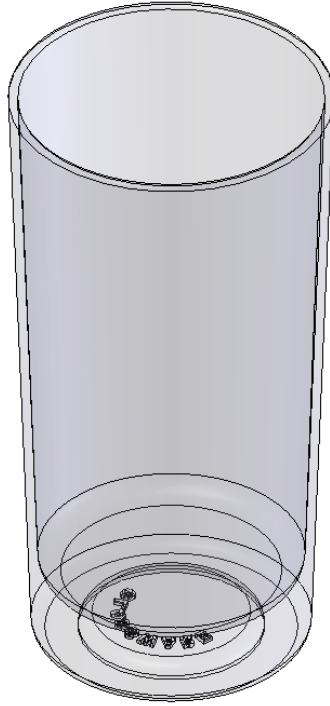
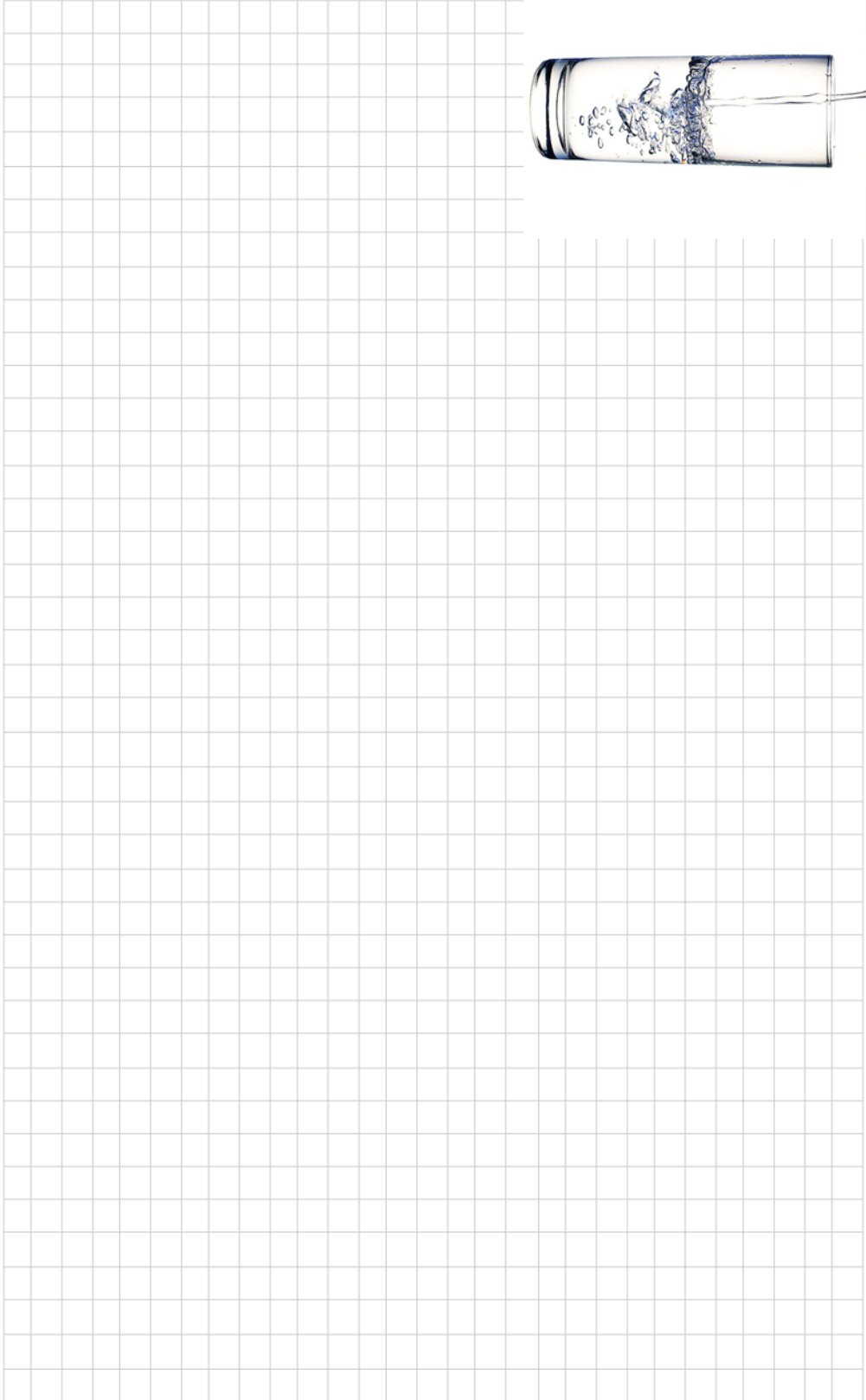


