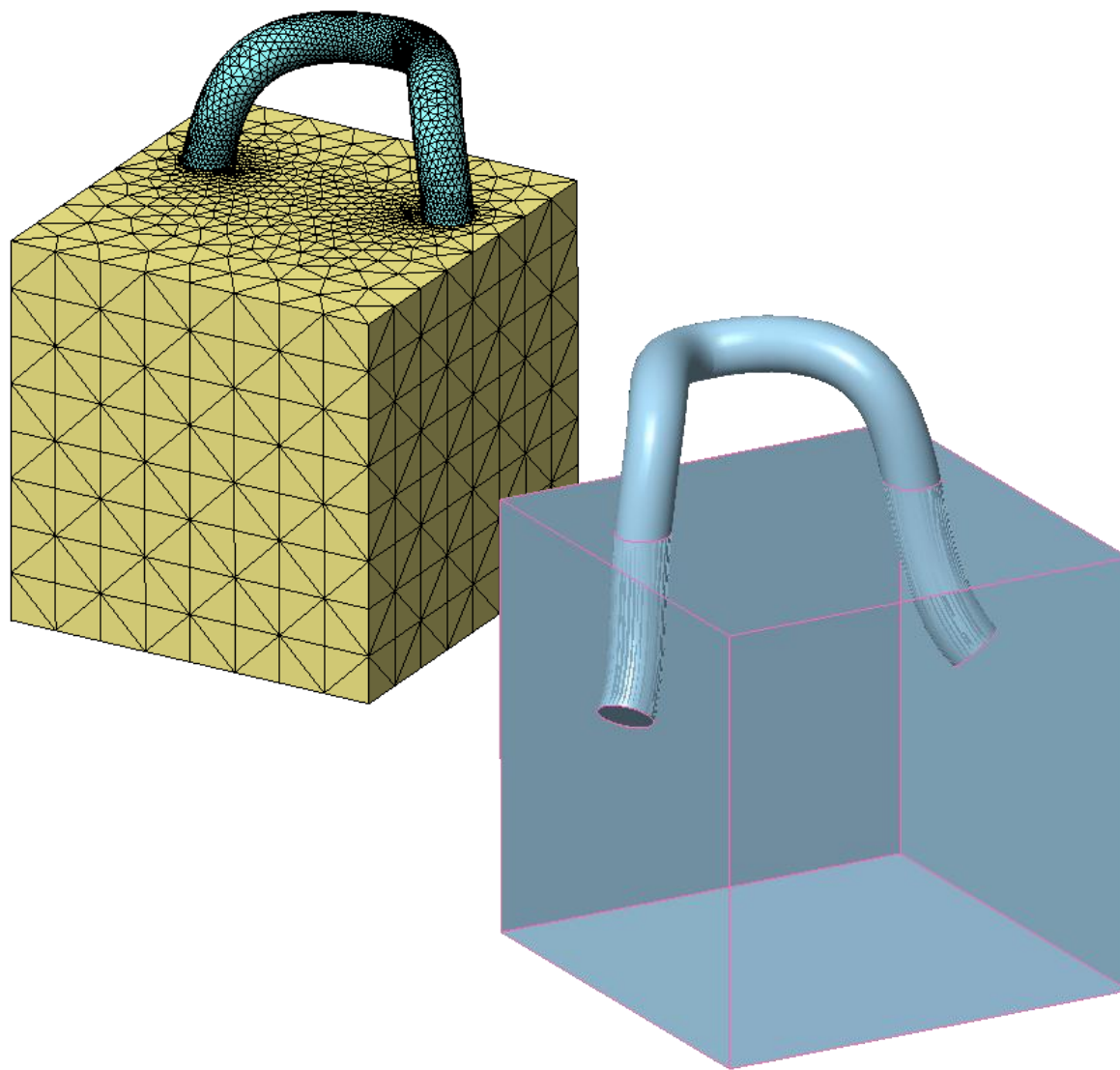
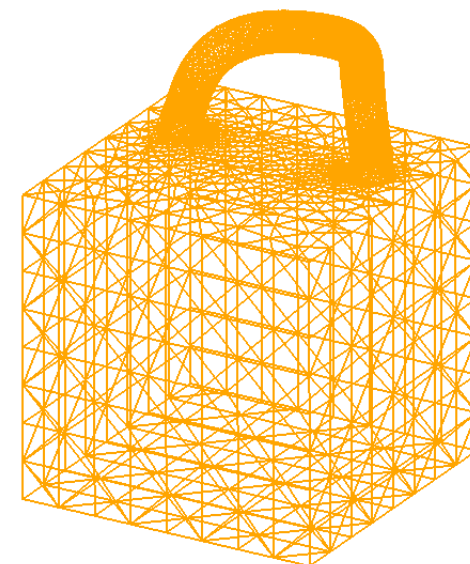


## TP-2. Embedded steel handle in a concrete block

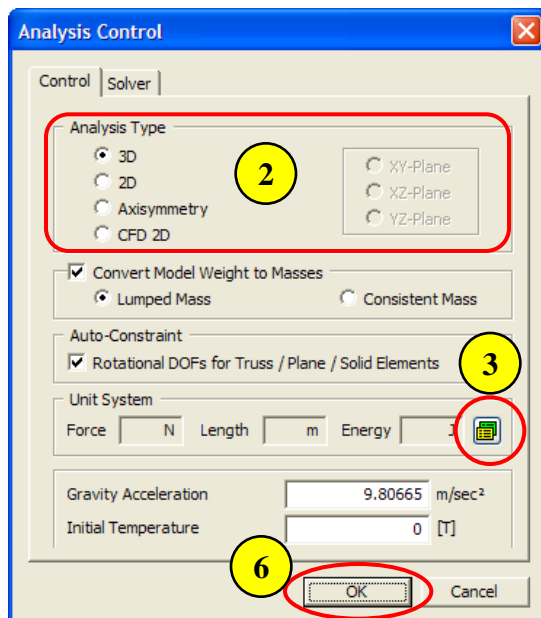



### Overview

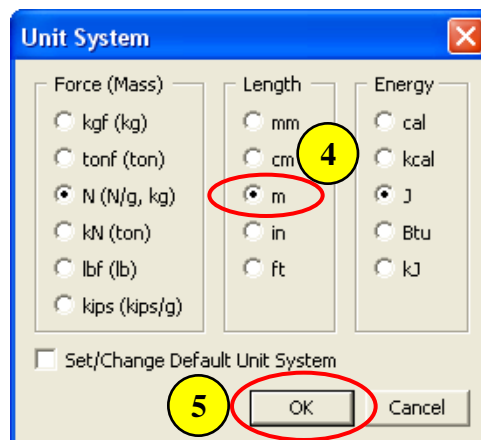
- Modeling an embedded steel handle in a concrete block
- Geometry
  - Sweep
  - Mirror
  - Fuse
  - Cut
- Mesh
  - Auto Mesh
  - Mesh Check



