

Gear 12T 48T Double

A. Toolbox New Part Spur Gear 48T.

Step 1. Click the **Design Library** tab  in the Task Pane, **Fig. 1**.

Step 2. In the **Toolbox**  **Toolbox**

Expand **ANSI Metric** folder  **ANSI Metric**

Expand **Power Transmission** folder  **Power Transmission**

Click **Gears** folder  **Gears**

Step 3. In the lower pane, **right click Spur Gear** and click **Create Part**, **Fig. 1**.

Step 4. In the Property Manager set:
under Properties, **Fig. 2**

Module: .5

Number of Teeth: 48

Pressure Angle: 20

Face Width: 1.5

Hub Style: None

Nominal Shaft Diameter: 2

click **OK** 

Step 5. Click **Zoom to Fit**  (F) on the View toolbar.

B. Save As.

Step 1. Click File Menu > Save As.

Step 2. Redirect file path to your **JSS folder** in your Tech Ed 14-15 folder.

Step 3. Delete the Part Number in the filename leaving:
Metric - Spur gear 0.5M 48T 20PA 1.5FW
and click Save.

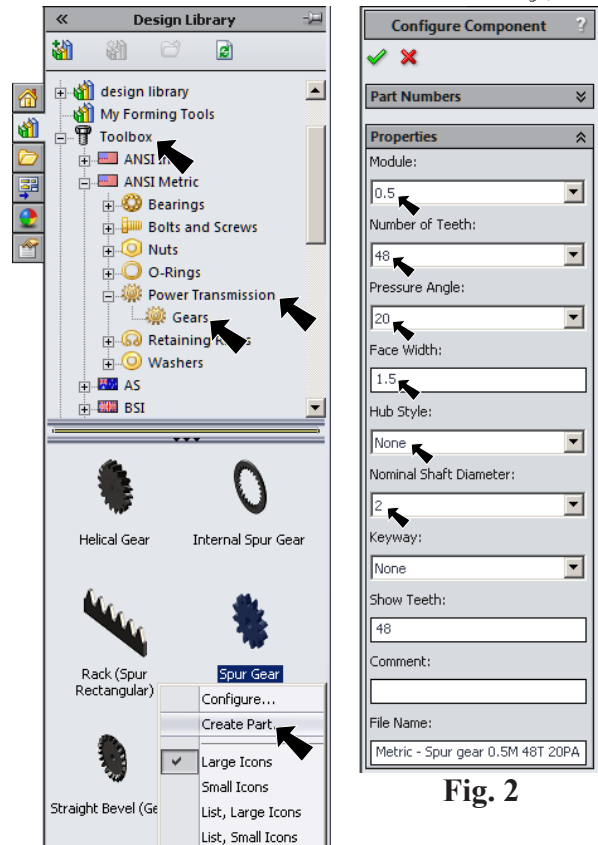


Fig. 1

Fig. 2

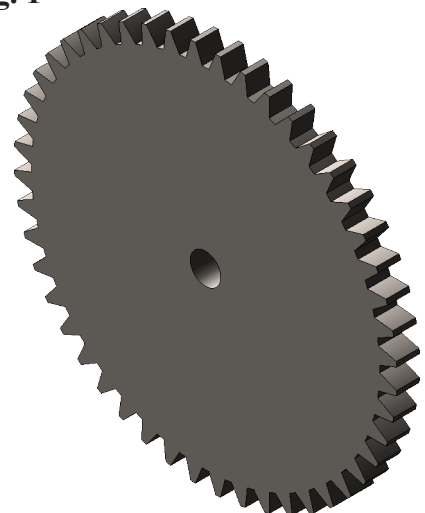


Fig. 3

C. Create Plane.

Step 1. Click **Plane 3** in the Feature Manager to select Plane, **Fig. 4**.

Step 2. Click **Reference Geometry** on the Features toolbar and **Plane** from the menu.

Step 3. In the Plane Property Manager set:
under First Reference, **Fig. 5**
Plane 3 should be selected

under Second Reference
click **Midpoint** of tooth face width edge,
Fig. 6 and **Fig. 7**.

