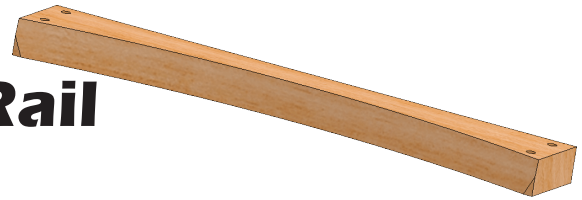




Chair Bottom Rail



A. Weldments Toolbar.

Step 1. Click File Menu > New, click **Part** and OK.

Step 2. **Right click Sketch**  on the Command Manager toolbar and select **Weldments**, **Fig. 1**.

Step 3. Click **Weldments**  on the Command Manager toolbar.

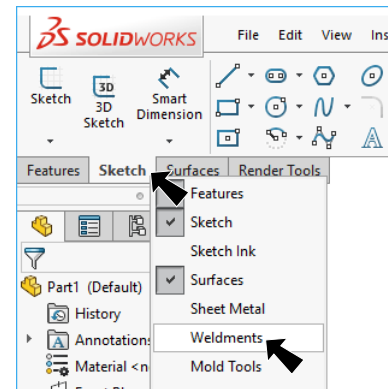






Fig. 1

B. 3D Sketch.

Step 1. Click **3D Sketch**  on the Weldments toolbar.

Step 2. Click **Line**  (L) on the Sketch toolbar. The cursor should change to XY plane  indicating you are sketching in XY plane. If not, press Tab to switch sketch plane.

Step 3. Sketch a line from **right to left** on X axis away from Origin  , **Fig. 2**. To Sketch line on X axis, click away from Origin at approximately Position 1 to start line. Move cursor across sketch along X axis, when cursor

changes to  (yellow X) click, Position 2.

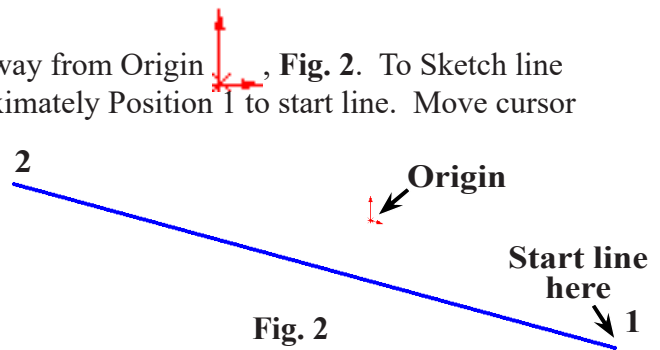




Fig. 2

Step 4. **Right click graphics area and click Select** from menu to unselect Line Tool.

Step 5. **Ctrl click line and Origin**  to select both. Release Ctrl key and click **Make Midpoint**  on the context toolbar, **Fig. 3**.

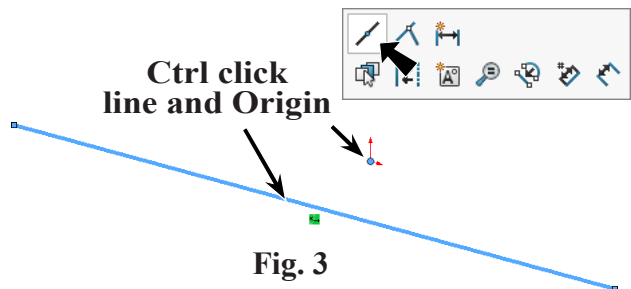


Fig. 3

Step 6. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 7. Dimension line **23.25**, **Fig. 4**.

Step 8. Click **Zoom to Fit**  (F) on the View toolbar.

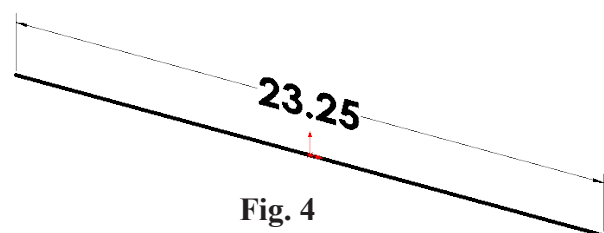

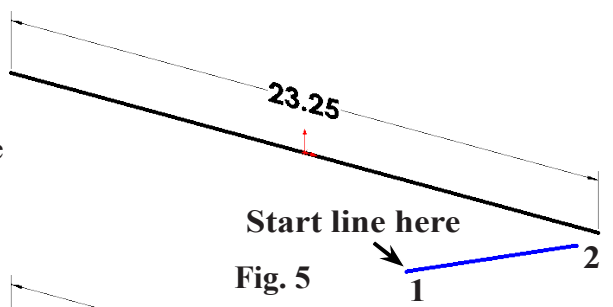


Fig. 4

Step 9. Click **Line**  (L) on the Sketch toolbar.

