LAB-1

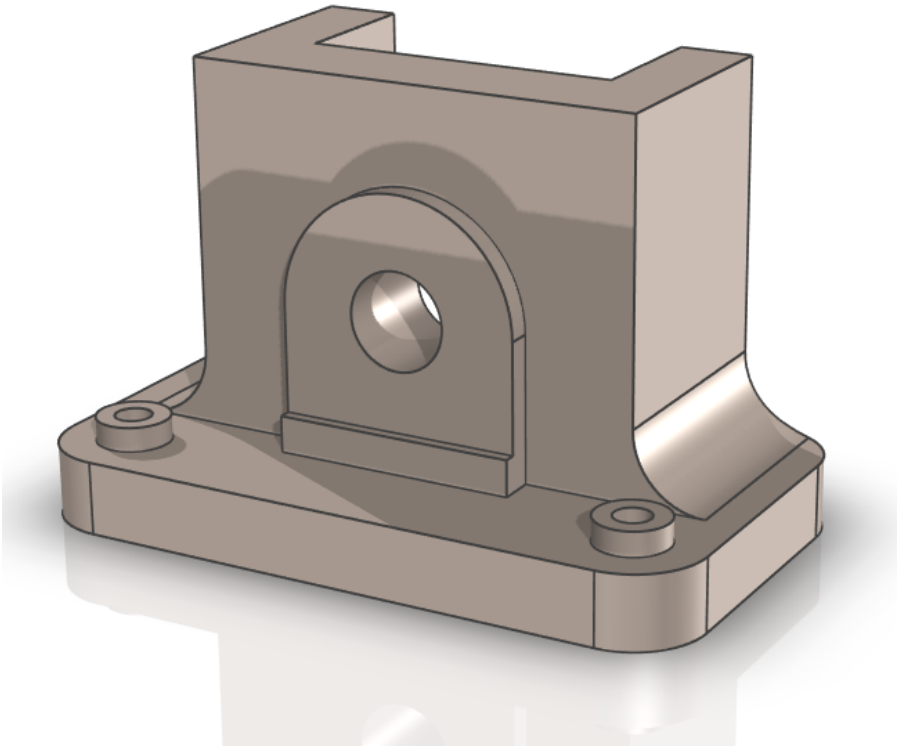
Guide Base

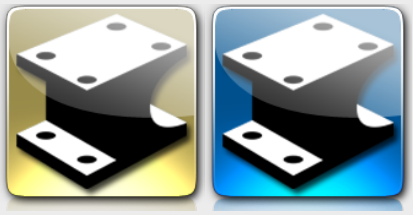
IronCAD

2021

3D Design

#PUL21LAB1





PULSAR SANCTIONED

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LAB-1

Guide Base

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in this lab...

You will model a Guide Base using only IronCAD's Drag-and-Drop modeling techniques along with IronCAD's Handle Technology.

objective...

To understand IronCAD's patented Drag and Drop modeling approach and functionality.

additional resources...

Companion Video:

http://www.magnacad.com/wp-content/uploads/2020/12/LAB_1-GUIDE-BASE-PUL21LAB1.mp4

LAB-1

Guide Base

PULSAR
SANCTIONED

LEGEND:

3-Button Mouse
with Scroll Wheel

LEFT-Mouse Click (LC)

LEFT-Mouse **HOLD** (LH)

MIDDLE-Mouse Click (MC)

MIDDLE-Mouse **HOLD** (MH)

RIGHT-Mouse Click (RC)

RIGHT-Mouse **HOLD** (RH)

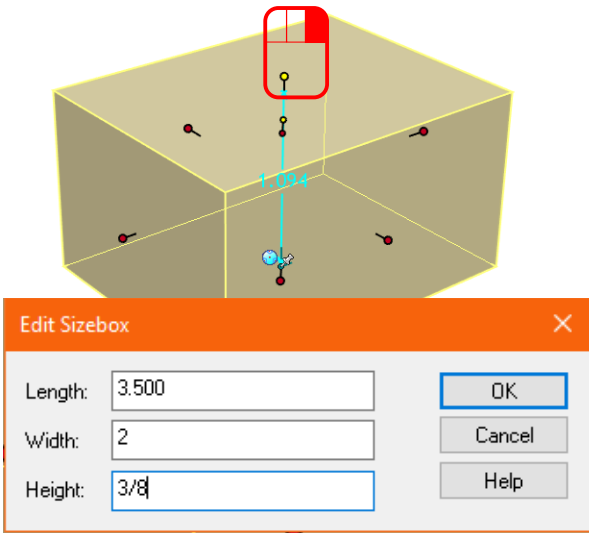
Scroll **IN** (ZOOMIN)

Scroll **OUT** (ZOOMOUT)

DEPRESS Scroll Wheel (DSW)

LEFT-Mouse **Hold** w/ **SHIFT** key **depressed** (LHS)

RIGHT Arrow Key



Lets get started...

