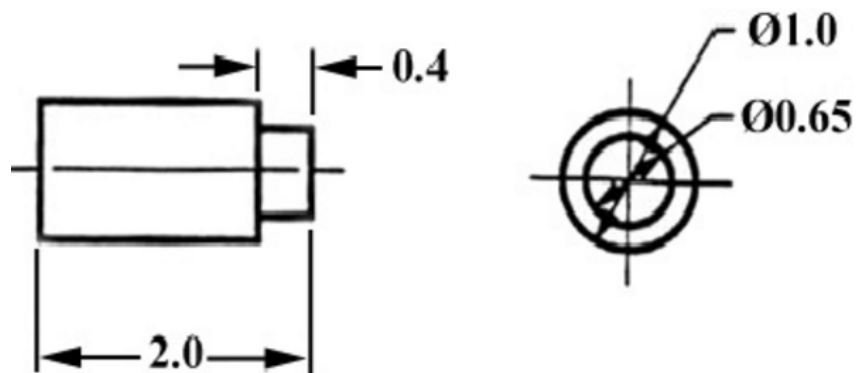


Figure 6 - An object needing only two orthogonal views.

Dimensioning

Some basic rules:

- Show all needed dimensions.
- No duplicate dimensions.
- Avoid crossing dimension lines.
- Avoid having dimension lines ON your object where possible.
- DON'T FORGET YOUR UNITS!

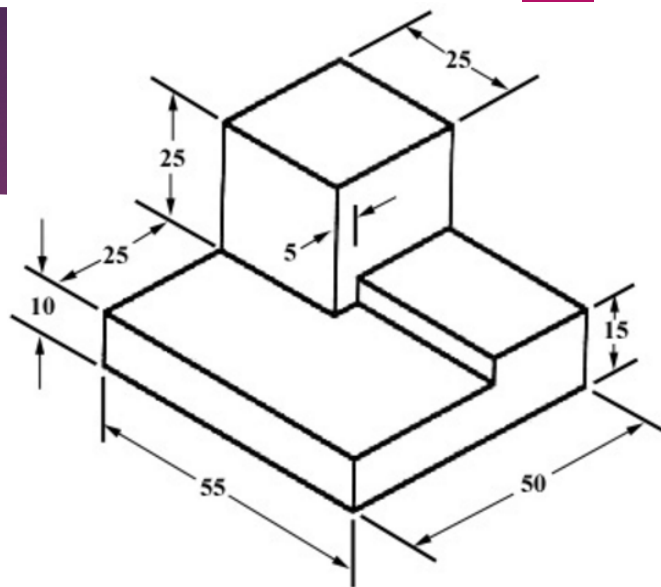
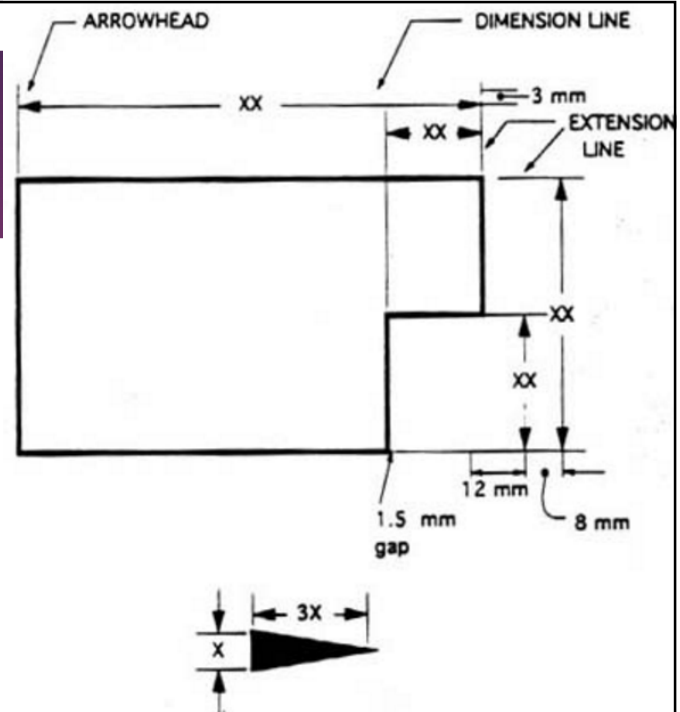
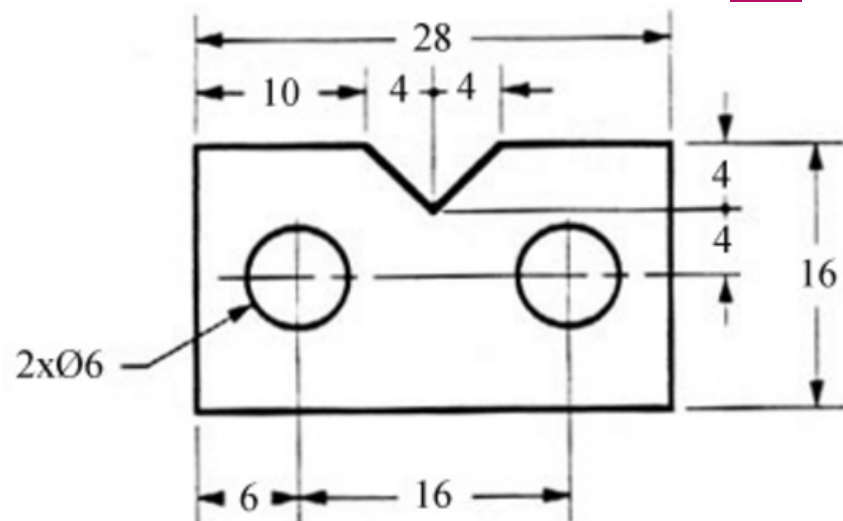