click OK

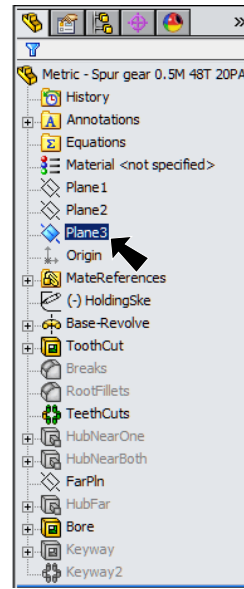


Fig. 4

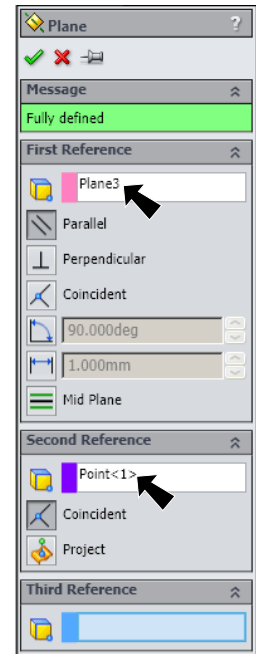


Fig. 5

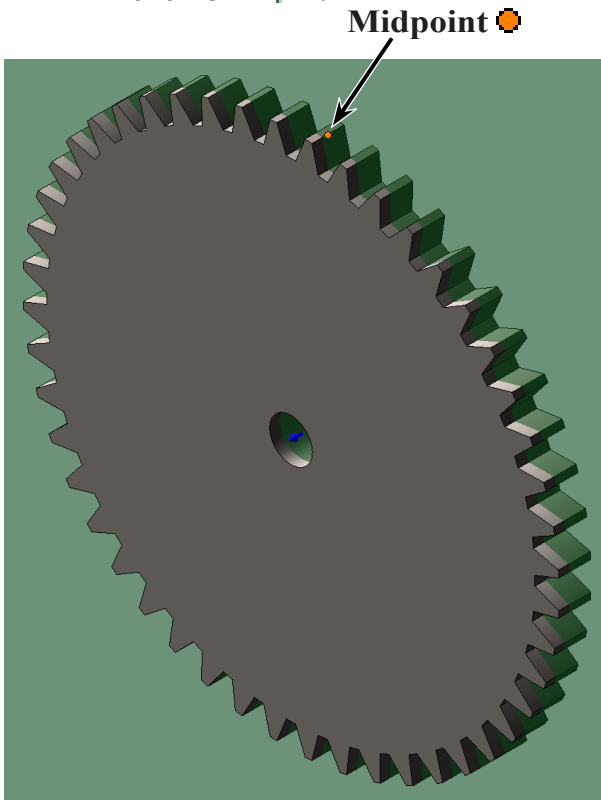


Fig. 6

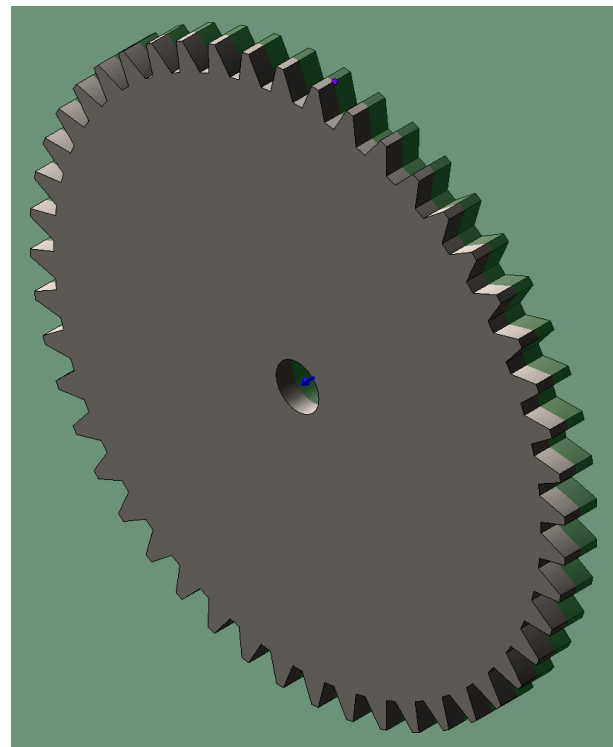




Fig. 7

D. Pitch Circle.

Step 1. Click new **Plane4**  in the Feature Manager and click **Sketch**  on the Context toolbar, **Fig. 8**.

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

Step 3. Click **Circle**  (S) on the Sketch toolbar.

Step 4. Draw a circle starting at the Origin , **Fig. 9**.

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

Step 6. Dimension circle **diameter 24**, **Fig. 9**.
Module * Number of Teeth = Pitch diameter
or $.5 * 48 = 24$

Step 7. Click **Exit Sketch**  on the Sketch toolbar.