From to **SHAPES** catalog drag (Left-click) an **EXTRUDE** shape into the 3D Scene background.

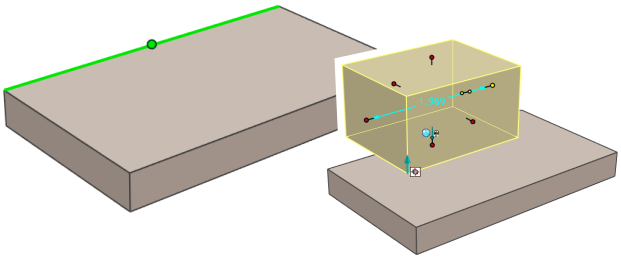
Click on block once to get into IntelliShape™ level. This is indicated by Yellow Highlight with Red handles.

Right-click on any **Red Handle** and click the **"Edit Sizebox"** option on pop-up menu.

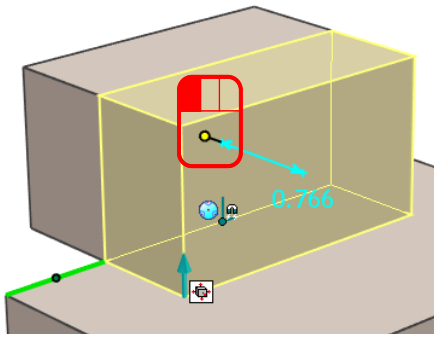
Enter the values shown in each appropriate field.

Click **OK** to finish.

IntelliShape™ refers to a feature shape of a part.



From to **SHAPES** catalog drag another **EXTRUDE** shape onto the **midpoint** of rear edge of existing block. Release mouse when you see the **bright green dot** and the **green edge highlight** as shown.



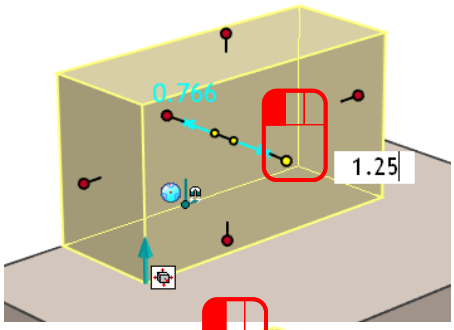
Resizing the second **block** in reference to the first...

LC rear handle while holding down the **SHIFT** key and drag handle until it snaps to the back edge of first block. The edge will highlight Green when you have snap alignment. **Release mouse button before** the **SHIFT** key to ensure you keep the snap reference.

TIP

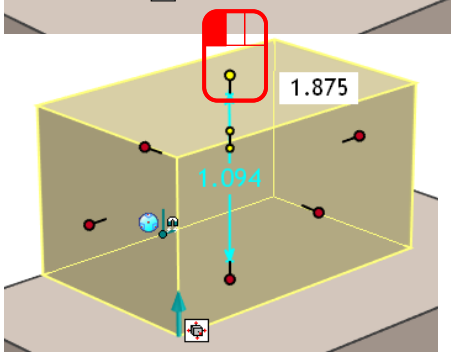
SmartSnap™ Technology

Holding SHIFT key while dragging a handle invokes IronCAD's SmartSnap™ Technology. SmartSnap will snap to Edges, Faces, Endpoints, Midpoints, Centerpoints, Tangents, 2D geometry, etc...



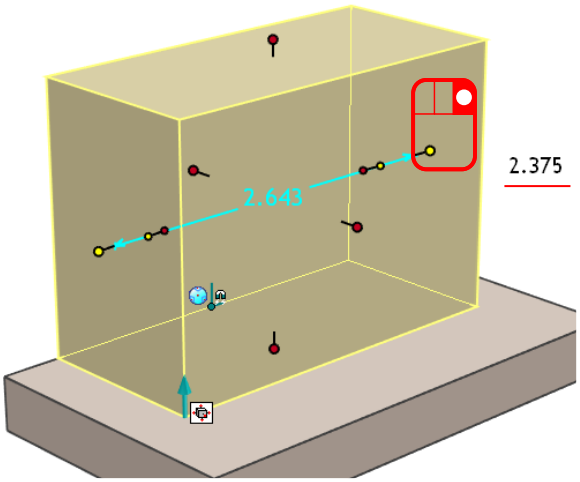
LC opposite handle and **enter 1.25** for the value.