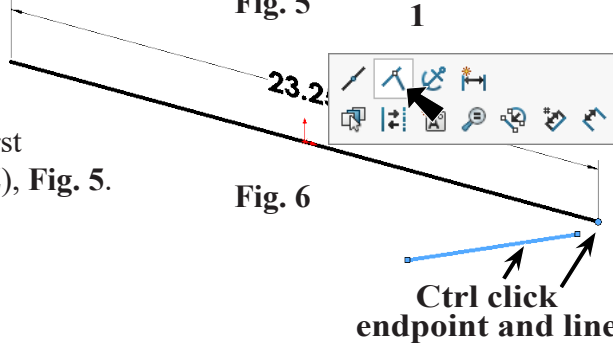
Step 10. Press Tab to change sketch plane to YZ plane

 **YZ**. View the Reference Triad at the bottom left corner of the display to determine the sketch plane.




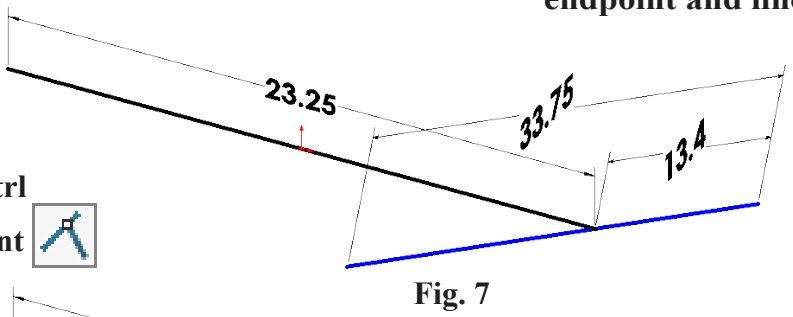
Step 11. Sketch a line from **left to right** away from first line at an angle or not on Z axis (no Yellow Z), **Fig. 5**.


Cursor should be  and not 



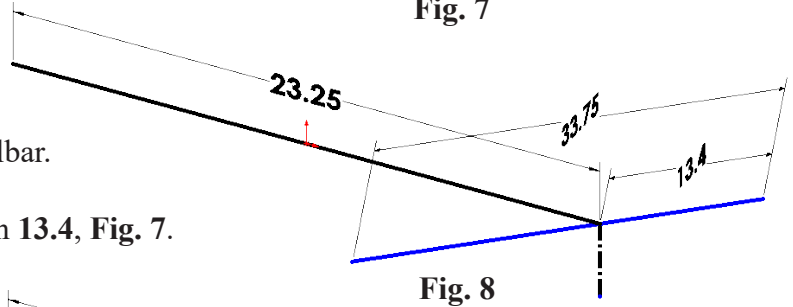
Step 12. **Right click graphics area and click Select** from menu to unselect Line Tool.



Step 13. **Ctrl click line and right endpoint of first line. Release Ctrl key and click Make Coincident**  on the content toolbar, **Fig. 6**.




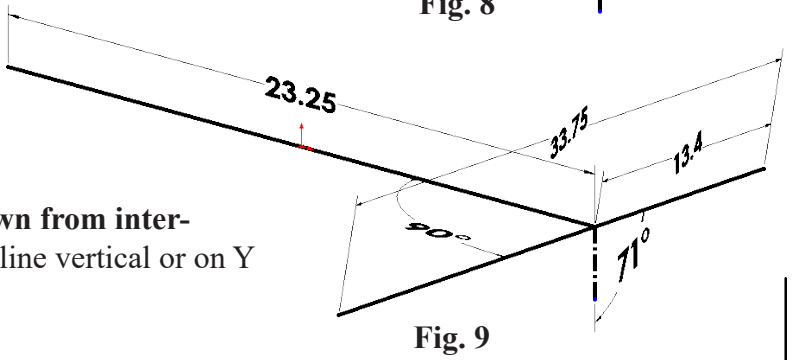
Step 14. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 15. Dimension the **33.75** first, then **13.4**, **Fig. 7**.