Figure 7 - An isometric view with dimensions.

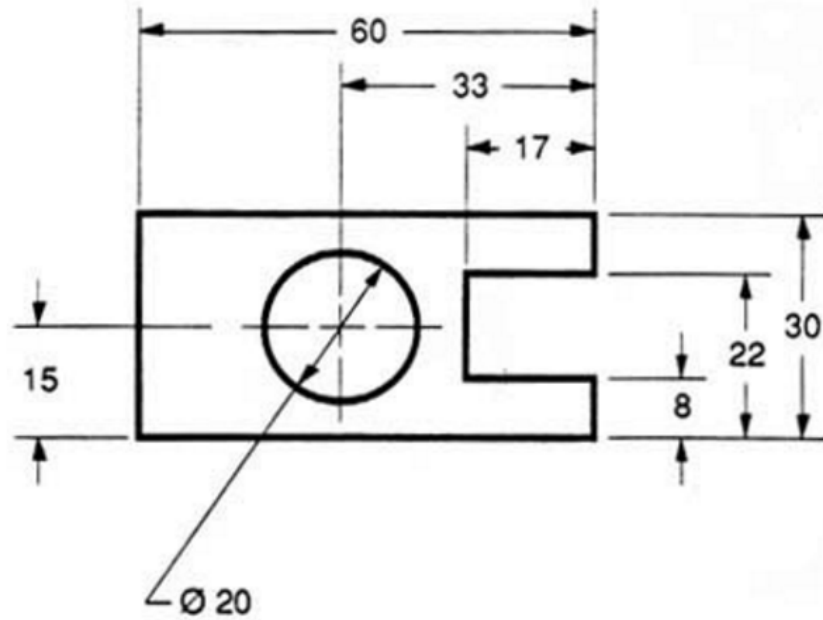
Dimensioning