Click **ENTER** key to finish.



LC top handle and **enter 1.875** for the value.

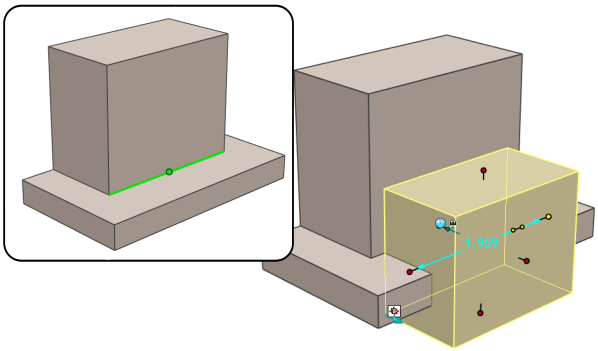
Click **ENTER** key to finish.



Objective:
Symmetrical sizing about the center of Block for the Length

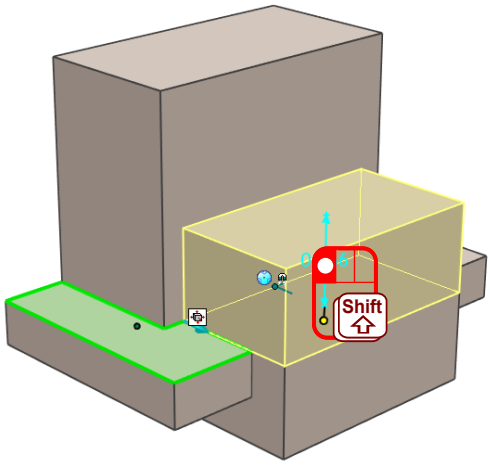
- **RH** right handle and drag (in any direction).
- Release button and enter value of **2.375**
- Click **ENTER** key to finish.

Right-Click and dragging (RCH) a Sizebox handle will invoke a symmetrical resizing behavior from opposite handle.

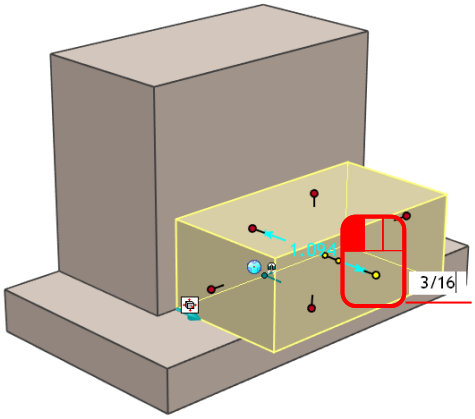


Objective:
Modeling the front "boss" using more drag-n-drop features.

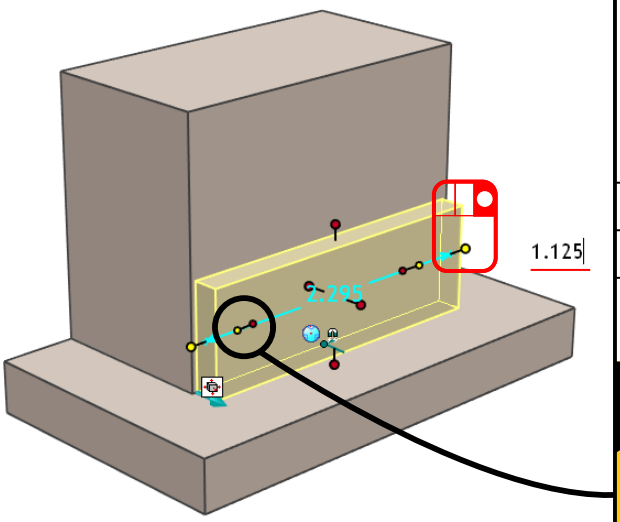
- **Drag** a Third EXTRUDE from the SHAPES catalog so it snaps to **midpoint of edge** common to both blocks as shown in Inset



- **LHS** bottom handle of **BLOCK** while holding **SHIFT** key (invokes SmartSnap) until target surface highlights bright **GREEN** and release mouse button first then release SHIFT key.



