San Jose State University

E10 – Introduction to Engineering

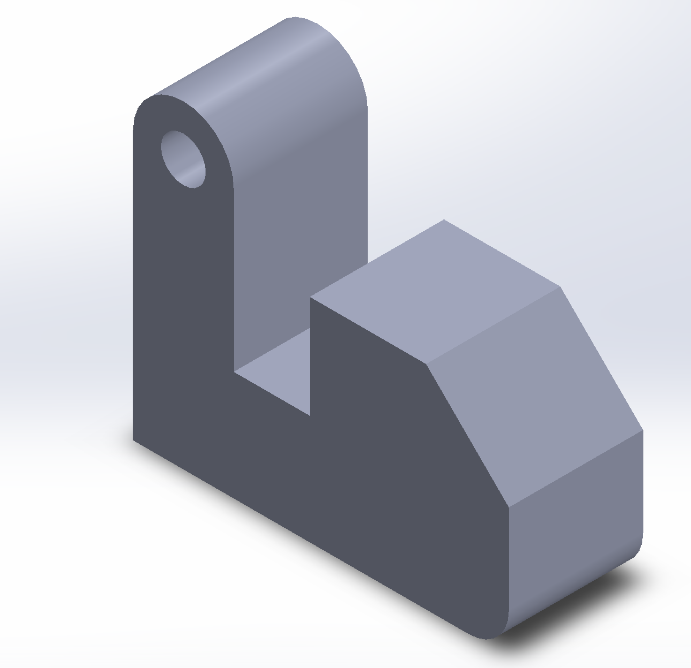
Introduction to 3D modeling, Lab. Exercise

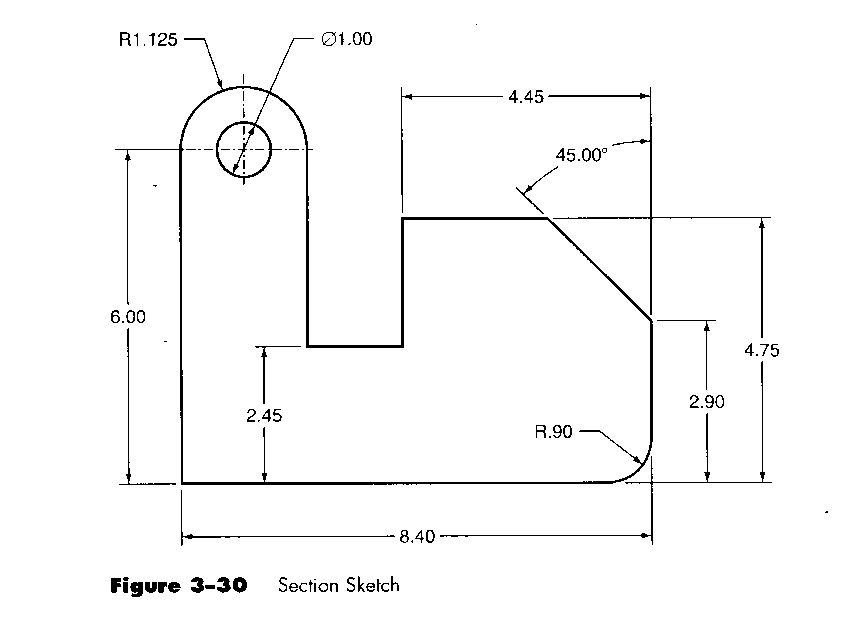
**Volume will be used to grade all models**

**Volume within ± 3% Full credit**

**Volume over ± 3% 1 points off**

**1 point off for every missing features (holes, rounds, ….)**

**Exercise 1 (5 pts.)** – Reproduce the object shown below. Sketch the profile using the dimensions given, then ***Extrude*** to a depth of 3.0 inch.