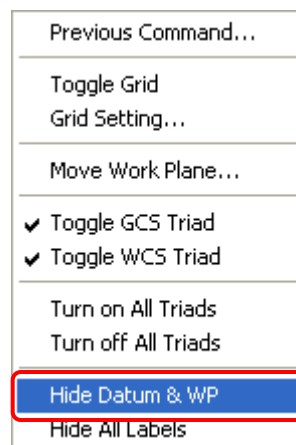
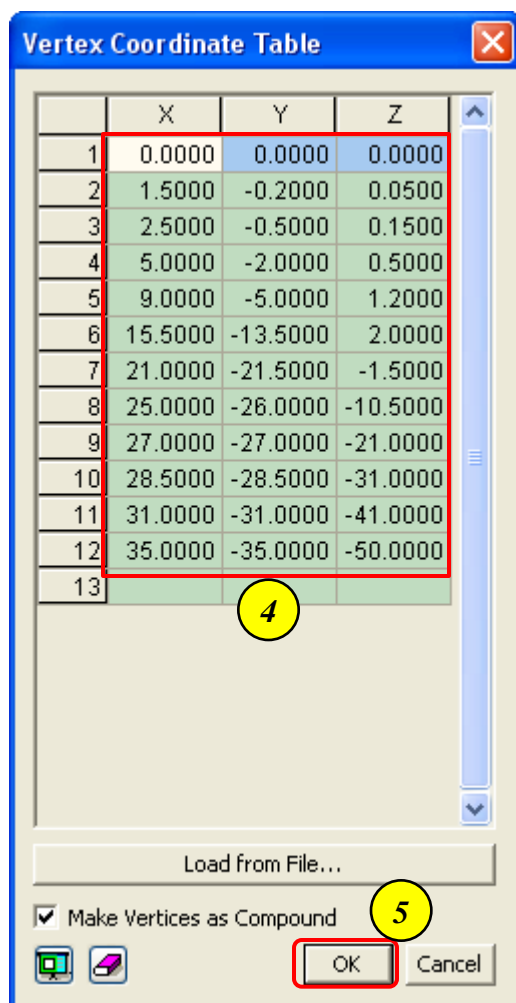
## Step 1.



1. Analysis > Analysis Control – Control tab
2. Analysis Type : 3D
3. Click  Button (Unit System)
4. Length : m
5. Click on [OK] Button
6. Click on [OK] Button



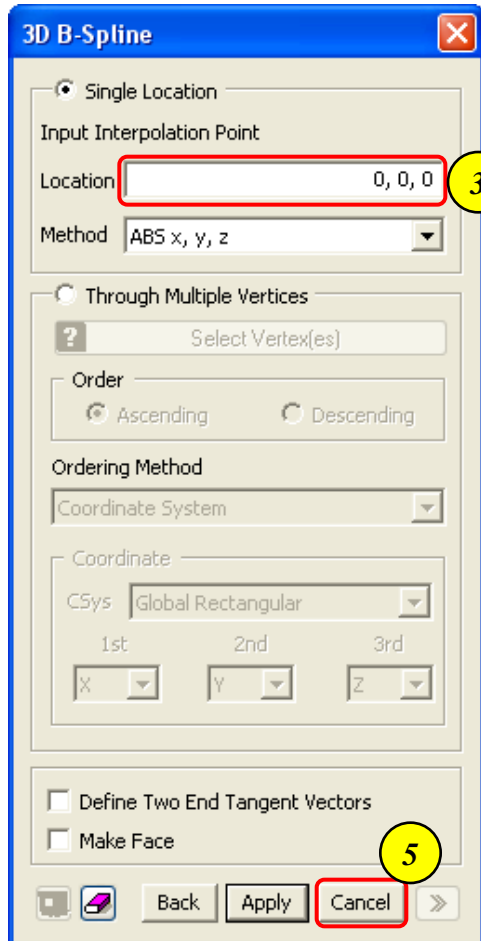
## Step 2.



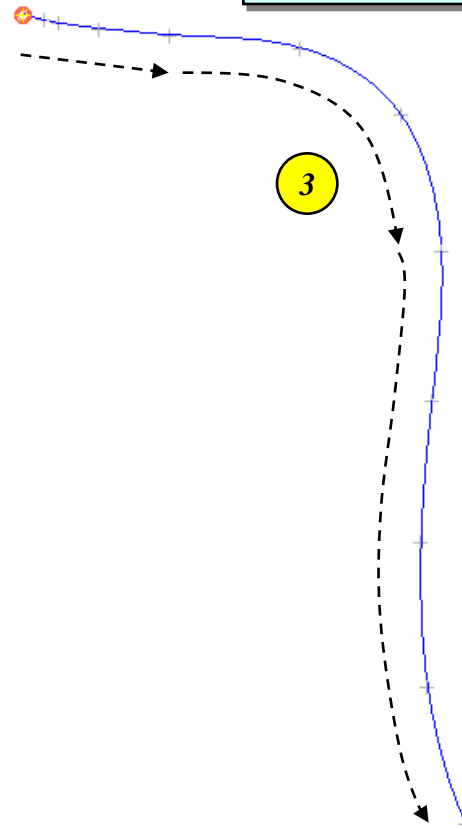
1. Toggle off "Toggle Grid"
2. Hide Datum & WP
3. Geometry > Vertex > Tabular Input...
4. Copy the highlighted tabulated coordinates into the dialog box.
5. Click on [OK] Button

X	Y	Z
0	0	0
1.5	-0.2	0.05
2.5	-0.5	0.15
5	-2	0.5
9	-5	1.2
15.5	-13.5	2
21	-21.5	-1.5
25	-26	-10.5
27	-27	-21
28.5	-28.5	-31
31	-31	-41
35	-35	-50

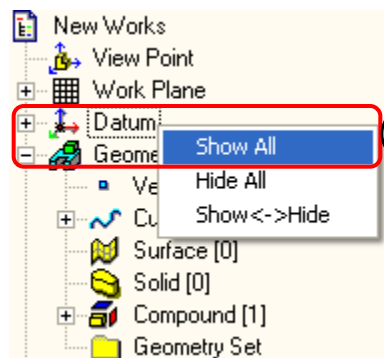
### Step 3.



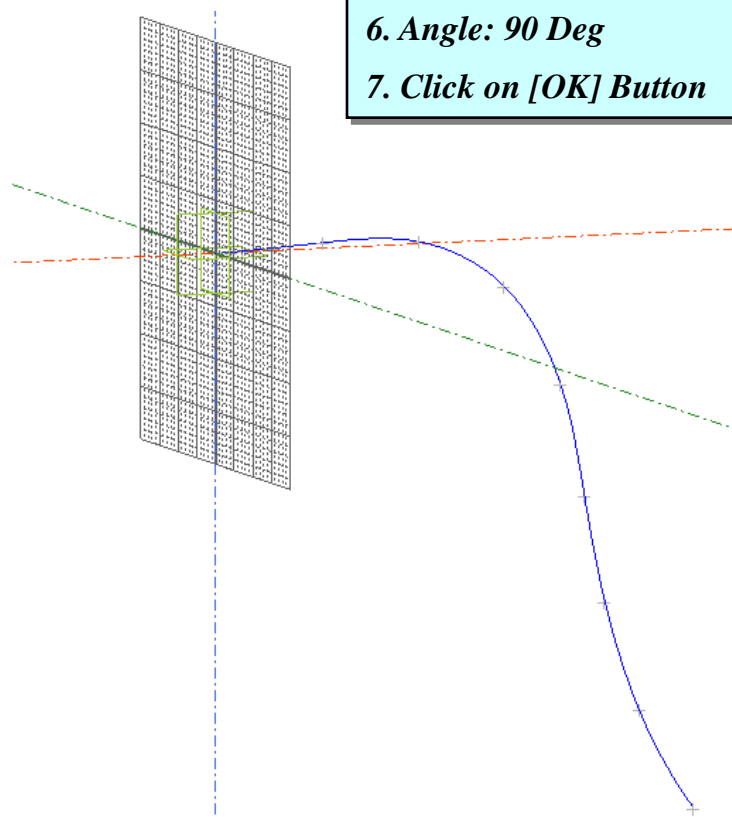
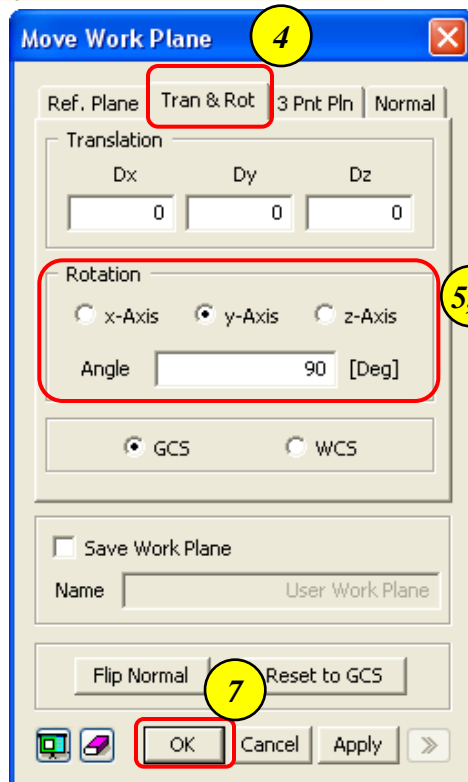
1. Geometry > Curve > Create 3D > B-Spline...
2. Toggle on "Vertex Snap"
3. Click on vertexes as shown in the picture
4. Click Right Mouse Button on Work Window
5. Click [Cancel] Button