- **LC** front handle and enter value of **3/16**
- Click **ENTER** key to finish.



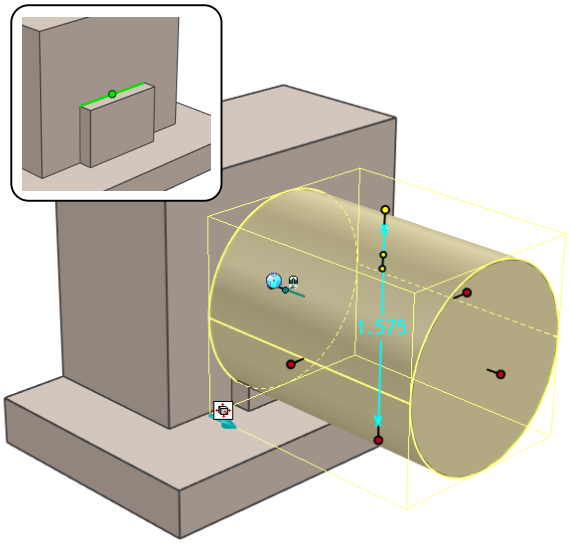
Objective:
Resize length symmetrically

- **RH** right handle and drag (in any direction).
- Release button and enter value of **1.125**
- Click **ENTER** key to finish.

TIP

Inner Shape Handles

By LC on the inner sizebox handles of a shape will allow you to use the left mouse button to drag for symmetry or not. IE. a red/yellow inner handle combo indicates symmetry. Yellow/Yellow indicates non-symmetry. Simply click to toggle as desired.



Objective:
Add top rounded shape to the front of the "boss"

- **Drag** a **CYLINDER** from the **SHAPES** catalog onto the back edge of last block as shown in Inset.

TIP

IMPORTANT:

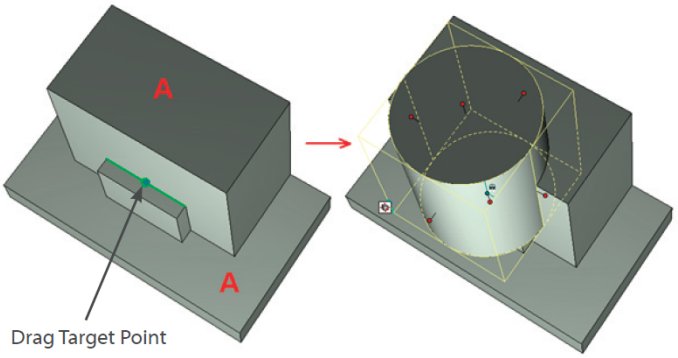
If you have been having trouble getting your shapes to orientate correctly as shown in this lab, chances are your view of the scene is not correct. What do I mean? Well, IronCAD is a zoom sensitive program. IronCAD thinks for you in these instances. For example, while dragging a shape from a catalog, onto a surface, edge or point, it will orient the shape perpendicular to the surface that is most closely perpendicular to your view in the scene (It will also resize the shape accordingly). See some examples in following section. This is important that you understand this because this is truly a time saving capability unique to IronCAD.

We have termed this capability...

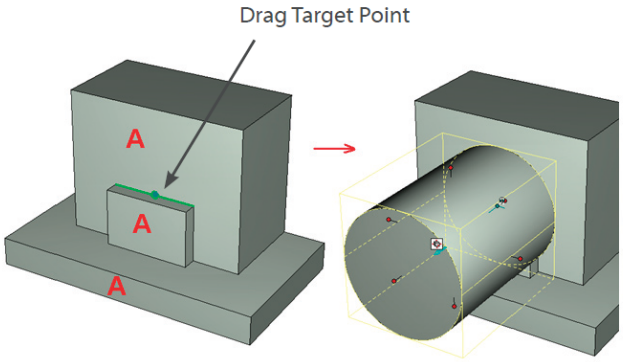
"Dynamic View Sensitivity Modeling Intelligence"

Dynamic View Sensitivity Modeling Technology

IronCAD is the leader in innovative 3D design technologies and has since been since the late 1980's. One of those innovative technologies is what we have coined as "Dynamic View Sensitivity Modeling". This was developed by IronCAD and still is the only 3D CAD application to have this ability. DVSM is IronCAD's innate ability to understand how you are viewing a part and knows automatically how a feature (IntelliShape™) should be placed on the part accordingly. To better understand this unique technology and its benefi ts, simply review the samples below.