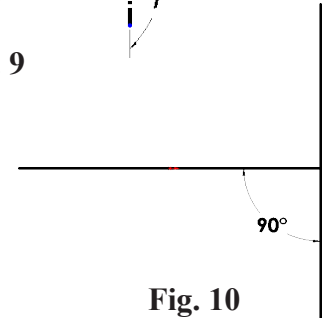
Step 16. Click **Centerline**  in the **Line flyout**  on the Sketch toolbar.


Step 17. Sketch **vertical centerline down from intersection of lines**, **Fig. 8**. Keep line vertical or on Y axis  (yellow Y).




Step 18. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 19. Dimension angles **71°** and **90°**, **Fig. 9**.



Step 20. Confirm 3D sketch in Top View. Click **Top**  on the Standard Views toolbar (**Ctrl-5**). The second line should be vertical, **Fig. 10**.

Step 21. Check 3D sketch in Right View. Click **Right**  on the Standard Views toolbar (**Ctrl-4**). Second line should be at angle, **Fig. 11**.

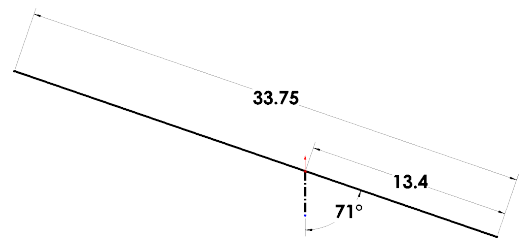
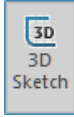


Fig. 11

Step 22. Click **3D Sketch**  on the Weldments toolbar to exit 3D Sketch.

C. Save as "CHAIR".

- Step 1. Click File Menu > Save As.
- Step 2. Key-in **CHAIR** for the filename and press ENTER.

D. Structural Member.

Step 1. Click **Trimetric**  on the Standard Views toolbar.

Step 2. Click **Structural Member**  on the Weldments toolbar.

Step 3. In the Structural Member Property Manager set:

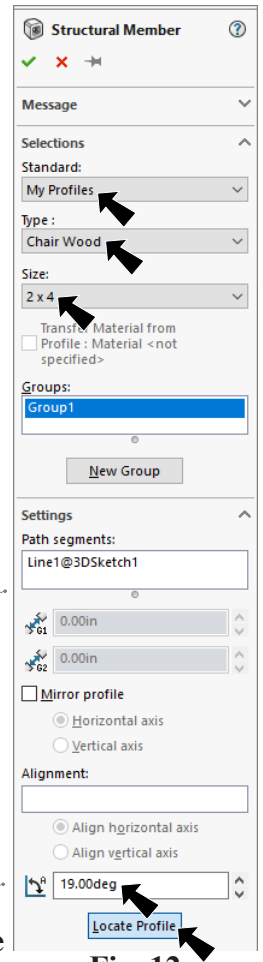


Fig. 12

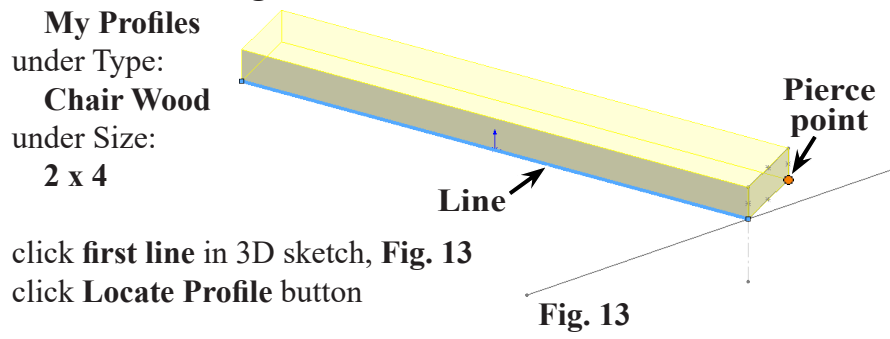


Fig. 13

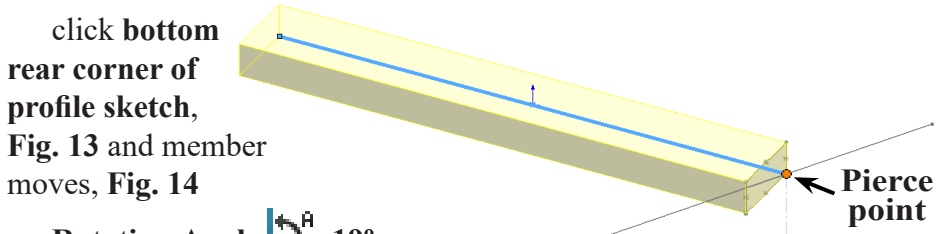


Fig. 14

Step 4. Save. Use **Ctrl-S**.

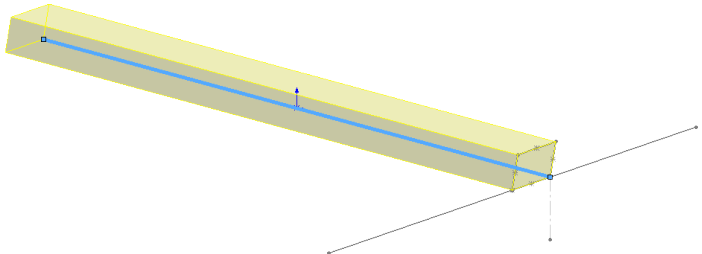


Fig. 15

E. Rename Structural Member 1 BOTTOM RAIL.

Step 1. Rename **Chair Wood 2 x 4 (1)** feature to **BOTTOM RAIL** in the Feature Manager, **Fig. 16**. To rename, click **Chair Wood 2 x 4 (1)** name in Feature Manager and press **F2** on keyboard. Key-in **BOTTOM RAIL**.

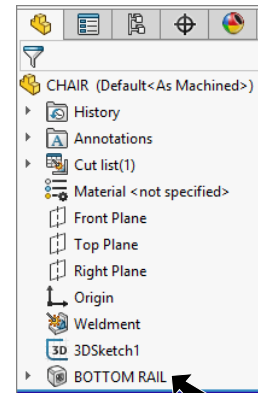






Fig. 16


F. Extruded Cut.

Step 1. Click **top face** of the member and click **Sketch**  on the context toolbar, **Fig. 17**.

Step 2. Click **Normal To**  on the Standard Views toolbar. (**Ctrl-8**)

Step 3. Click **3 Point Arc**  (S) in the **Arc flyout**  on the Sketch toolbar.

Step 4. Sketch 3 Point Arc between Points 1, 2 and 3 across bottom of member, **Fig. 18**.

Step 5. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 6. Dimension both the **.39s** first, then arc **45.15**, **Fig. 19**.