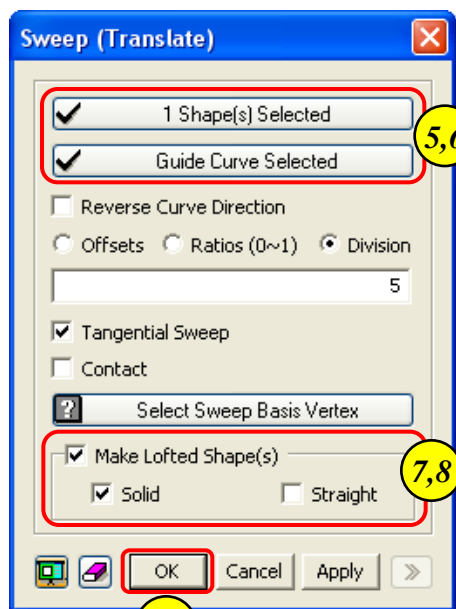
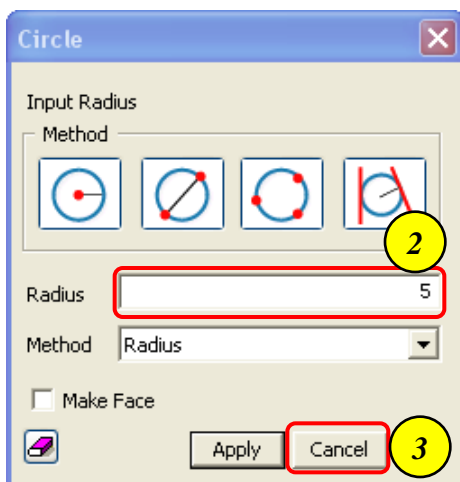
# Step 4.



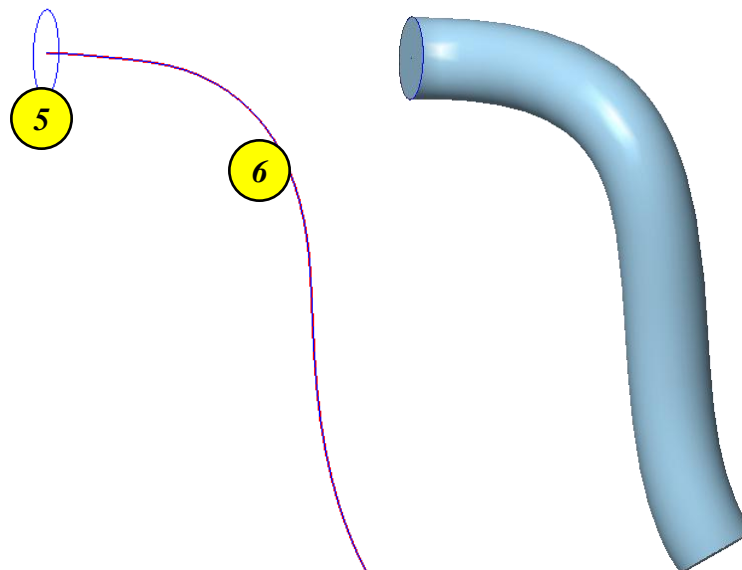
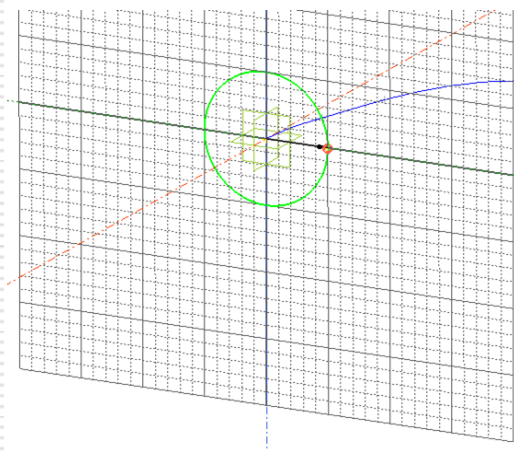
1. Toggle on "Toggle Grid"
2. Click Right Mouse Button on Datum – Show All
3. Click on "Move Work Plane"
4. Select "Tran & Rot" tab
5. Rotation: y-Axis
6. Angle: 90 Deg
7. Click on [OK] Button



## Step 5.

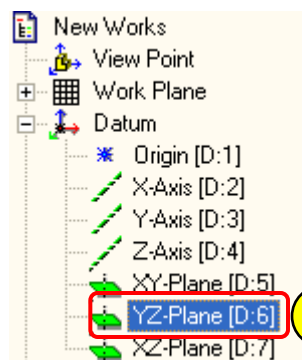
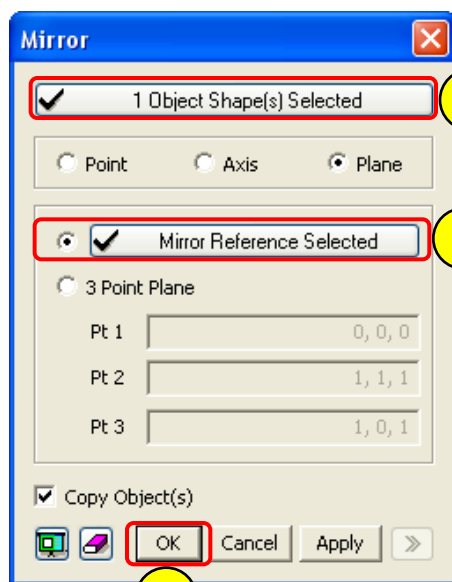


1. *Geometry > Curve > Create on WP > Circle ...*
2. *Location : (0), (5)*
3. *Click [Cancel] Button* ⌨
4. *Geometry > Transform > Sweep-Translate ...*
5. *Select the circle as Shape To Translate*
6. *Select the curve as Guide Curve*
7. *Select “Make Lofted Shape(s)”*
8. *Tick on “Solid”*
9. *Click on [OK] Button*