Introduction to Revolve - A Glass




Object Analysis sheet



Revolve

NAME: _____ DATE: _____



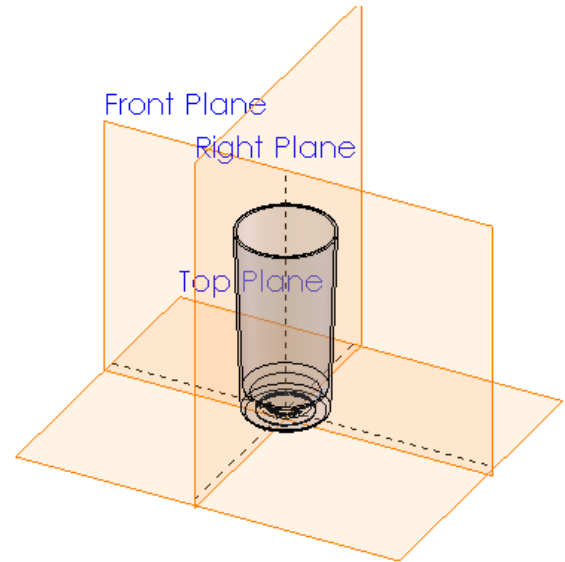
DESIGN & COMMUNICATION GRAPHICS

Prerequisite Knowledge Previous knowledge of the following commands are required to complete this lesson, **sketching (line construction, dimensioning, Text), Fillet, Extruded Boss/Base**

Commands Used This lesson includes **Sketching (Centerline, line, Smart Dimension, Text, fillet), Revolve Boss/Base, Fillet** and **Edit Materials**.


Where to start?

If you wish the Glass to end up sitting on the **Top Plane** (Horizontal Plane) as shown.

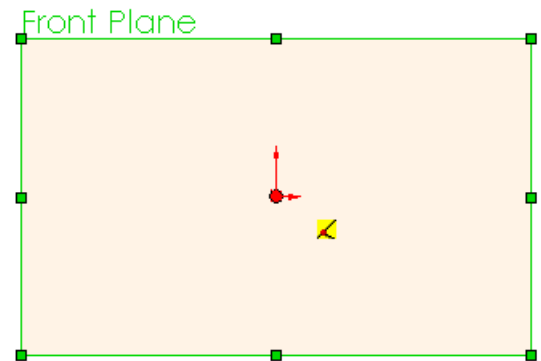


Getting Started

In this case the **Sketch** will be setup on the **Front Plane**, as the glass is in the vertical position.

Select **Sketch**  on the features command toolbar.

Select the **Front Plane**, the front plane will move into the normal view, as shown.

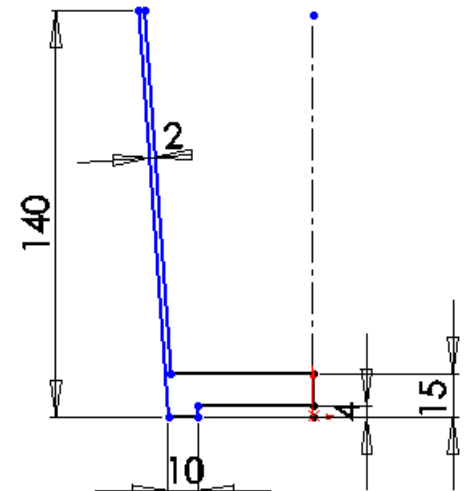


Create the profile

Create the sketch using the line command and dimensions shown.