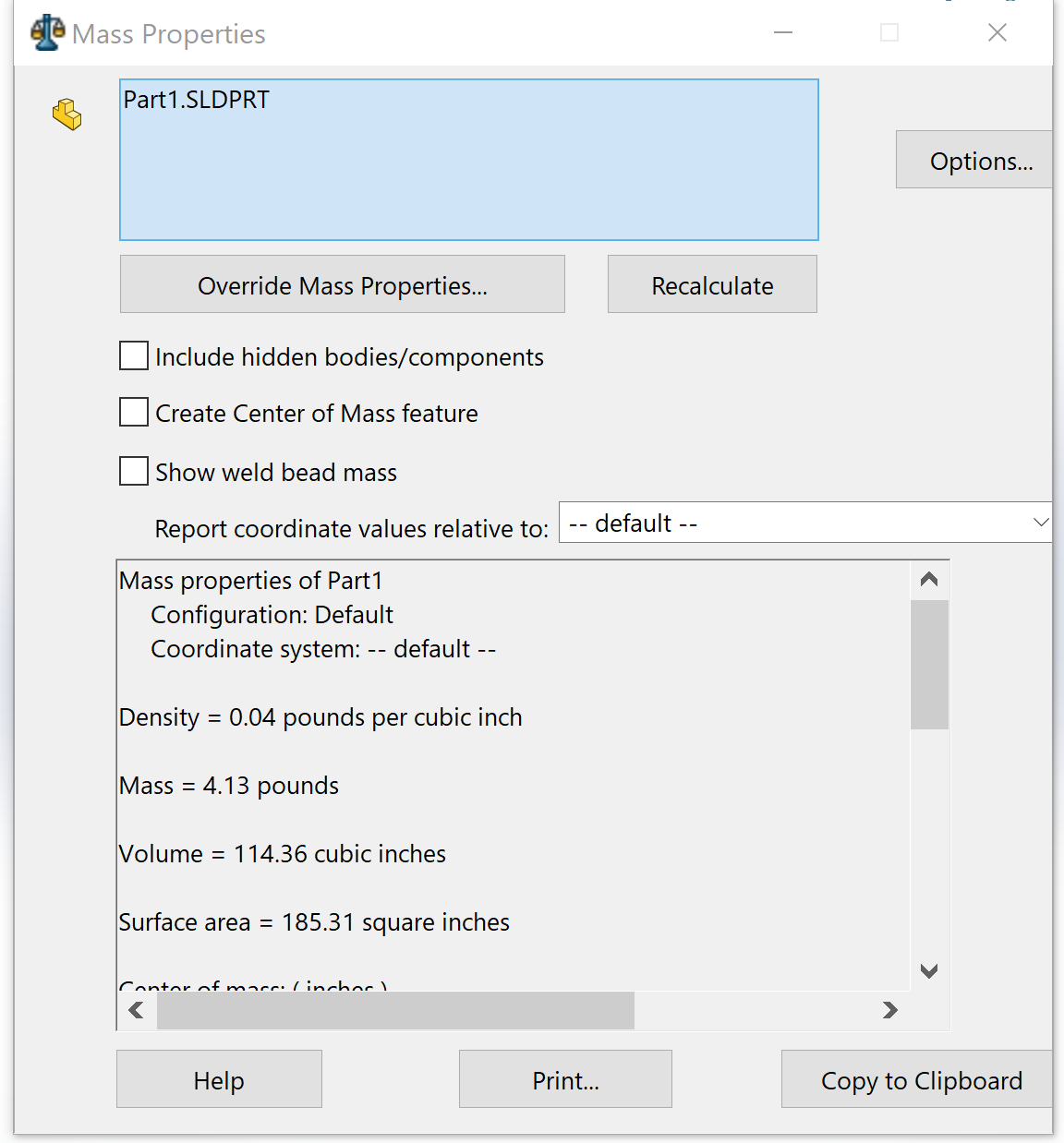


Profile (2D – dimensions in inches)

3D Model

**45o**

Profile (2D – dimensions in inches)