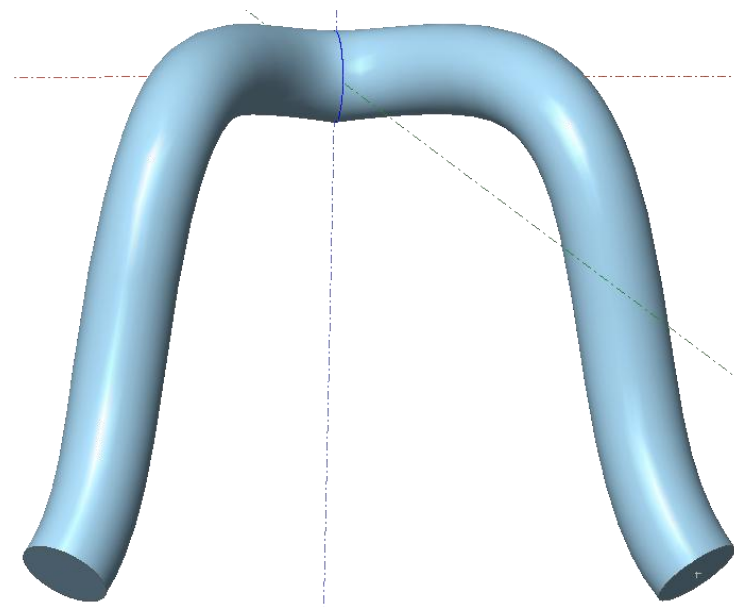
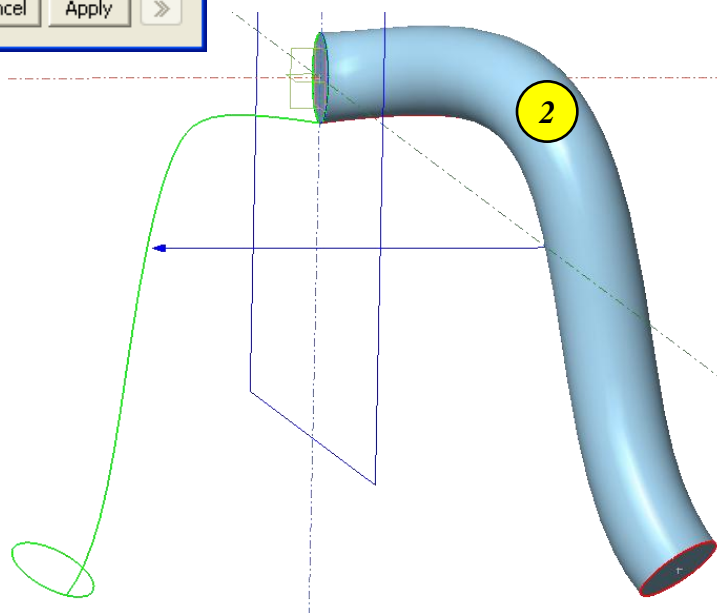


⌨ “Esc” as shortcut for “Cancel”.

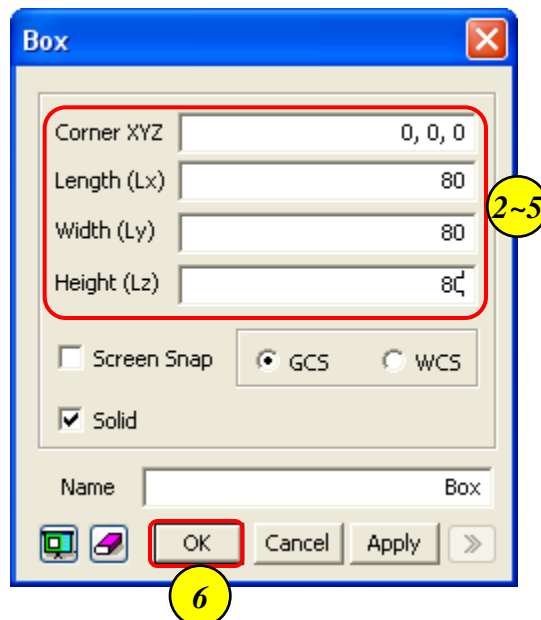
## Step 6.



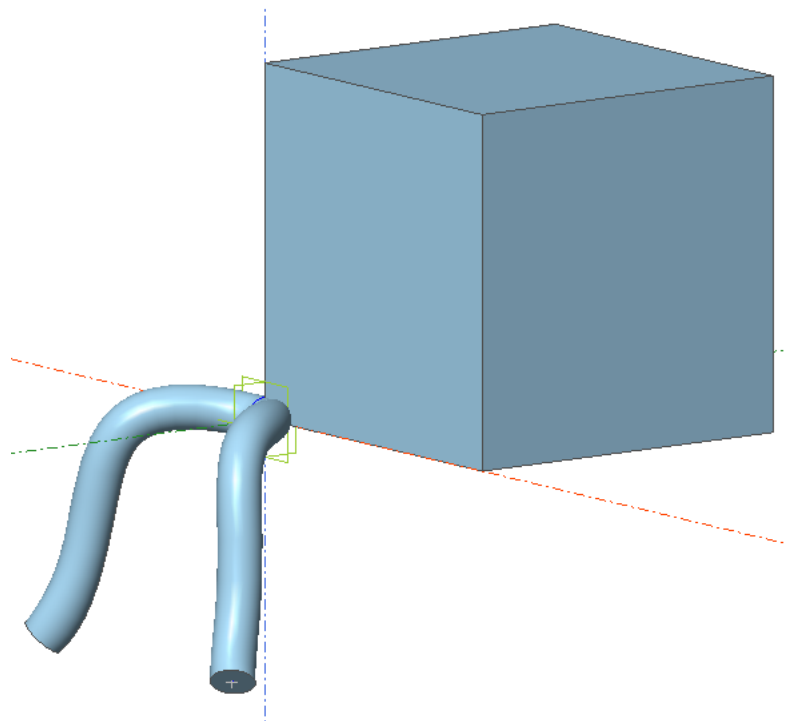
1. Geometry > Transform > Mirror ...
2. Select the Solid shape
3. Select "YZ Plane" from work tree for Mirror Plane
4. Click on [OK] Button



### Step 7.

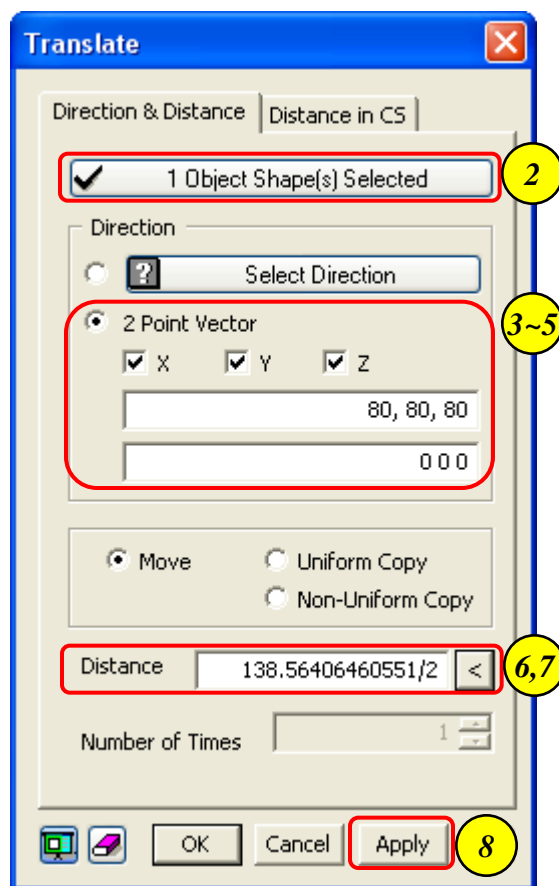



1. Geometry > Primitive Feature > Box ...
2. Corner XYZ: 0,0,0
3. Length (Lx): 80
4. Length (Ly): 80
5. Length (Lz): 80
6. Click on [OK] Button