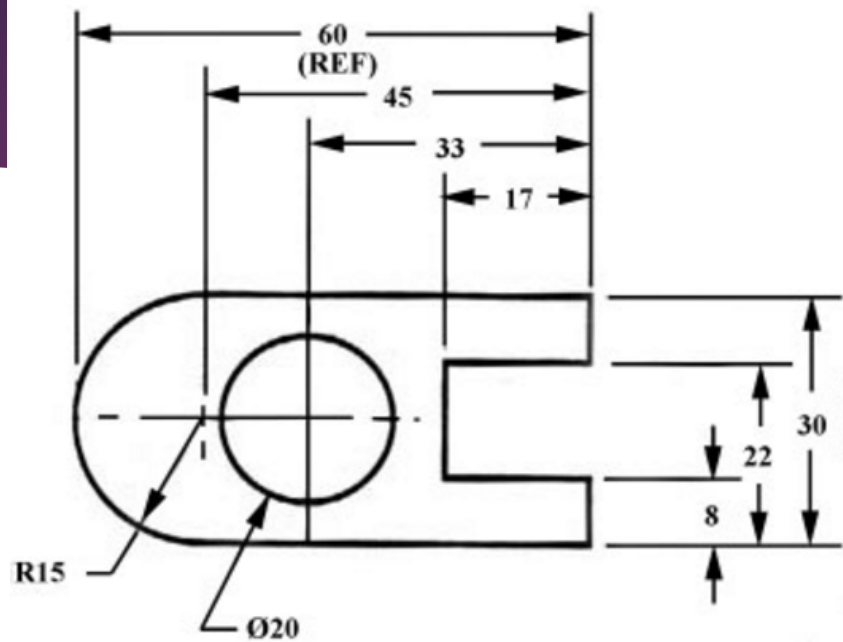
Example

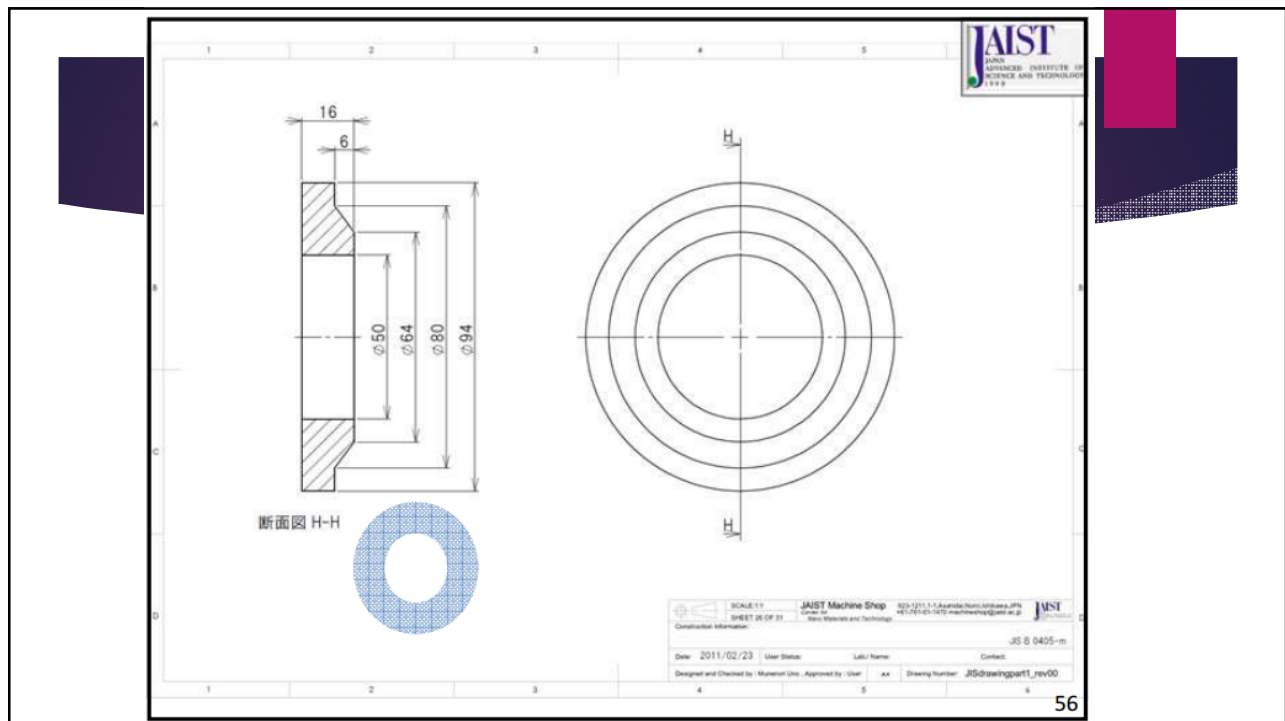
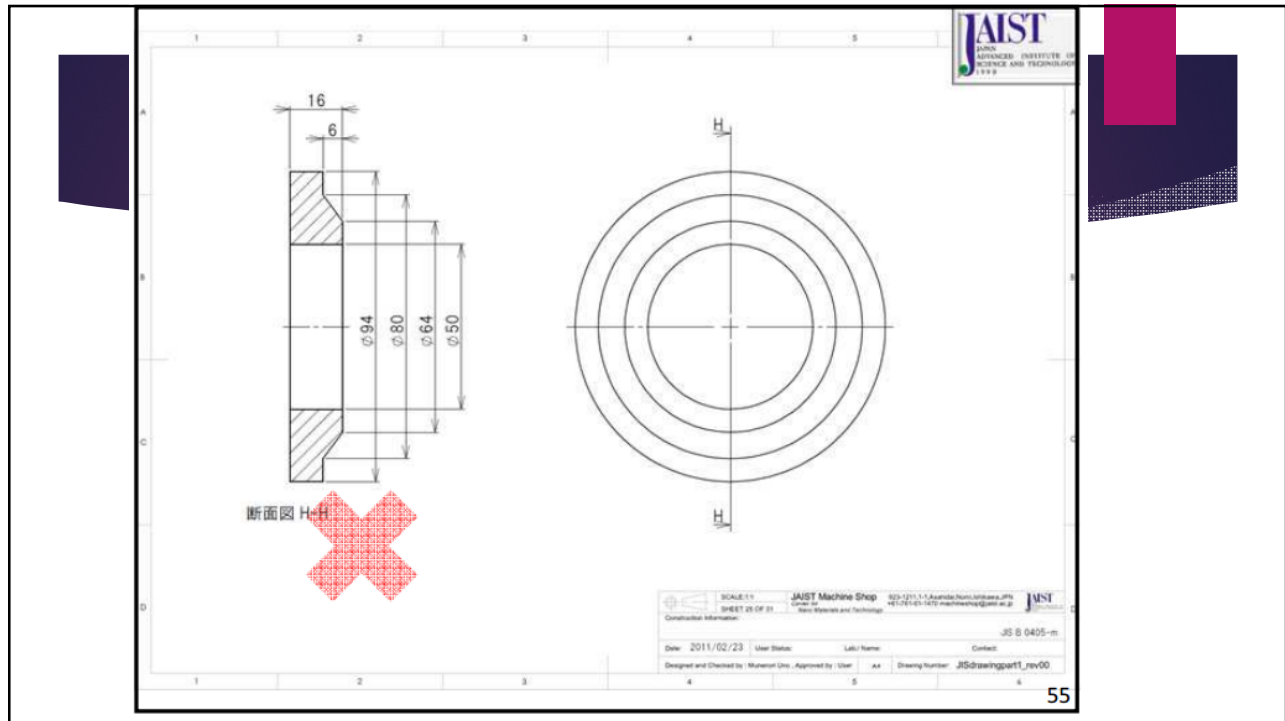