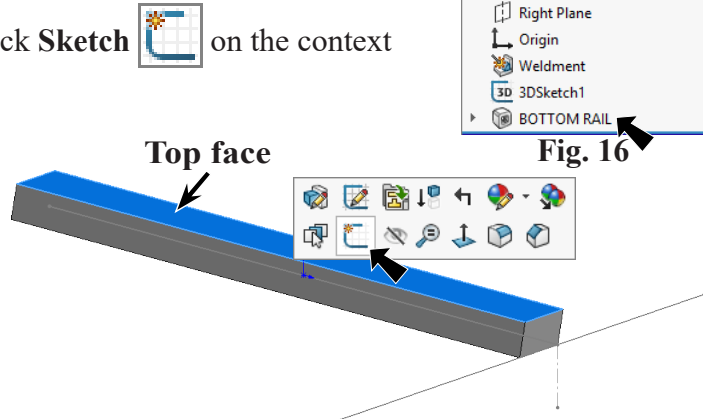


Fig. 17

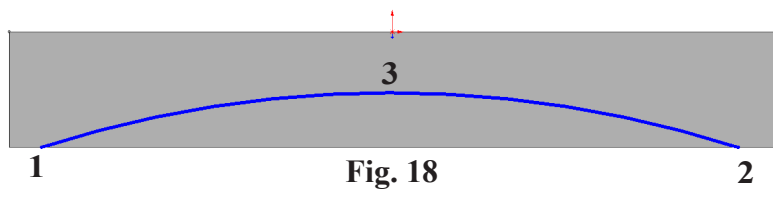


Fig. 18

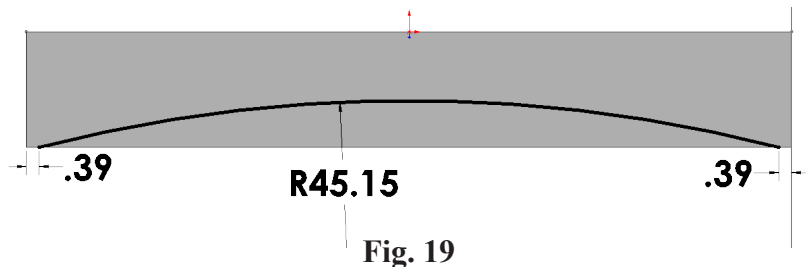
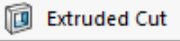


Fig. 19

Step 7. Click **Weldments**  on the Command Manager toolbar.

Step 8. Click **Extruded Cut**  on the Weldments toolbar.

Step 9. In the Cut-Extrude Property Manager set:
 under Direction 1, **Fig. 20**

End Condition **Through All**

The Direction arrow should point towards area to be cut away,
Fig. 21. If arrow is pointing in wrong direction, check **Flip side to cut**
cut, Fig. 20.

Click OK .

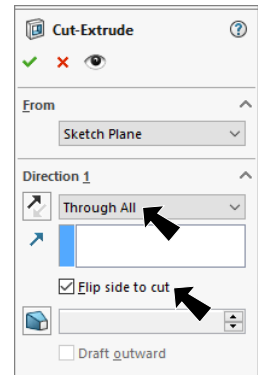


Fig. 20

G. Chamfer.

Step 1. Click **Trimetric**  on the Standard Views toolbar.

Step 2. Click **Chamfer**  on the Weldments toolbar.

Step 3. In the Chamfer Property Manager set:

under Chamfer Type, **Fig. 5**

select **Angle Distance** 
 click **top front edge, Fig. 24**
 under Chamfer Parameters

Distance  **1.5**

Angle  **7°**

uncheck **Flip direction**.

The Direction arrow should point down, **Fig. 24**. If arrow is pointing in wrong direction, check **Flip direction**.

click OK .

Step 4. Save. Use **Ctrl-S**.