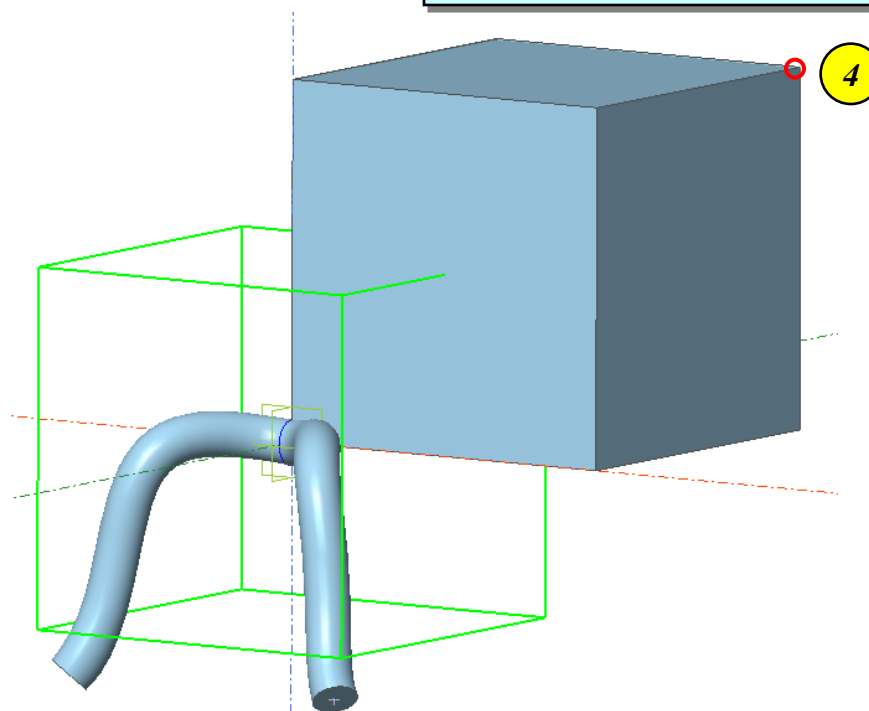




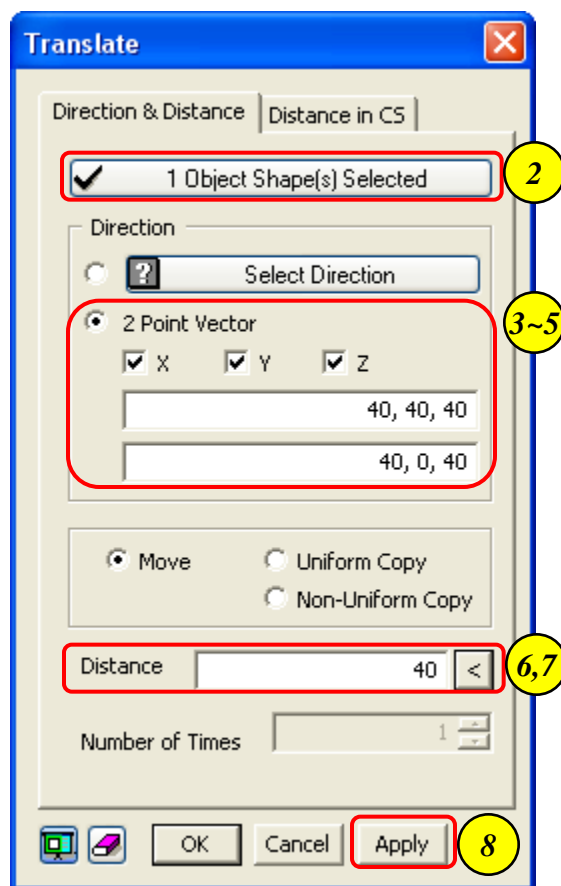
## Step 8.




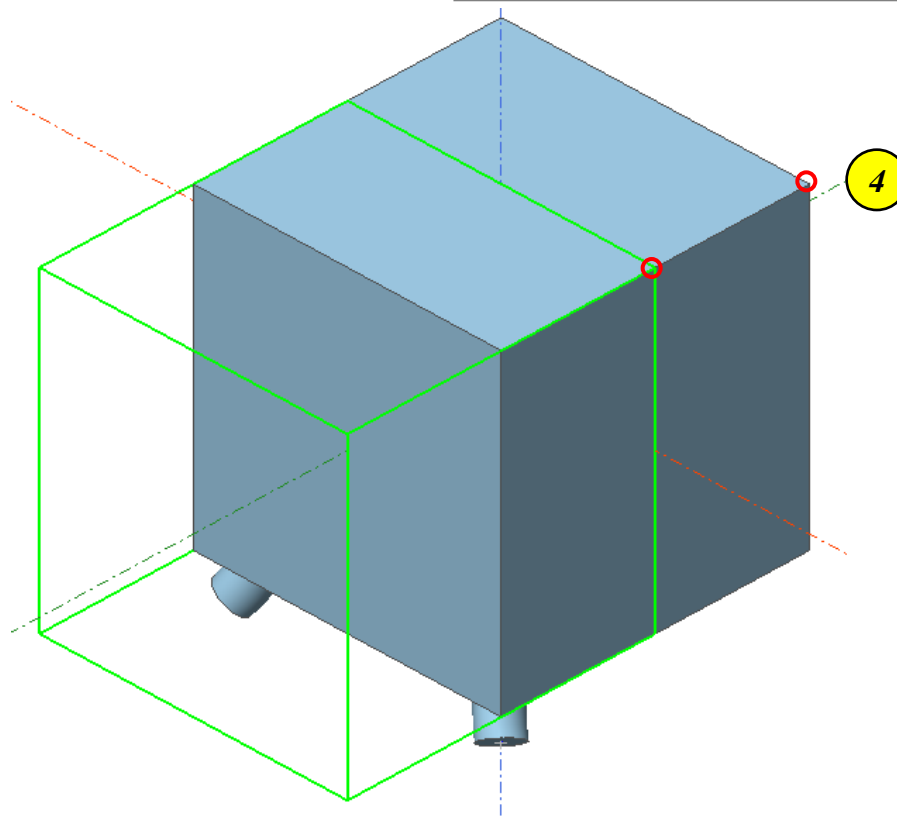
1. Geometry > Transform > Translate...
2. Select the box
3. Direction: 2 Point Vector
4. Select the highlighted point on the box
5. Enter (0,0,0) for the second point
6. Click on  for actual distance
7. Distance: 138.56406460551 / 2
8. Click on [Apply] Button



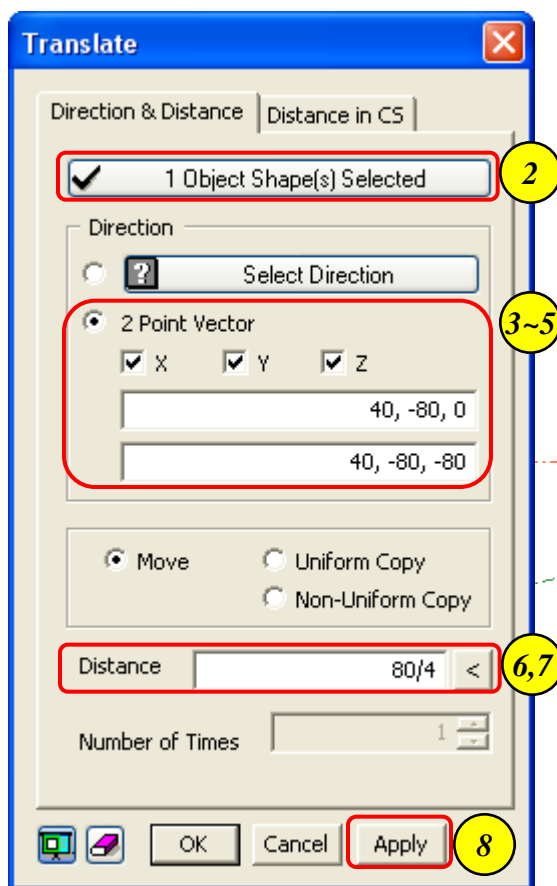
## Step 9.