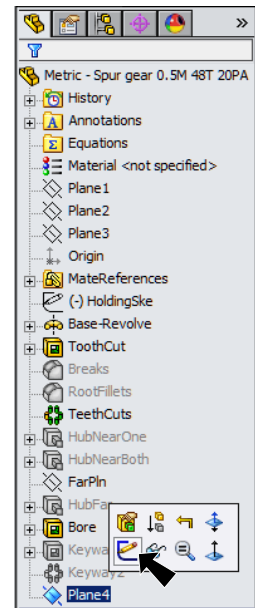


Fig. 8

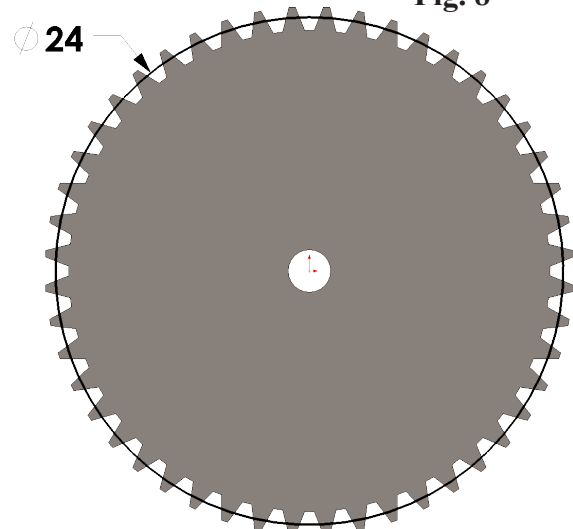


Fig. 9

E. Material ABS Plastic.

Step 1. Click **Isometric**  on the Standard Views toolbar. (**Ctrl-7**)

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

Step 3. **Expand Plastic** in the material tree and select **ABS**. Click **Apply** and **Close**.

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

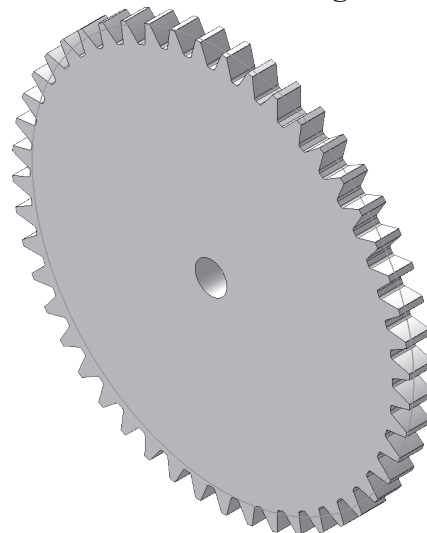



Fig. 10

F. Insert Part - Gear 12T.

Step 1. Click Insert Menu > Part.

Step 2. Select your 12T gear (Metric - Spur gear 0.5M 12T 20PA 5FW)

Step 3. Position tip of your cursor near shaft hole in 48T, Fig. 11. When 12T snaps into place and cursor changes to indicate Concentric mate , click to release 12T.

Release part when cursor changes to 

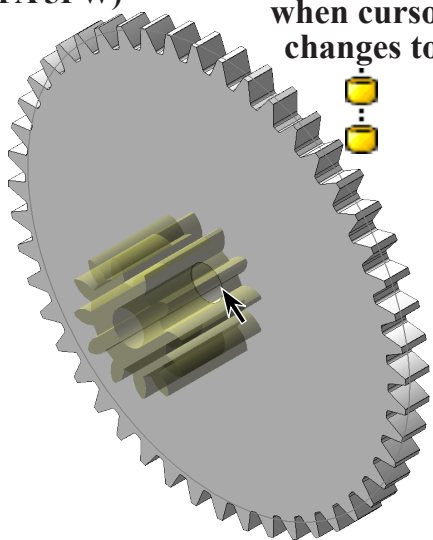


Fig. 11



Step 4. Click Add/Finish Mate  to add Concentric mate, Fig. 12.



Fig. 12

Step 4. In the Locate Part Property Manager, Fig. 13 if necessary, click Constraints.

Step 5. In the Locate Part Property Manager: under Mate Settings, Fig. 14 click side face on both gears, Fig. 15.