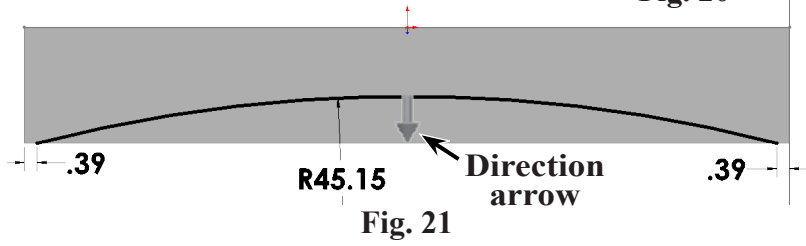


Fig. 21

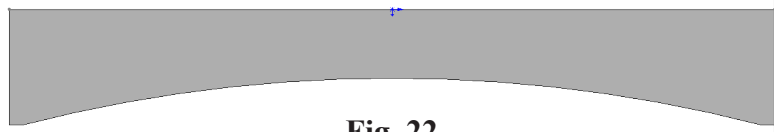


Fig. 22

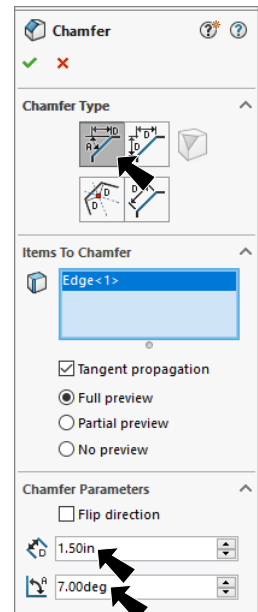


Fig. 23

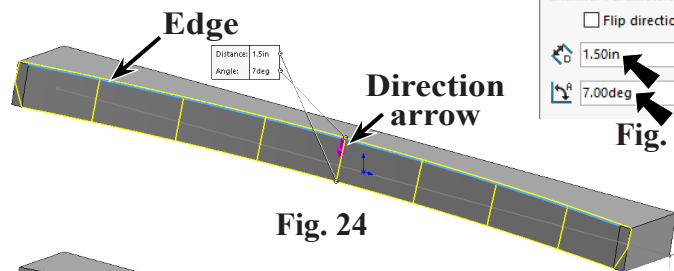


Fig. 24

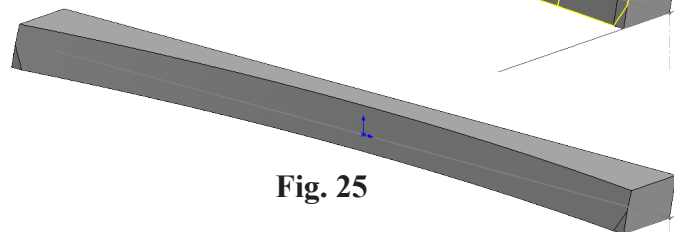



Fig. 25

H. Hole Wizard Counterbore.

Step 1. Click **Top**  on the Standard Views toolbar. (Ctrl-5)

Step 2. Click **Hole Wizard**  on the Weldments toolbar.

Step 3. In the Property Manager, on the Type tab set:
under Hole Type, **Fig. 26**

select **Counterbore** 

under Standard:

select **ANSI Inch**

under Size:

select **#8**

under End Condition:

Through All

under Options

uncheck **near side countersink**

check **Under head countersink**

Under Head Countersink  **Diameter .33**

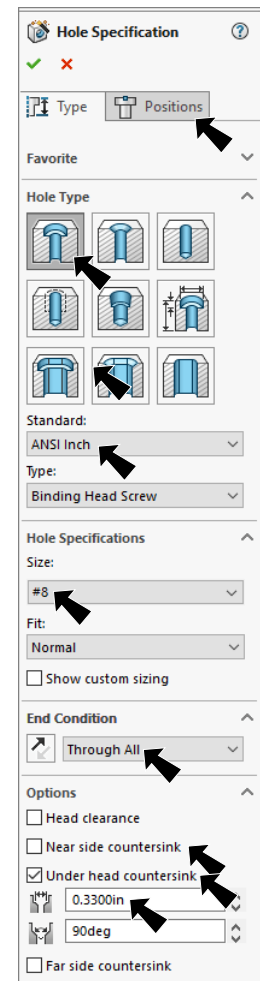
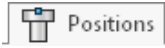




Fig. 26

Step 4. Click **Positions** tab  at top of Property Manager.

Step 5. Click **top face** one time as face for holes. Then, click **twice to place two holes inside right edge**, **Fig. 27**.

Step 6. **Right click graphics area** and click **Select** from menu to unselect Point tool.

Step 7. **Ctrl click both Points** to select both. Release Ctrl key and click **Make Vertical**  on the context toolbar, **Fig. 28**.

Step 8. Click **Smart Dimension**  (S) on the Sketch toolbar.

Step 9. Add dimension, **Fig. 29**.