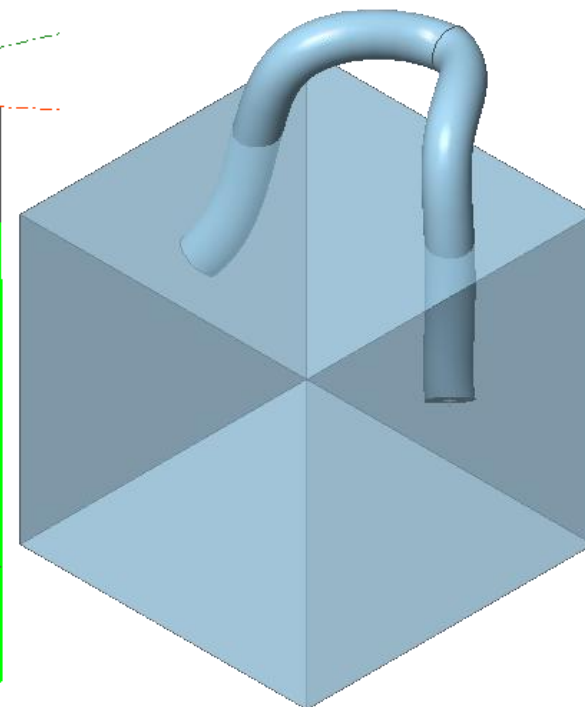
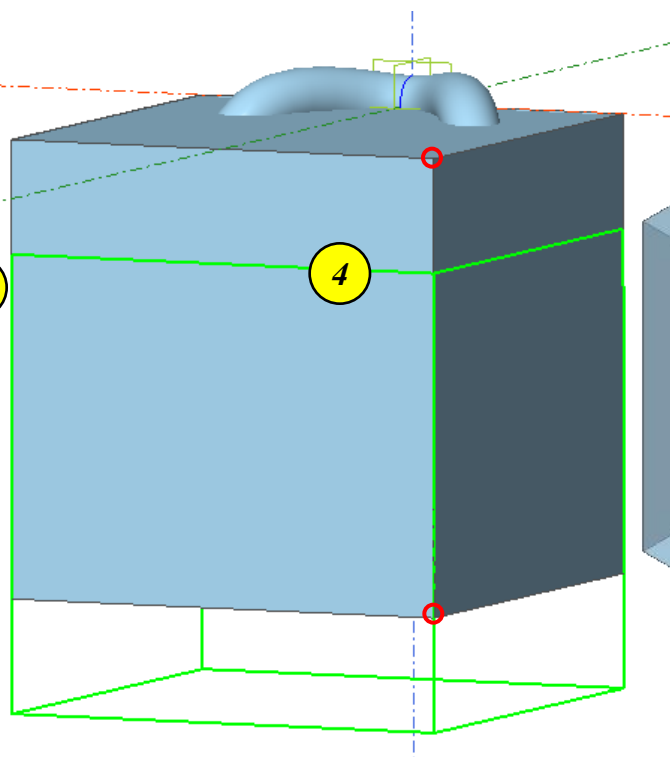
1. Geometry > Transform > Translate...
2. Select the box
3. Direction: 2 Point Vector
4. Select two highlighted points on the box
5. Click on  for actual distance
6. Click on [Apply] Button



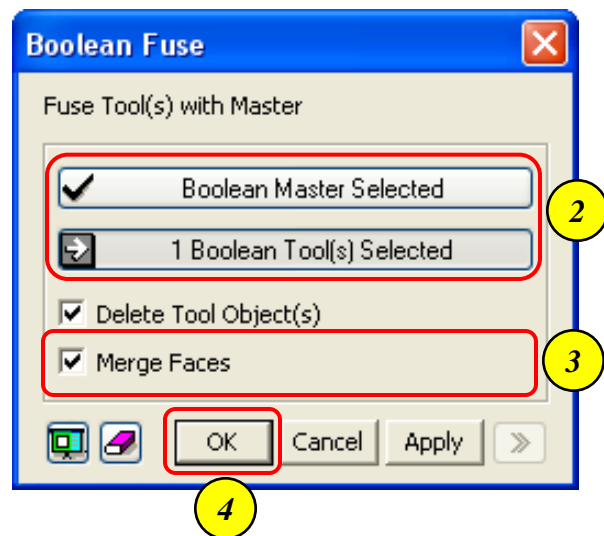
## Step 10.



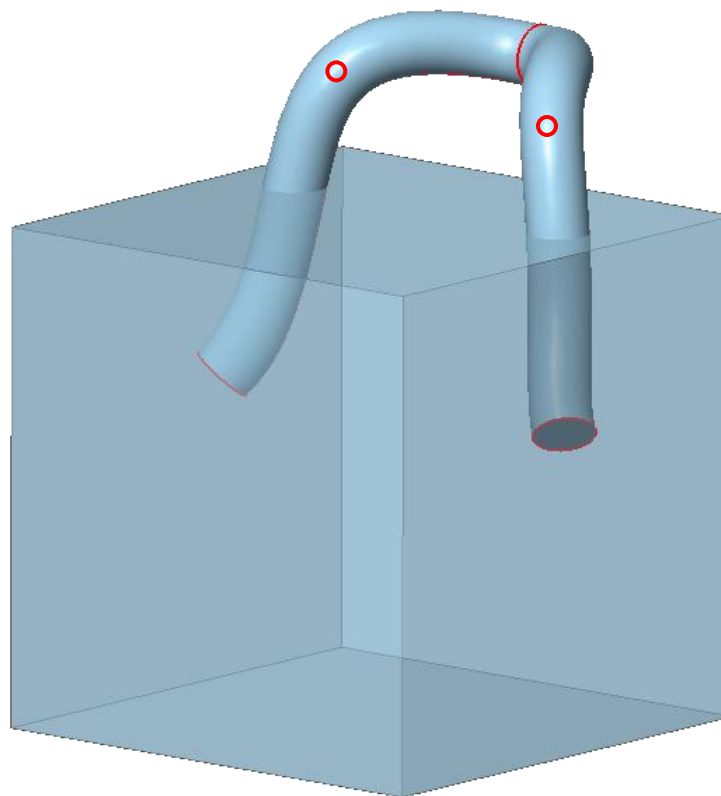
1. Geometry > Transform > Translate...
2. Select the box
3. Direction: 2 Point Vector
4. Select two highlighted points on the box
5. Click on  for actual distance
6. Distance: 80 / 4
8. Click on [OK] Button



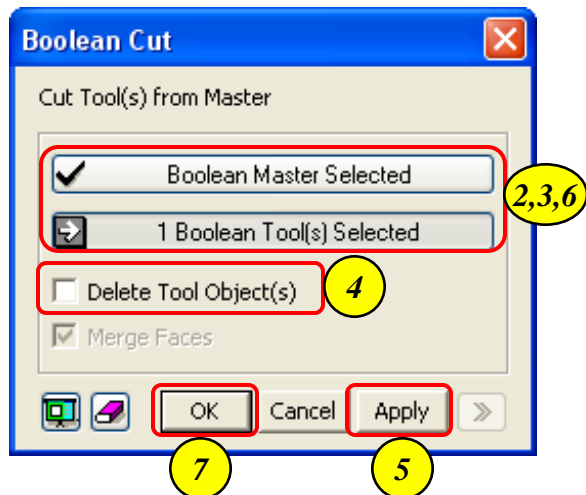
## Step 11.