Note: Sketch is not yet **Fully defined**.



Diameter

Dimensions

Some dimensions should be diameter dimensions in the finished revolve feature. For these dimensions, always select the **centerline** (axis of revolution) as one of the picks. You will then have your choice of either a radius or diameter dimension, depending on where you place the dimension text.

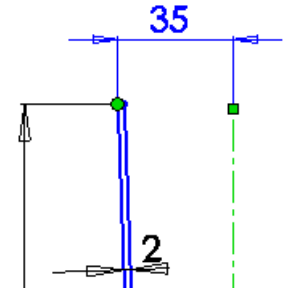


Note: This option is only available if a centerline is used as the axis of the revolution.

Dimension between the **centerline** and the outer vertical edge to create a horizontal dimension.

Do not click to place the dimension text just yet.

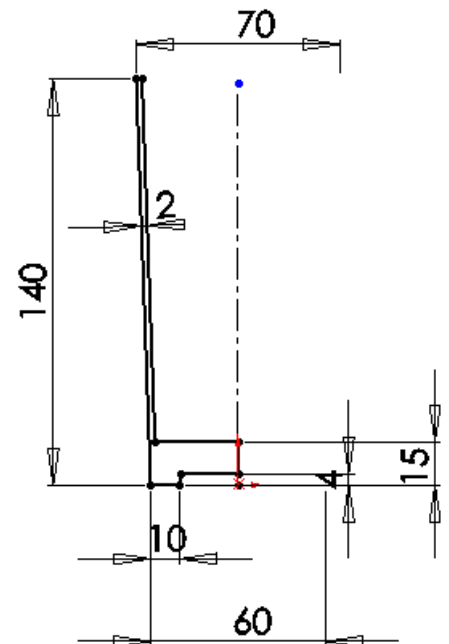
Notice the preview is a **radius** dimension.



Move the cursor to the right of the centerline. The preview changes to a diameter dimension as shown.

Click to place the dimension text. Change the value to **70mm**.

Set bottom diameter to **60mm** as shown.

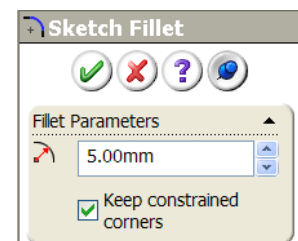
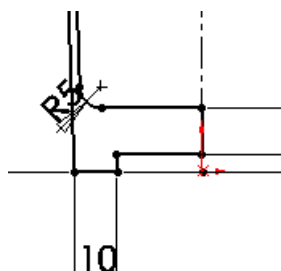


Adding Fillet

Select **Tools/Sketch Tools/Fillet** or select **Fillet** from the **sketch** toolbar.

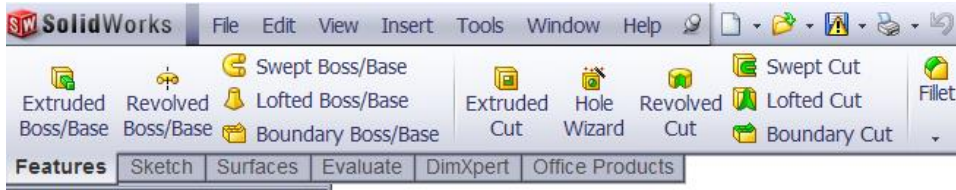
Enter a **Radius** of 5 mm


Select inner lines of the sketch, as shown.



