

# Stepped Shaft - Mesh

Authors: Rajesh Bhaskaran and Vincent Prantil

[Problem Specification](#)

[1. Pre-Analysis & Start-Up](#)

[2. Geometry](#)

[3. Mesh](#)

[4. Physics Setup](#)

[5. Numerical Solution](#)

[6. Numerical Results](#)

[7. Verification & Validation](#)

[Exercises](#)

[Comments](#)

## Mesh

The following video shows how to create a mesh for the 2D geometry. We stick with the default "Q8" elements (eight nodes per element including mid-side nodes). The element edge sizes are controlled by inserting a "face sizing".

We improve the mesh obtained above by refining the mesh in the transition region between the larger and smaller cross-sections where stress concentration is expected. We do so by:

- Decreasing the *Curvature Normal Angle* which sets the maximum allowable angle that one element edge is allowed to span
- Decreasing the *Min Size* which sets the minimum allowable element edge size

[Go to Step 4: Physics Setup](#)

[Go to all ANSYS Learning Modules](#)