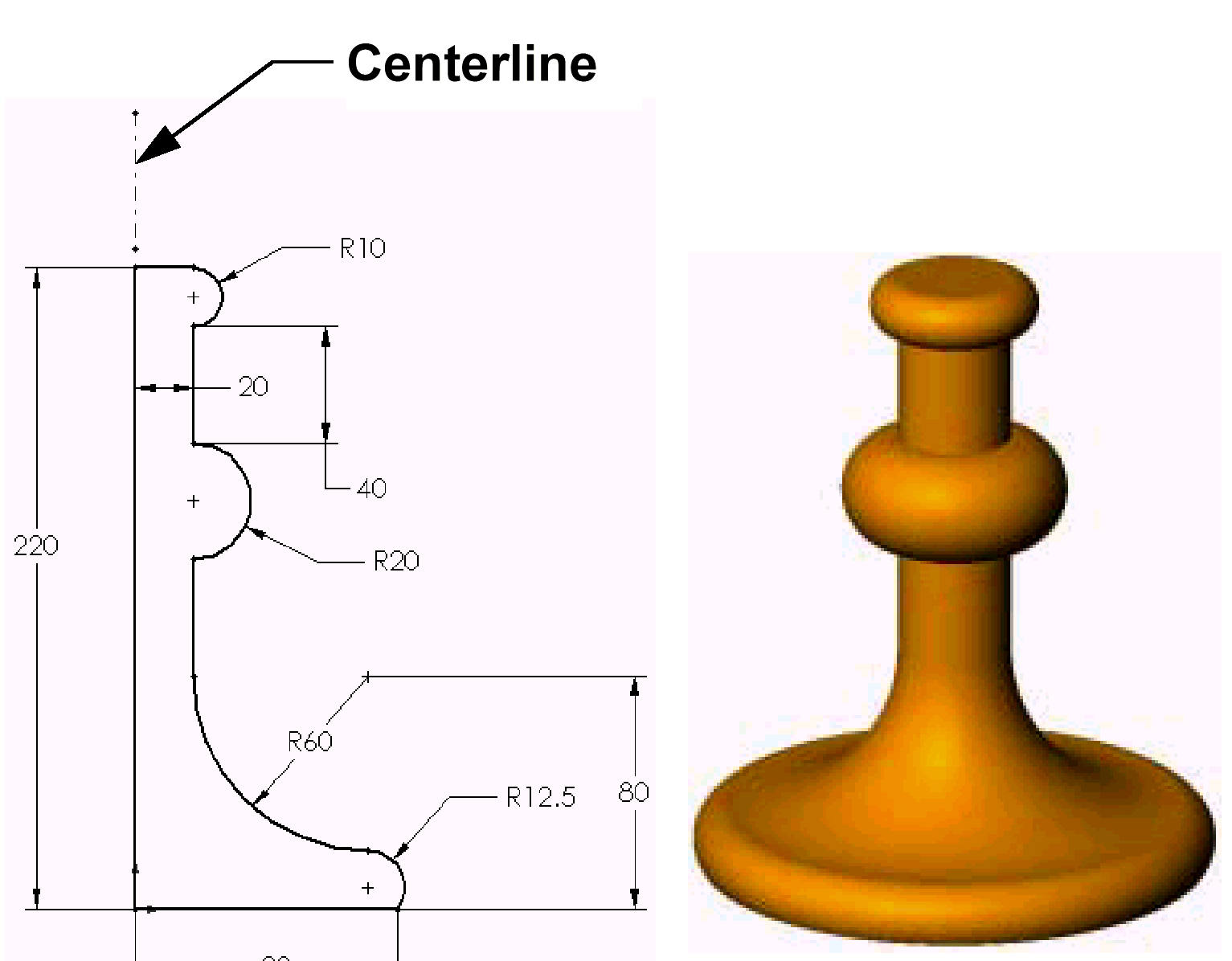
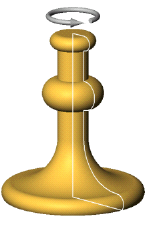
Volume