Creating the feature

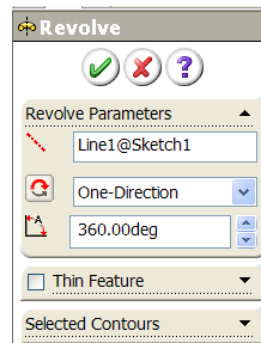
Select **Features** from the **Command Manager**. The **Features** toolbar has now replaced the **Sketch** toolbar along the top of the screen



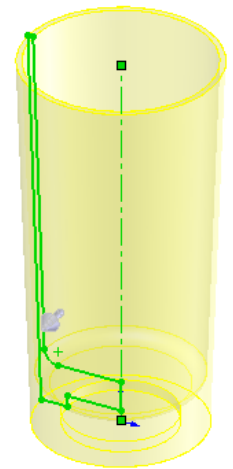
Choose **Revolve Boss/Base** , the sketch rotates to a trimetric view with a preview of the proposed revolve.

Revolve Feature Settings

The **PropertyManager** appears with these default end conditions.



The **Glass** will default to a preview as shown.



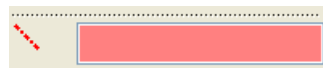
Lets analyze the Propertymanager

Axis of Revolution

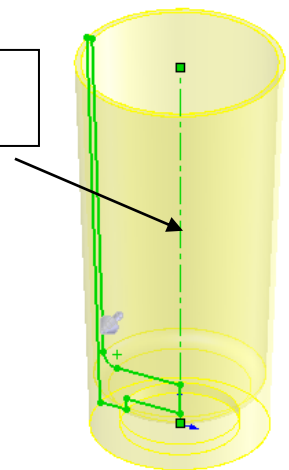
 = **Axis of Revolution**

In this case SolidWorks has recognized the centerline as being the **Axis of Revolution**. As the sketch was dimensioned from the centerline to create the diameter dimensions of the glass.


If different centerline was required it would be selected from this area

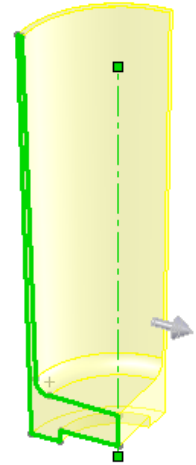


Axis of Revolution



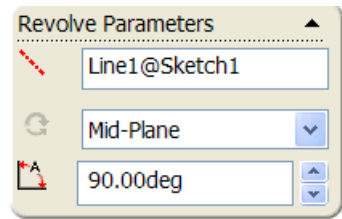
Revolve Direction

Select  **Reverse Direction**. The **Revolve** will now revolve to opposite direction as shown.

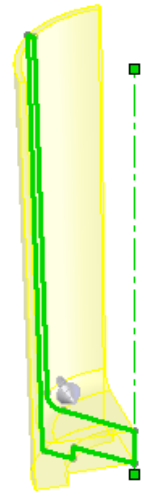


Revolve Type

Select **Mid-Plane** in **Revolve Type** window as shown.



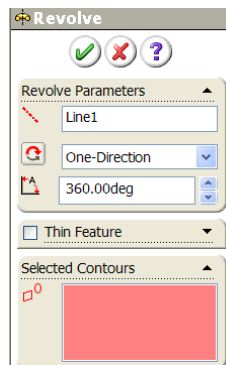
The sketch (Profile) will now revolve through 90° **Mid-Plane** as shown.



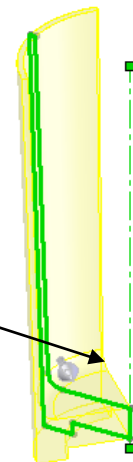
Note: Each of these options allow you to Manipulate the Revolve feature to suit the part.

Selected Contours

Allows you to select individual **sketches** (Profiles) which are to be revolved about an **Axis**.