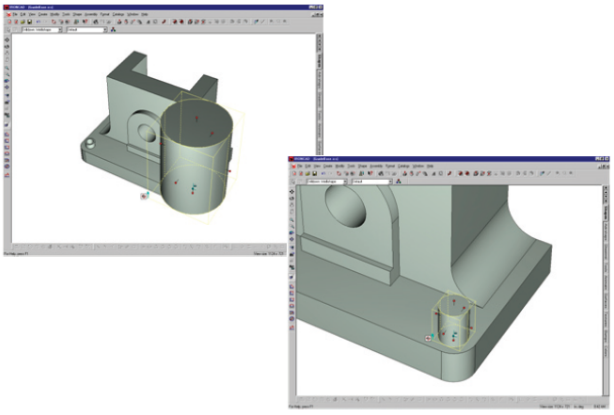


Since surfaces "A" are orientated more relative to our field of view, the cylinder once dragged on the edge indicated will orientate with its HEIGHT handle perpendicular to our view.

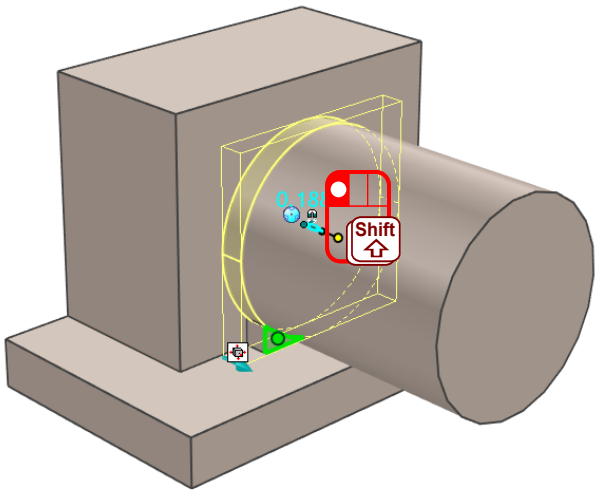


Notice how we drag the SAME cylinder to the SAME point and according to our field of view the cylinder will reorientate accordingly.

IronCAD Dynamic View Sensitivity will also ask if you wish to resize features relative to how zoomed in on a part you are.

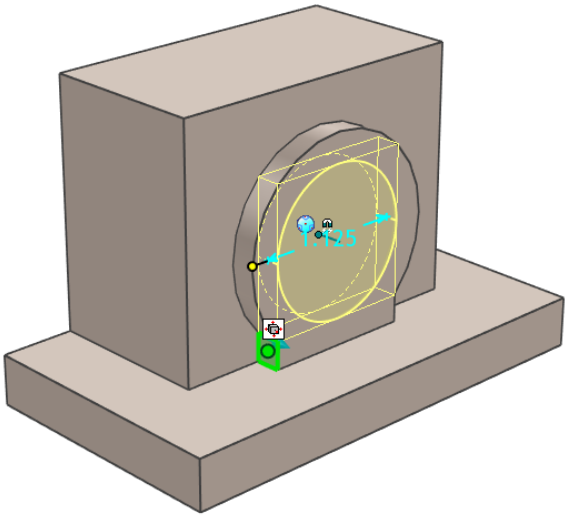


Through IronCAD's unique DVSM technology, users gain lighting speed in their modeling processes. DVSM allows the user the ability to zoom in tight on complex designs and not have to concern themselves about getting the proper feature first. DVSM in conjunction with SmartSnap™ and On-Demand technologies provide a powerful functionality that actually makes 3D design more synergetic an enjoyable.



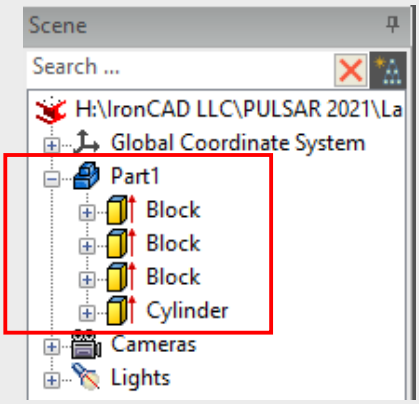
Snap front of cylinder to front of boss

LHS height handle of **CYLINDER** while holding **SHIFT** key (invokes SmartSnap) until target surface highlights bright **GREEN** and release mouse button first then release SHIFT key.