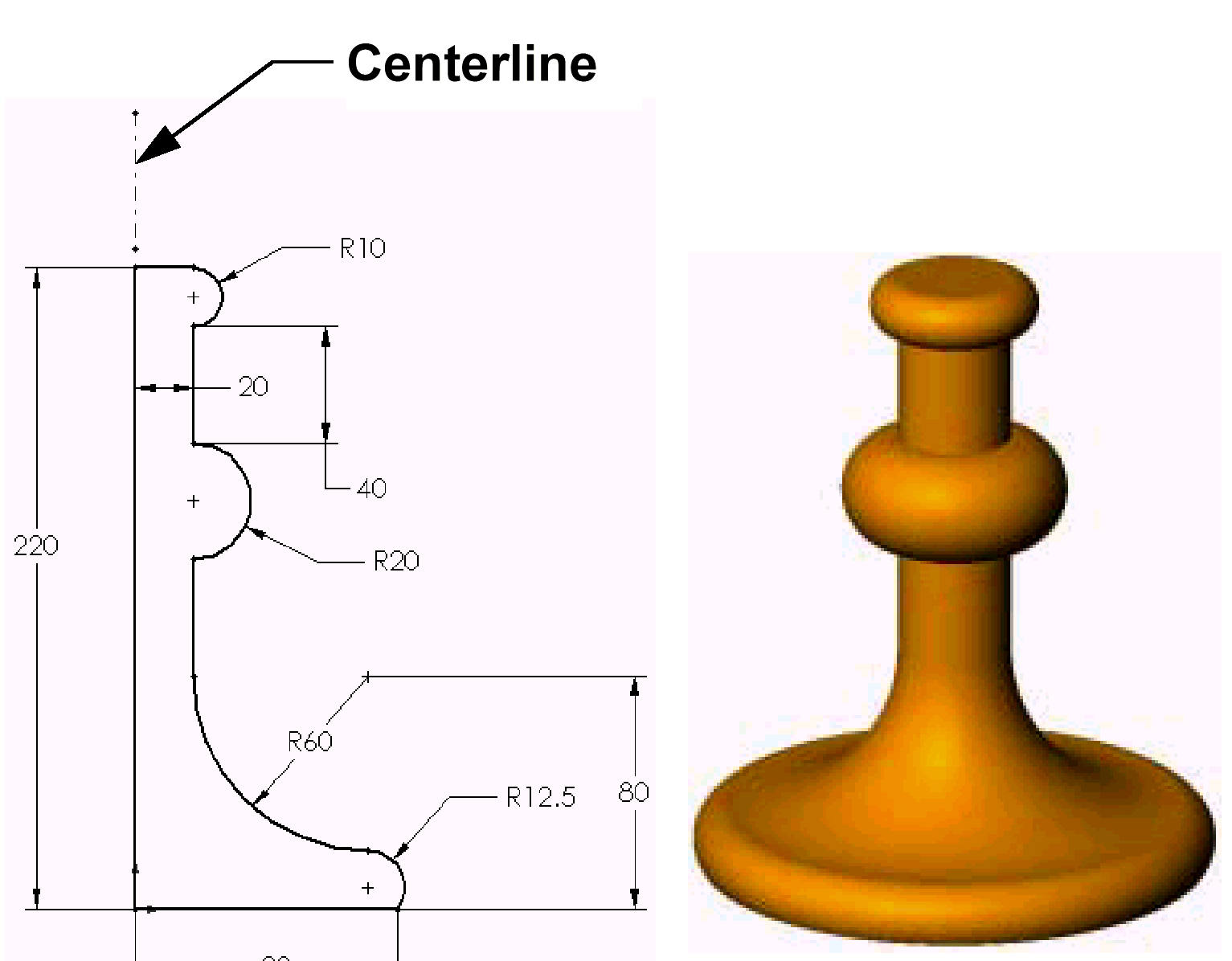
Profile (2D – dimensions in inches)

Profile (2D – dimensions in inches)

Properties Window

**Exercise 2 (5 pts.)** - Reproduce the object shown below. Sketch the profile using the dimensions (mm) given, then use the ***Revolve*** command (360o) to create the object.





90

Profile (2D – dimensions in mm)

3D solid model

**Exercise 3 (5 pts.)** – Create the 3D solid model of the paper clip shown below. The dimensions are in mm. Use

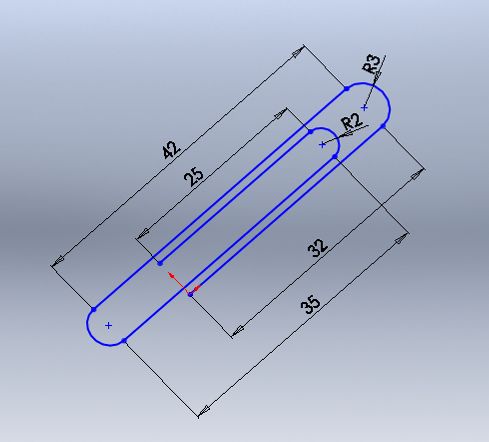
the ***Sweep*** command.