Sketch (Contour)

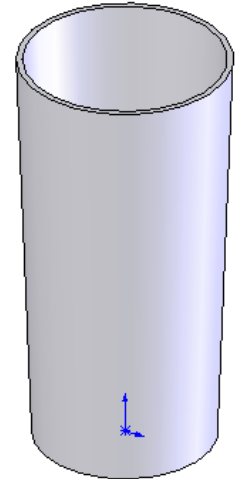


Enter Required Parameters

Enter  Angle = **360°**.

Select **One-Direction**  in **Revolve Type** window

Click **OK** button  to create the feature.



Completed feature

This is the first completed feature of the part. The sketch has been absorbed into the *REVOLVE 1* feature in the **Feature Manager**.



Rename Feature



Add Top Fillet

Select the **Fillet** option. The fillet options appear in the property manager.



Set the **Fillet Type** to **Full Round Fillet**

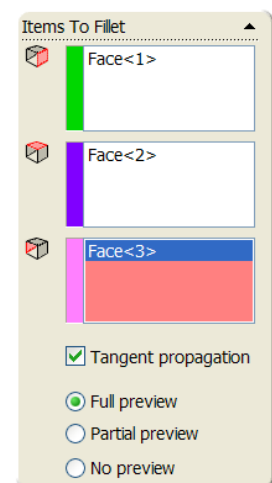


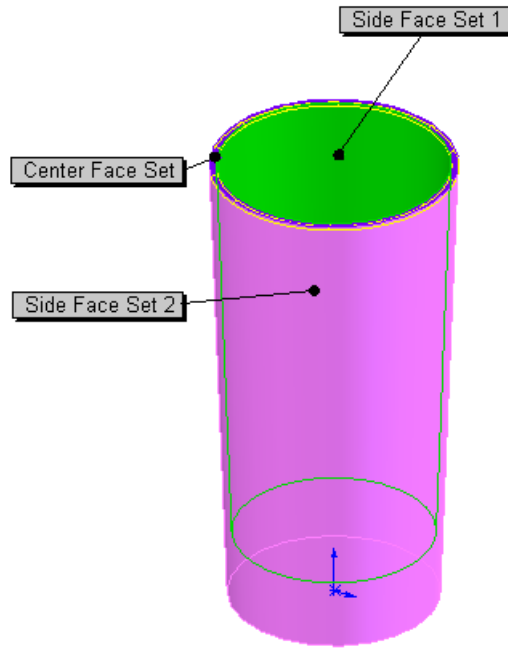
Note: The top edge of the glass is semi-circular. By choosing **Full round fillet** it is not necessary to enter a radius and if the glass feature is edited, This feature will not need to be edited.

Face Selection

Using **Items To Fillet** window, select the appropriate face within window.

Select the **faces** of the glass in sequence.