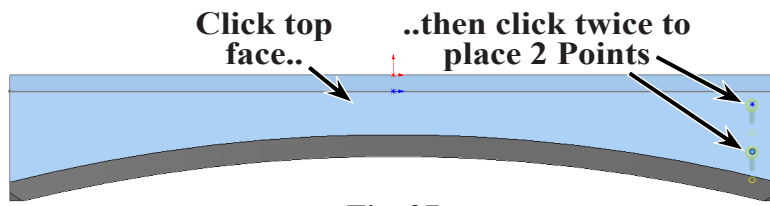


Fig. 27

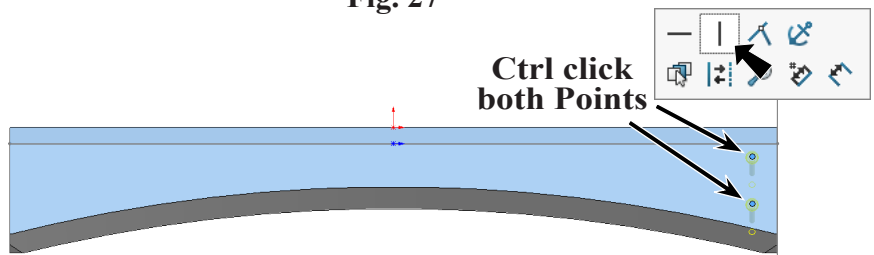


Fig. 28

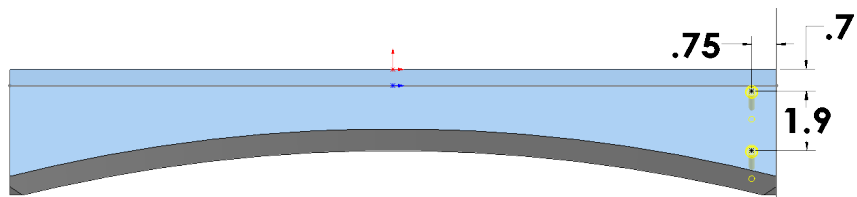



Fig. 29

Step 10. Click **Centerline**  (S) on the Sketch toolbar.

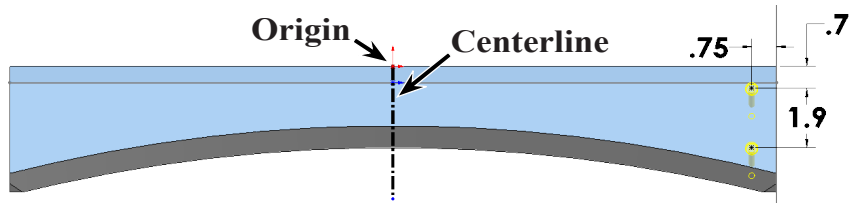



Fig. 30

Step 11. Sketch a vertical centerline down from Origin , Fig. 30.

Step 12. **Right click graphics area and click Select from menu to unselect Centerline tool.**

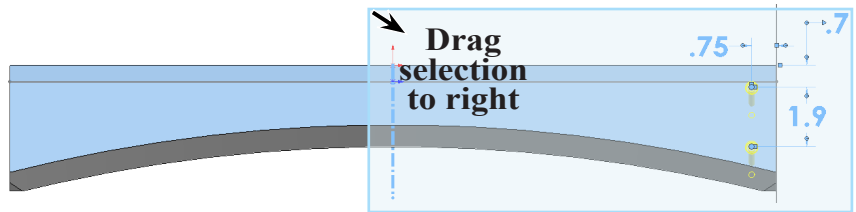


Fig. 31

Step 13. Drag a selection around all geometry, Fig. 31.

Step 14. Click **Mirror Entities**  on the Sketch toolbar, Fig. 32.

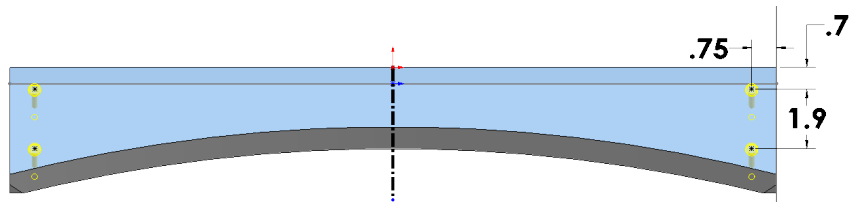



Fig. 32

Step 15. Click OK  in the Hole Wizard Property Manager.

Step 16. Save. Use **Ctrl-S**.

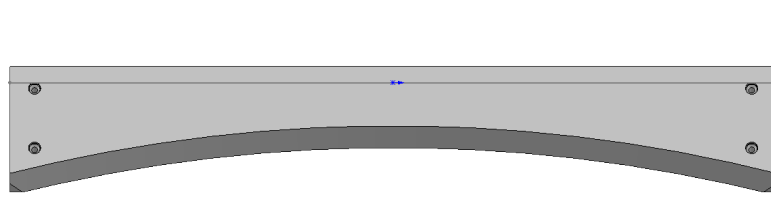




Fig. 33

I. Material Cedar.

Step 1. Click **Trimetric**  on the Standard Views toolbar.

Step 2. **Right click Material**  in the Feature Manager and click **Edit Material**, Fig. 34.

Step 3. Expand **Woods** (click ) in the material tree and select **Cedar**, click **Apply** and **Close**, Fig. 35.

Step 4. Save. Use **Ctrl-S**.