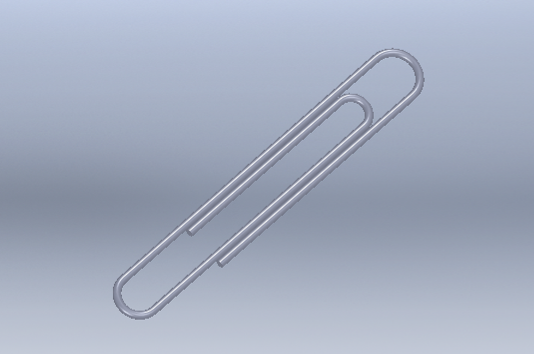
Profile (2D – dimensions in mm)

Paper clip diameter, d = 1 mm

R2 = radius of 2 mm

R3 = radius of 3 mm

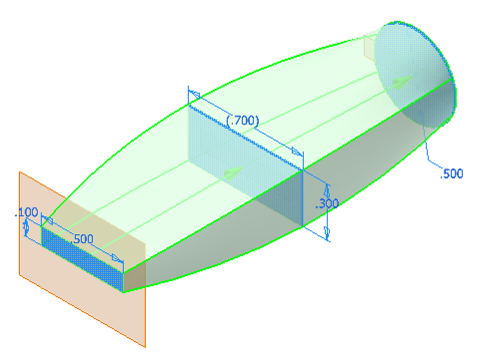




3D solid model

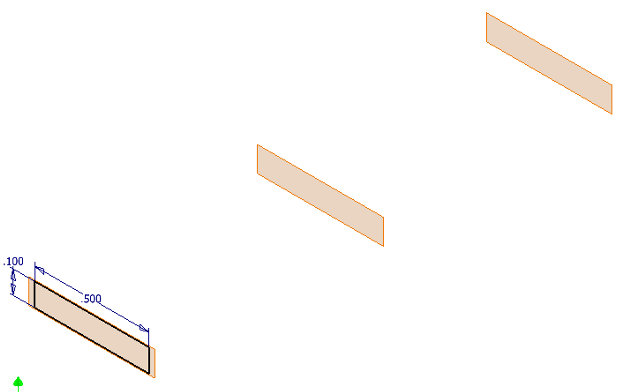
**Exercise 4 (7 pts.)** – You are asked to design the tip of a straight screw driver. The desired shape and dimensions are provided below. Sketch the three profiles on three sketch planes, use the front plane for the tip profile (rectangle 0.5 in by 0.1 in) and create two reference planes 1.0 in. apart. Sketch the other two profiles and use the ***Loft*** command to create the front section of the screw driver.

**all dimensions in inches**



1.000

1.000

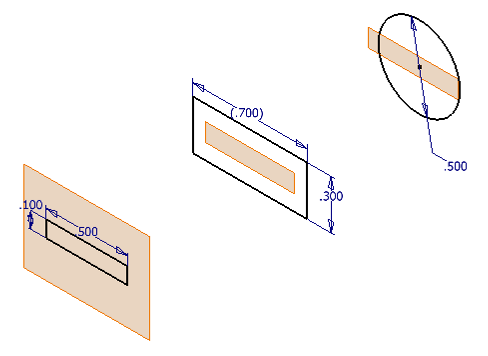


First profile

Front plane

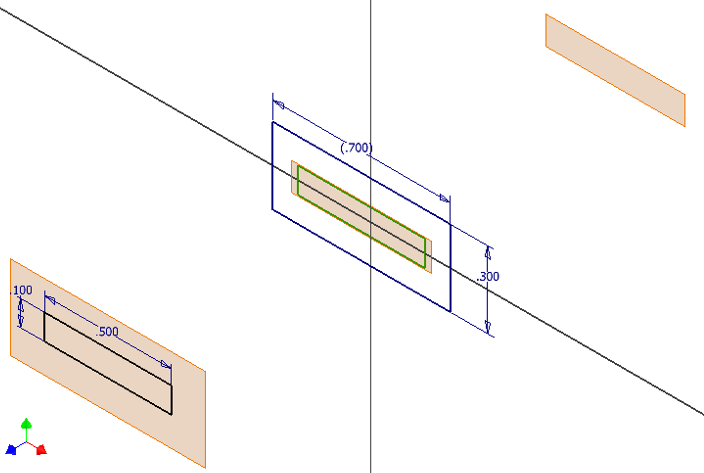
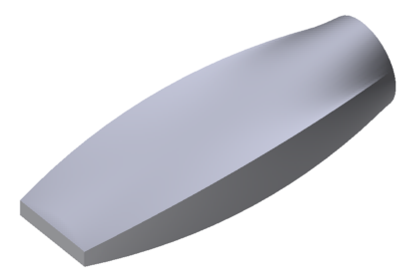
Reference planes

Straight line passing through the centers of all profiles



Second profile

Third profile



Second profile

**3D model**