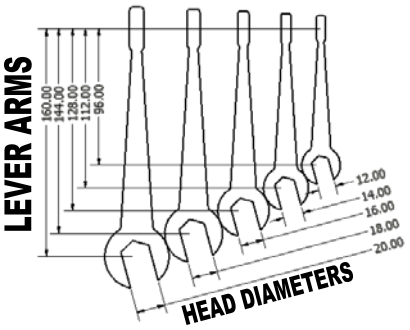
SE101 Engineering Graphics and Design
Department of Industrial and Enterprise Systems Engineering
College of Engineering – UIUC

MA8 Instructions – Part Families

Use Inventor iParts to create a combination wrench part family. Hand in a scaled front view drawing of the assembly based on the specifications below:



- **5 wrenches** with head diameters "D" ranging from 12 mm to 20 mm, incrementing by 2 mm. Show these dimensions in drawing.
- Each wrench head thickness is ½ its diameter.
- The distance between the centers of two opposite wrench heads (lever arms) should be 8·D. Also show these dimensions in the plot.
- The opposite wrench head features should be on perpendicular sketch planes, and joined by a loft to get the handle.
- All the edges of the handle should be rounded (wrench should be comfortable to hold).

Once you've modeled a scalable wrench, beginning with defining "D" as a parameter and having **ALL** dimensions in terms of "D", convert it to an ***iPart*** factory by varying value of "D" and then begin the assembly.

One Build Strategy for wrench part (of many)

- Create a parameter "D" to use in dimensions and features.
- Sketch ends (dimensioned in terms of this parameter "D") with lines to define new work planes intersecting the ends for use in loft sketches; extrude. Circular pattern the hexagon cut to get the dodecagram on one end.
- Start new sketches on new work planes, for each: slice graphics (F7), project cut edges, dimension offset loops for loft end sketches; loft together.
- Delete faces (✓ heal) to open wrench head.
- Add scalable fillets.
- ★ **Frequently** change the defining parameter "D" to make sure that everything scales appropriately.