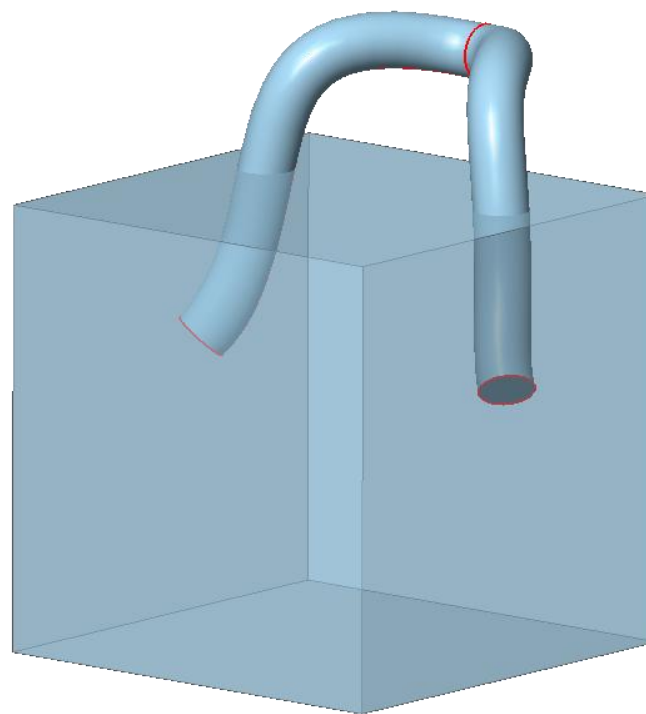
1. *Geometry > Boolean Operation > Fuse ...*
2. *Select two solid shapes as Boolean Master and Boolean Tool*
3. *Tick on Merge Faces*
4. *Click on [OK] Button*



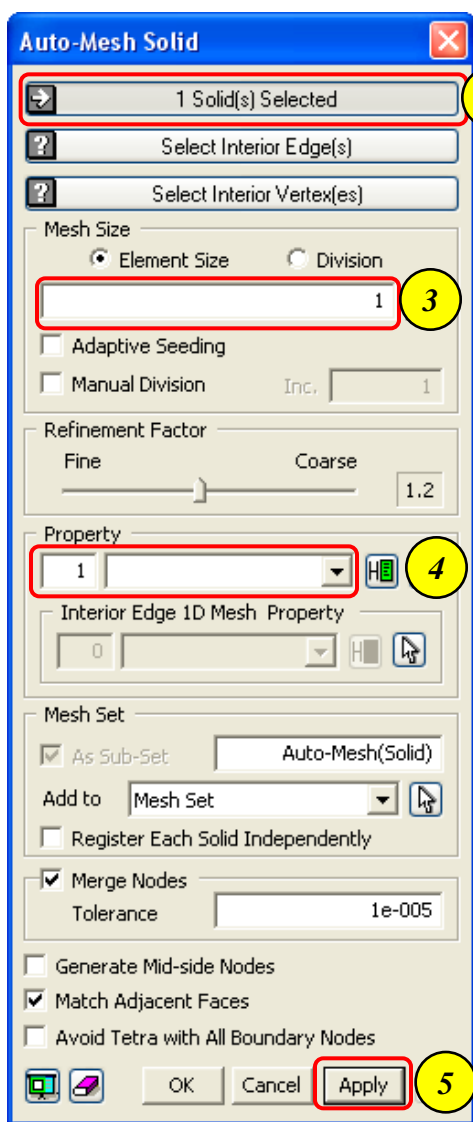
## Step 12.



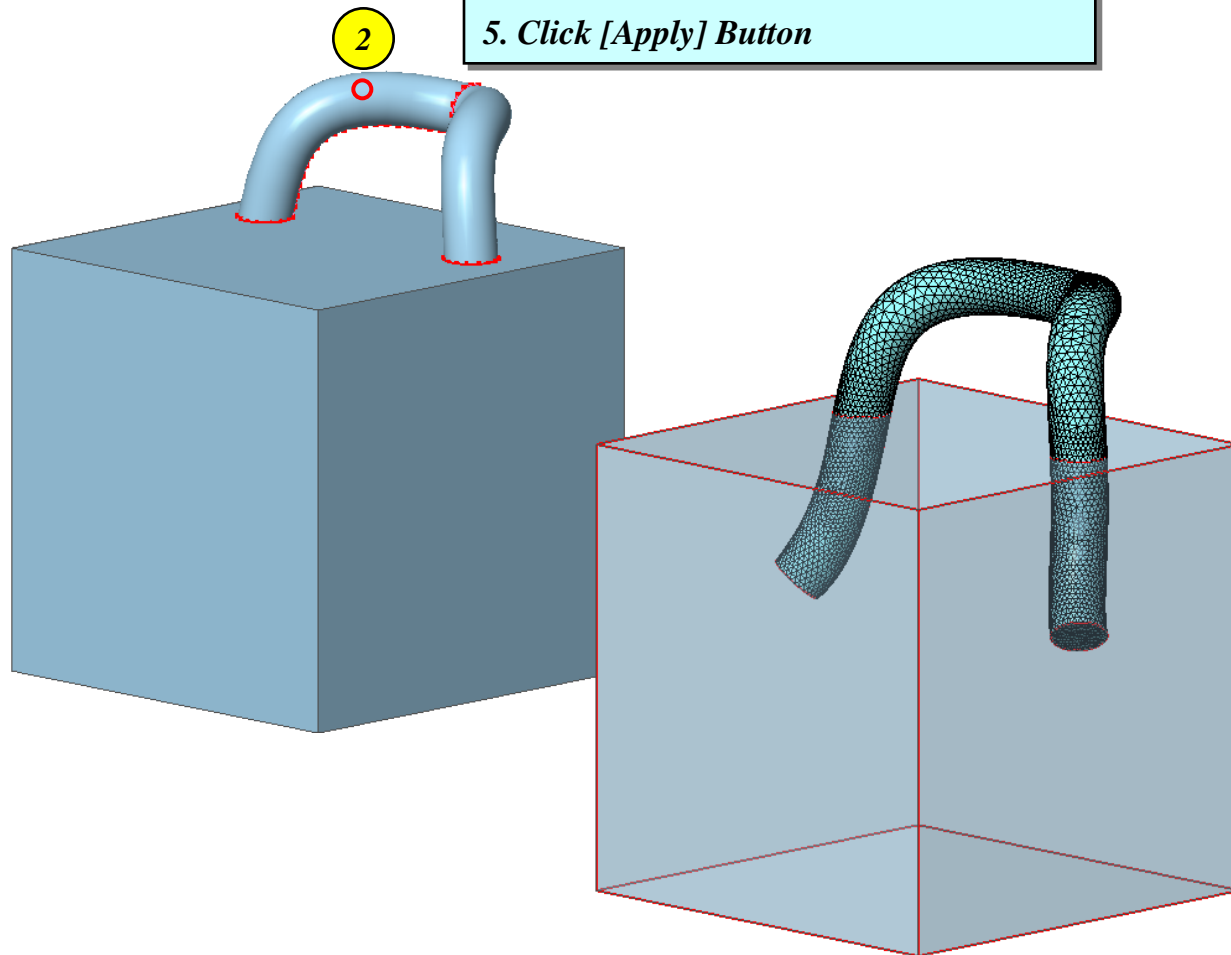
1. *Geometry > Boolean Operation > Cut ...*
2. *Select the Box as Boolean Master*
3. *Select the fused solid as Boolean Tool*
4. *Unselect Delete Tool Object(s)*
5. *Click on [Apply] Button*
6. *Repeat the same steps this time by selecting fused solid as Boolean Master and Box as Boolean Tool*
7. *Click on [OK] Button*