click Distance 
key-in 4 for distance
check Flip dimension

click OK 

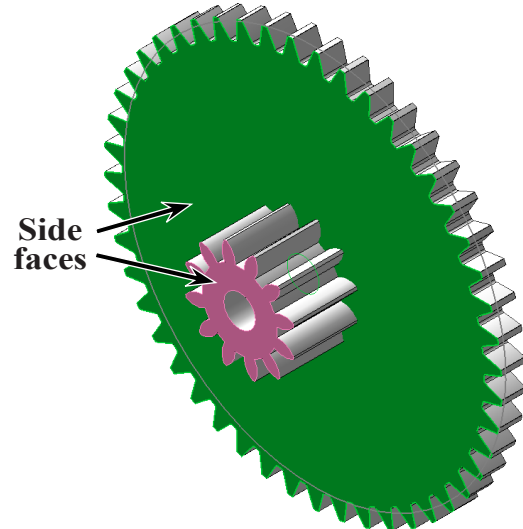


Fig. 15

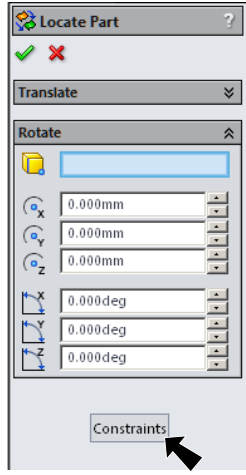


Fig. 13

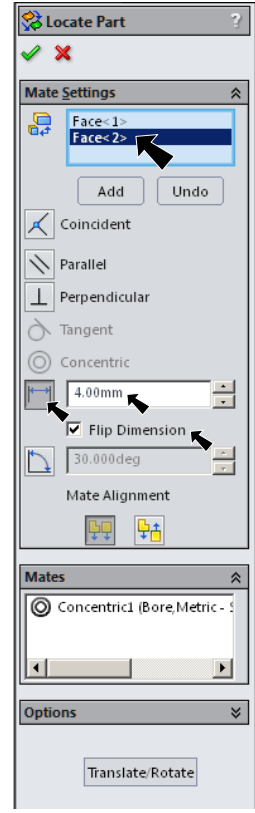


Fig. 14

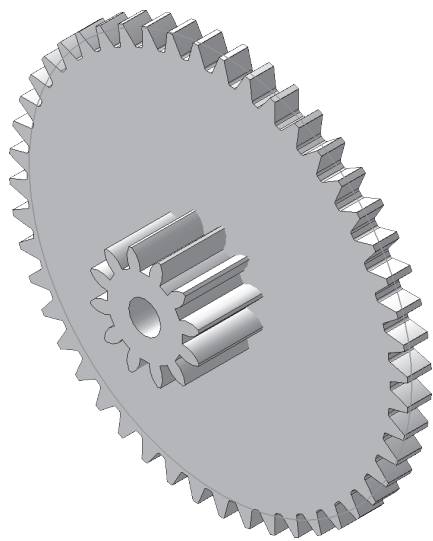



Fig. 16

G. Combine Bodies.

Step 1. Click Insert Menu > Features > Combine.

Step 2. In the Combine Property Manager:
under Operation Type, **Fig. 17**
select **Add**
click **both gears**, **Fig. 18**
click OK .

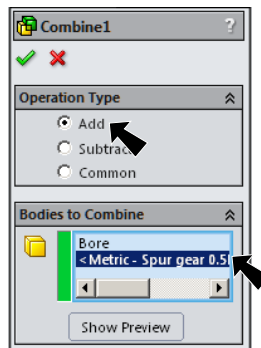


Fig. 17

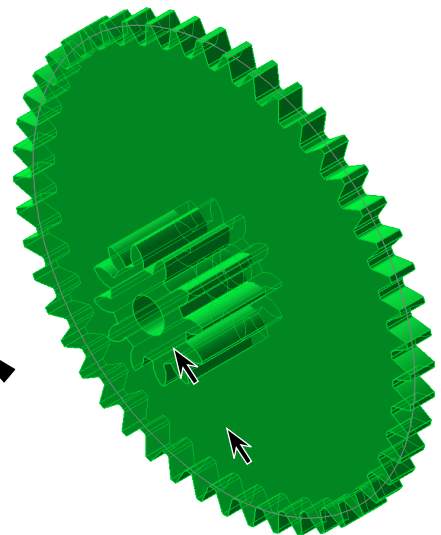


Fig. 18

H. Save As.

Step 1. Click File Menu > Save As.

Step 2. Add **12T** and **DOUBLE** to the filename leaving:

Metric - Spur gear 0.5M 12T-48T 20PA 1.5FW DOUBLE
and click Save.

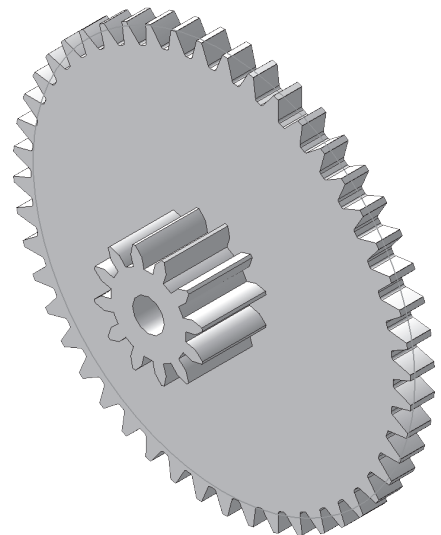


Fig. 19