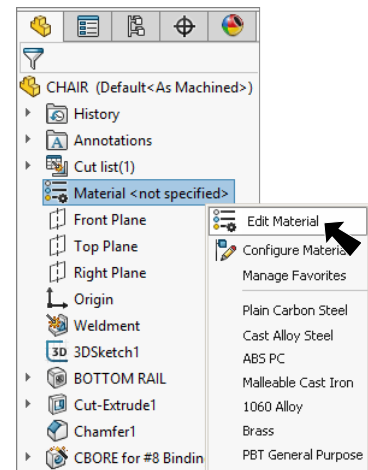


Fig. 34

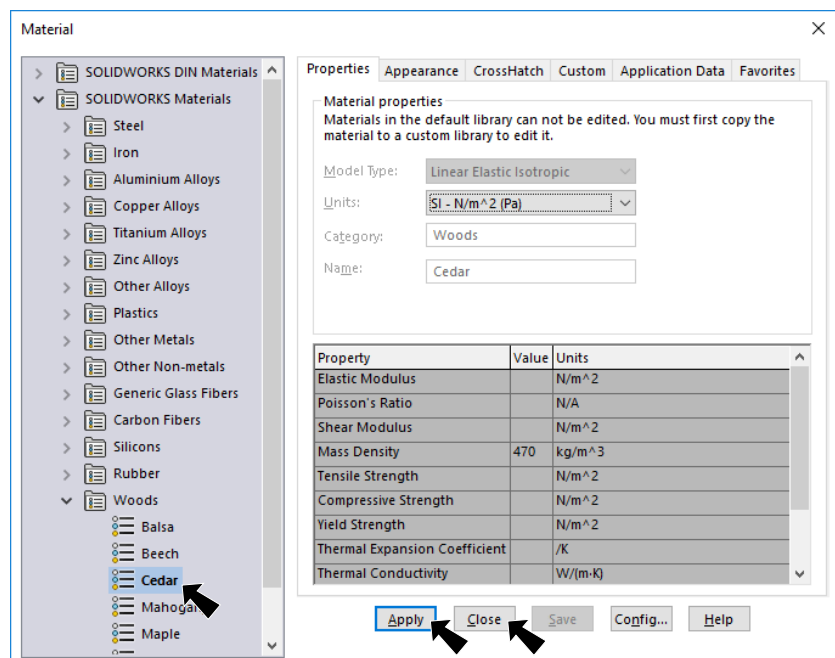


Fig. 35

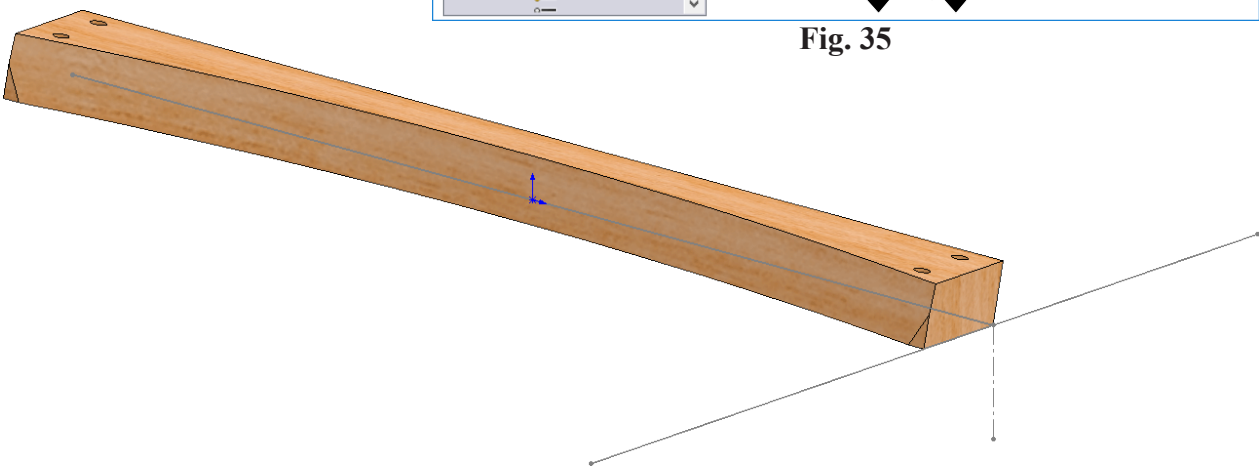


Fig. 36