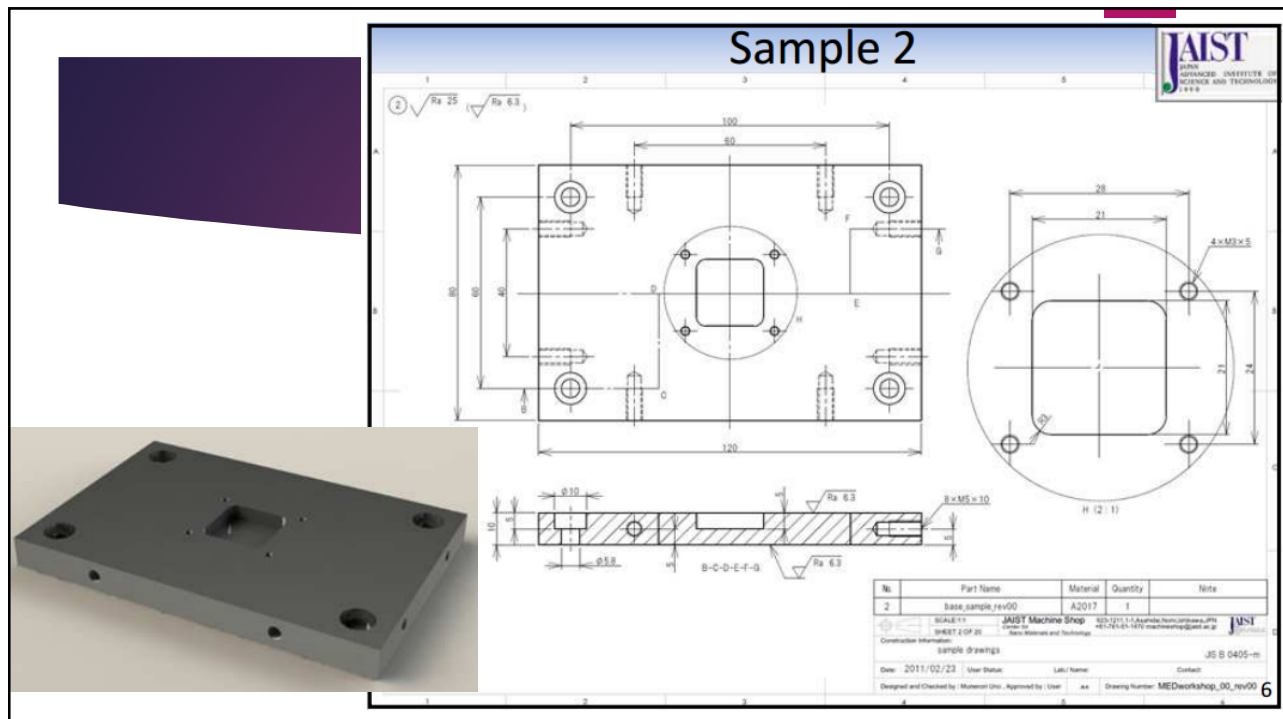
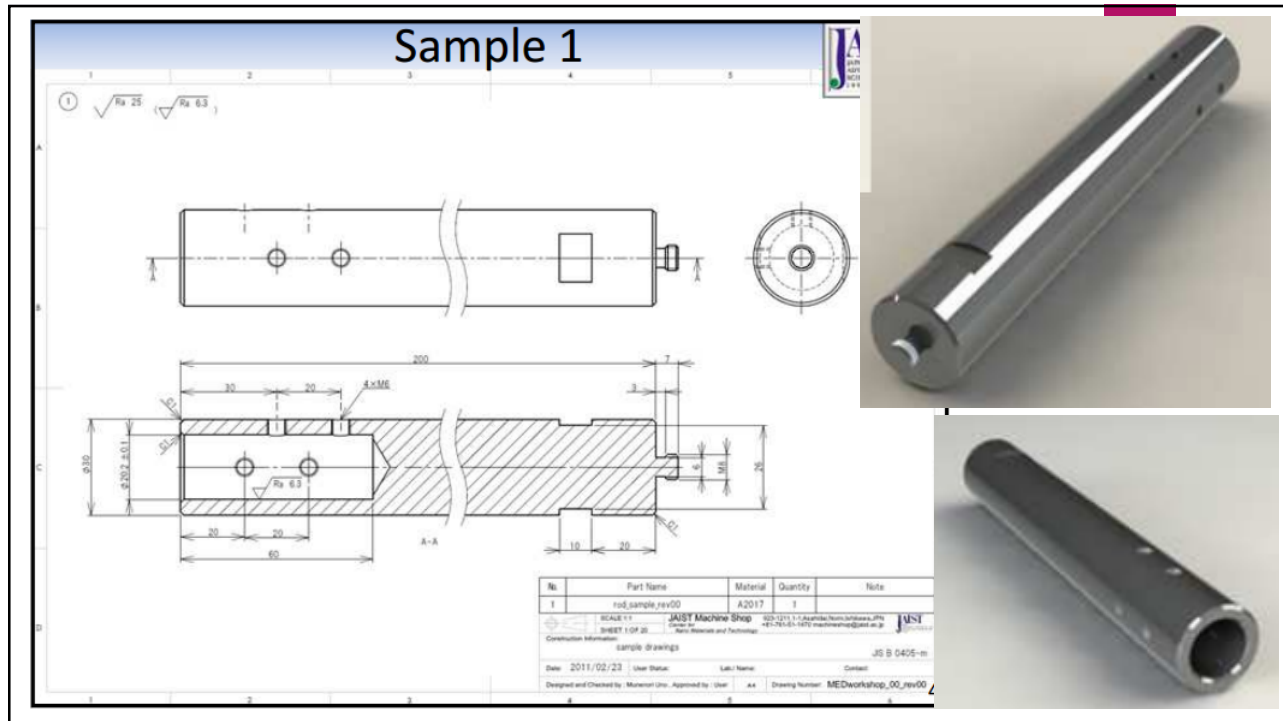
Example



Example







Autodesk Inventor

Links

- ▶ http://ocw.mit.edu/courses/mechanical-engineering/2-007-design-and-manufacturing-i-spring-2009/related-resources/drawing_and_sketching/
- ▶ http://www.jaist.ac.jp/nmcenter/Machine_Shop/mshp/pdf/MDWpo_E.pdf
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