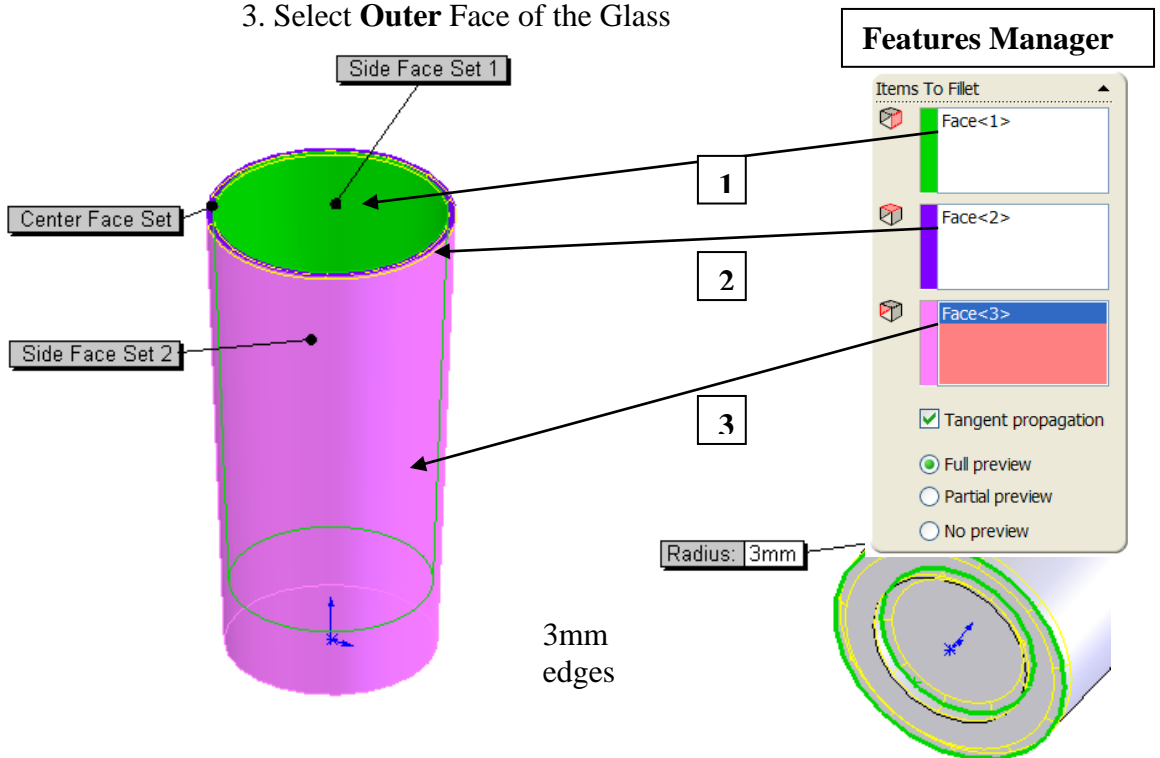




Sequence of selection

Using the **Features Manager** selection windows select the **faces** in the following sequence.

1. Select **Inner** face of Glass.
2. Select **Top** face of the Glass
3. Select **Outer** Face of the Glass



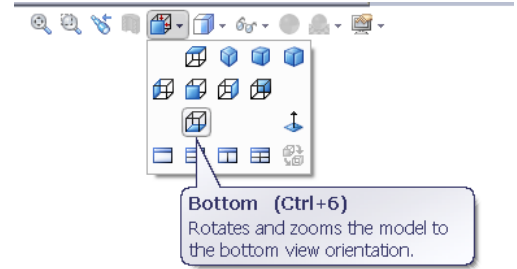
Add Bottom Fillets

Add fillets to the shown.

Rotate Glass in position for bottom text

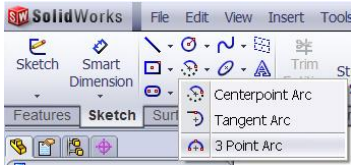
Select **Standard Views** from view toolbar at the top of the SolidWorks window as shown.

Select **Bottom** to rotate the Glass into a bottom view as shown.

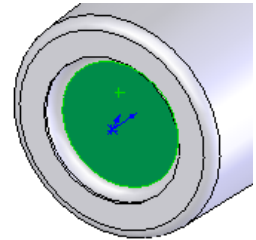


Text
Generating the Text

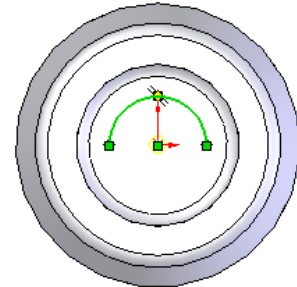
Create a sketch on the bottom surface of the glass.



Select **Centerpoint Arc**  command from the sketch tool bar.



Select center point and construct **semi-circle**.



Note: Line guide sketch will obstruct the **Extrusion** of the **Text**. The properties of the line / semi-circle must be changed first to a construction line.