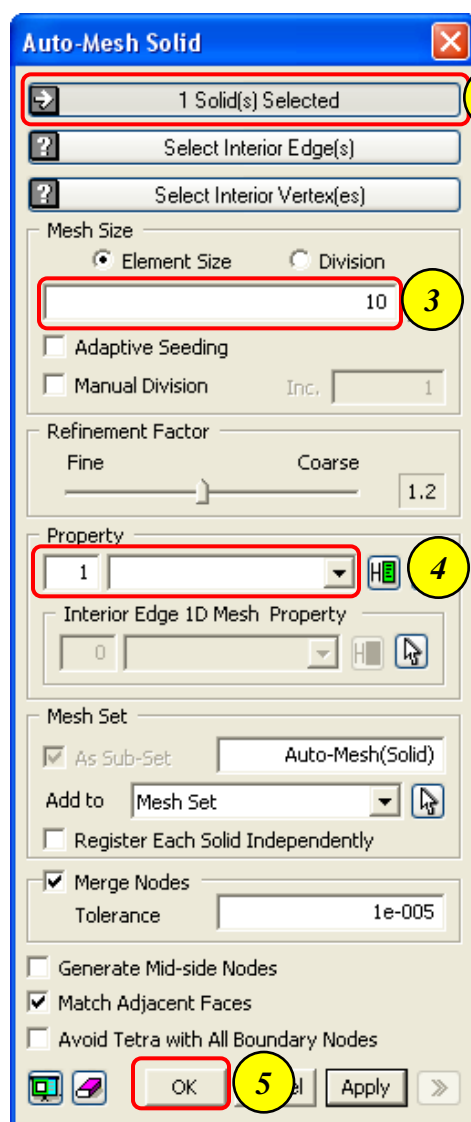
## Step 13.



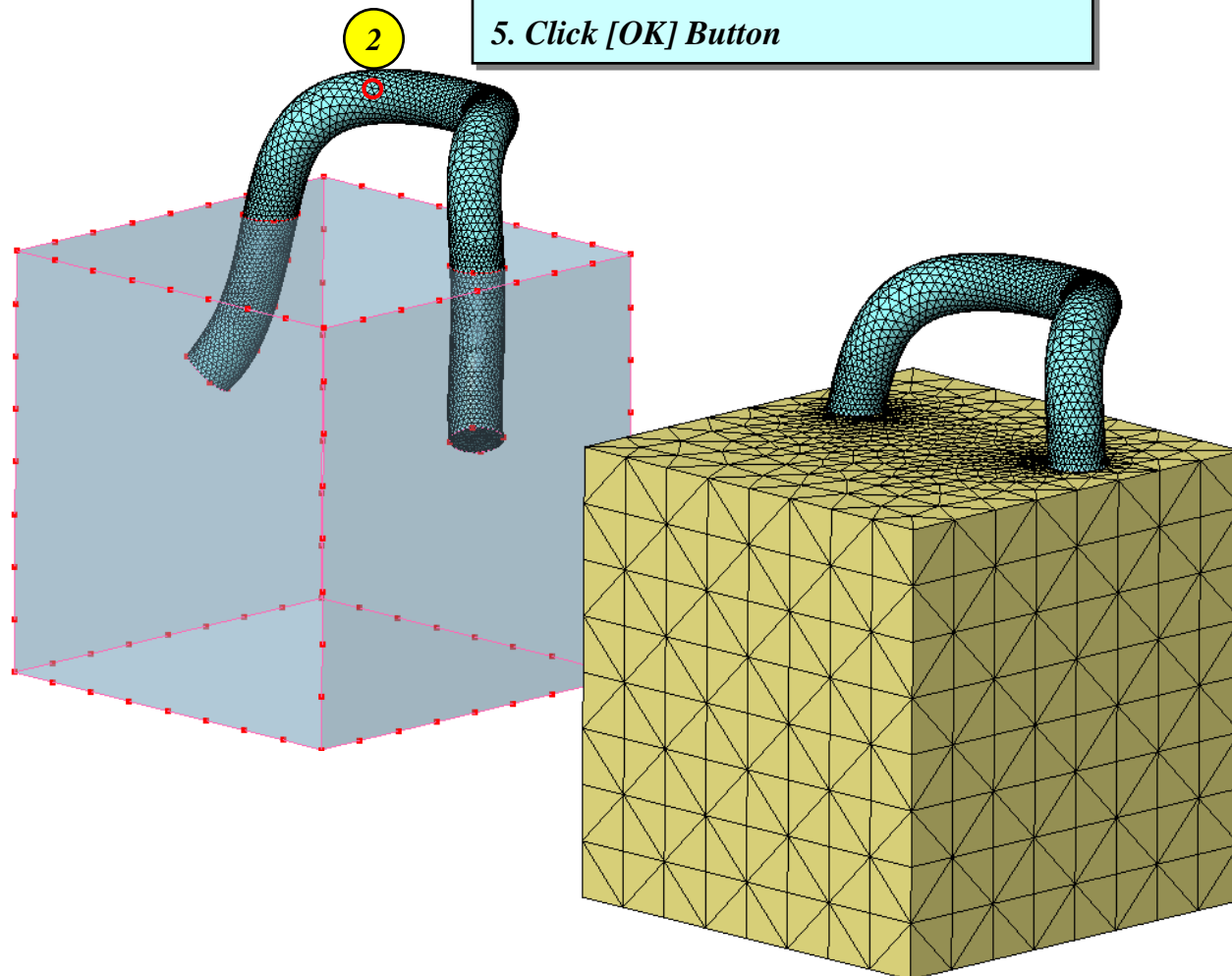
1. Mesh > Auto Mesh > Solid ...
2. Select the highlighted solid shape
3. Mesh Size: 1
4. Property: 1
5. Click [Apply] Button



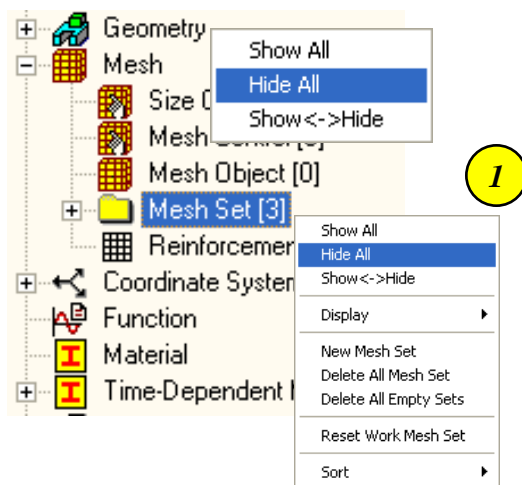
## Step 14.



1. Mesh > Auto Mesh > Solid ...
2. Select the highlighted solid shape
3. Mesh Size: 10
4. Property: 1
5. Click [OK] Button



## Step 15.



1. From work tree Hide all the Geometry and Mesh Sets
2. Mesh > Check Mesh ...
3. Select Free Faces
4. Click [Apply] Button

