

# ANSYS - Vibration Analysis of a Frame - Step 5

## Problem Specification

1. Start-up and preliminary set-up
2. Specify element type and constants
3. Specify material properties
4. Specify geometry
5. **Mesh geometry**
6. Specify boundary conditions
7. Solve!
8. Postprocess the results
9. Validate the results

## Step 5: Mesh geometry

### Generate the Mesh

To bring up the MeshTool, Select:

**Main Menu > Preprocessor > MeshTool.**

Click on **Set** under **Element Attributes** in the MeshTool.

**MeshTool**

Element Attributes:

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☐ Smart Size

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Size Controls:

Global

Areas

Lines

Layer

Keypoints

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Mesh:

Shape: ☒ Radio1 ☐ Hex/wedge

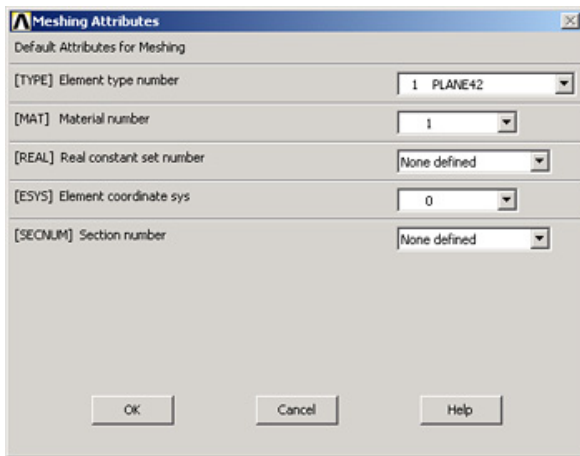
☒ Free ☐ Mapped ☐ Sweep

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Refine at:

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This brings up the *Meshing Attributes* menu. You will see that the correct element type, material number and real constants are already selected since we have only one of each.

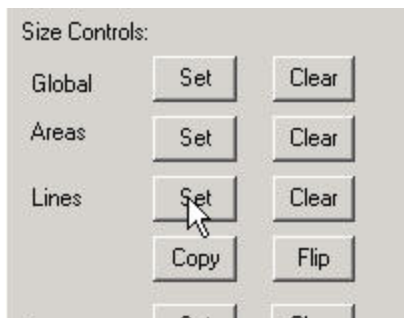


Close this menu by clicking **OK**.

### Define Number of Elements for Each Line

We'll use 20 elements for AB and 20 elements for BC to be consistent with Cook et al.

Under **Size Control** and **Lines**, click **Set**.



Select line AB.



Click **OK**.

Enter 30 for **NDIV**.

**Element Sizes on Picked Lines**

[LESIZE] Element sizes on picked lines

SIZE Element edge length

NDIV No. of element divisions

(NDIV is used only if SIZE is blank or zero)

KYNDIV SIZE,NDIV can be changed ☒ Yes

SPACE Spacing ratio

ANGSIZ Division arc (degrees)

( use ANGSIZ only if number of divisions (NDIV) and element edge length (SIZE) are blank or zero)

Clear attached areas and volumes ☐ No

OK Apply Cancel Help

Click **Apply**.

Select line BC.

**Min, Max, Inc**

OK Apply

Reset Cancel

Pick All Help

Click **OK**.

Enter 20 for **NDIV**.

**Element Sizes on Picked Lines**

[LESIZE] Element sizes on picked lines

SIZE Element edge length

NDIV No. of element divisions

(NDIV is used only if SIZE is blank or zero)

KYNDIV SIZE,NDIV can be changed ☒ Yes

SPACE Spacing ratio

ANGSIZ Division arc (degrees)

( use ANGSIZ only if number of divisions (NDIV) and element edge length (SIZE) are blank or zero)

Clear attached areas and volumes ☐ No

OK Apply Cancel Help

Click **OK**.

## Creating the Mesh

In the *MeshTool*, click on **Mesh**. This brings up the *pick* menu. Click on **Pick All**.

The geometry has been meshed and the elements are plotted in the graphics window. Close the *MeshTool*.

## Save your work

Once you have successfully created the mesh, click on **SAVE\_DB** in the *ANSYS Toolbar* to save the database.

Go to [Step 6: Specify boundary conditions](#)

Go to [all ANSYS Learning Modules](#)