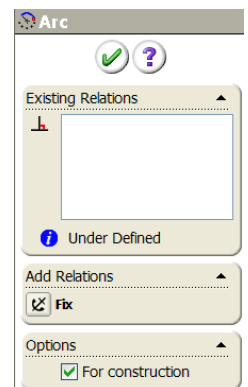
Change Properties

In order to change the properties of the semi-circle to a construction line.

Select the semi-circle in the sketch.

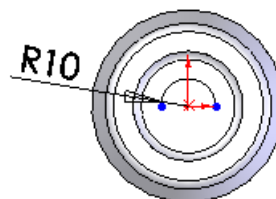
For construction will be unchecked in the **PropertiesManager**.

Select this to change properties as shown



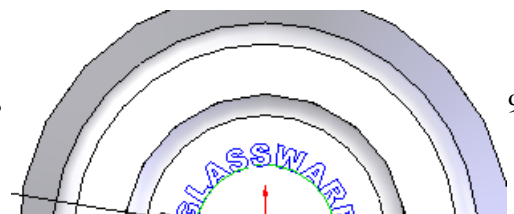
Dimension Arc

Radius = 10mm



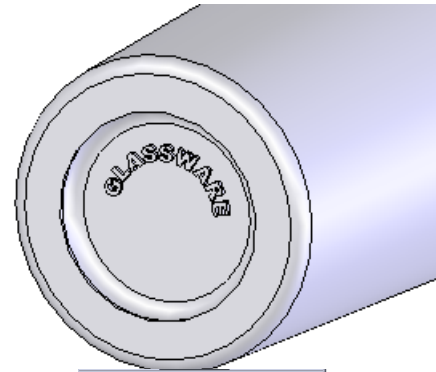
Add Text

Add **Text** to sketch as shown.



Front = **Arial Black**
Units = **3.0 mm**
Align = **Center**

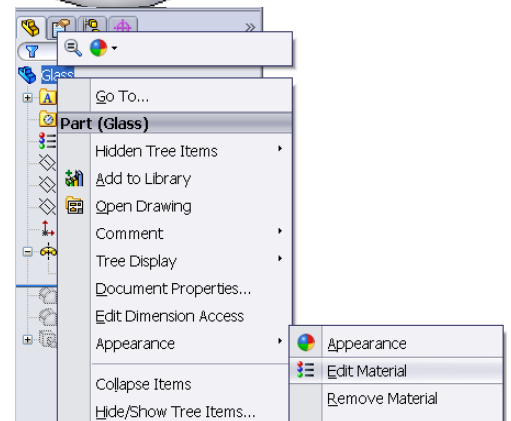
Extrude Boss/Base the sketch to a **thickness of 1mm**



Edit Materials

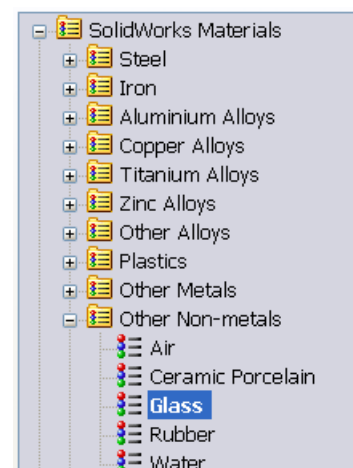
Right hand click on the part name, select **Edit Material**.

Scroll down through the **SolidWorks Materials** to **Other Non-metals**.



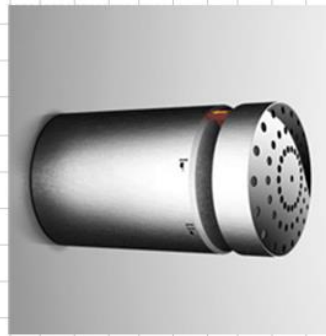
Select **Other Non-metals** and select **Glass** as shown.

Select **OK** 



Other Possible Revolve Options

Revolve



NAME: _____ DATE: _____

t⁴ TECHNOLOGY
SUBJECTS
SUPPORT
SERVICE

DESIGN & COMMUNICATION GRAPHICS