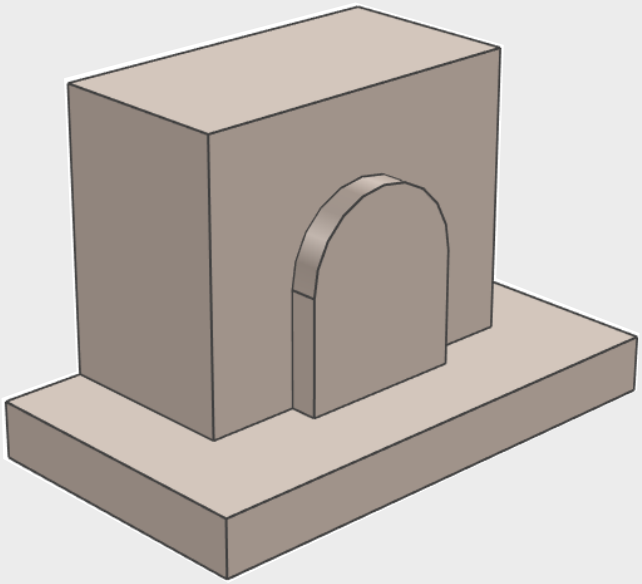


Snap diameter of cylinder to side of boss

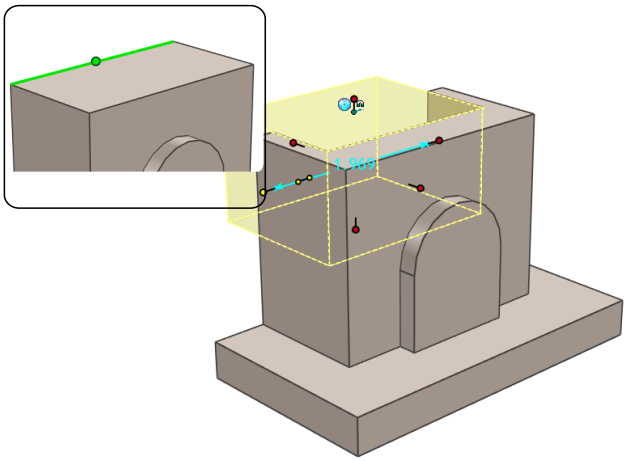
LCHS length handle of **CYLINDER** while holding **SHIFT** key (invokes SmartSnap) until target surface highlights bright **GREEN** and release mouse button first then release SHIFT key.



Scene Browser
Located on left side of UI. Click "plus" sign next to "Part 1" to view the Parts feature structure.



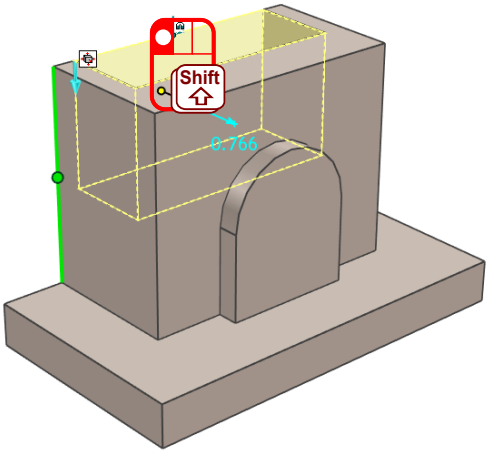
At this point your model should look like this. If not, please review previous steps.



Objective:

Use a negative volume block to remove the material from the back

Drag an **CUT EXTRUDE** from the **SHAPES** catalog onto the **midpoint** of the back edge of large block.

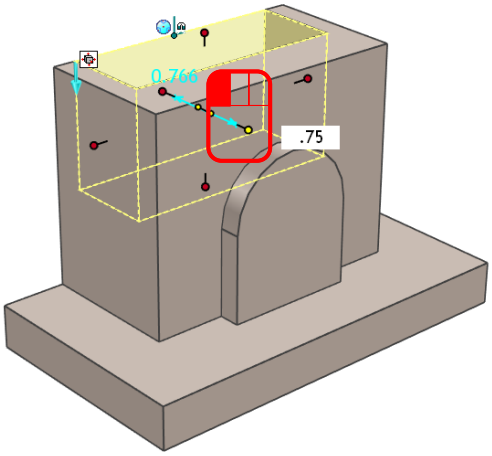


Using SmartSnap **(LHS) drag rear handle** of **CUT EXTRUDE** shape and snap to back edge of block as indicated with bright **GREEN** highlight.

TIP

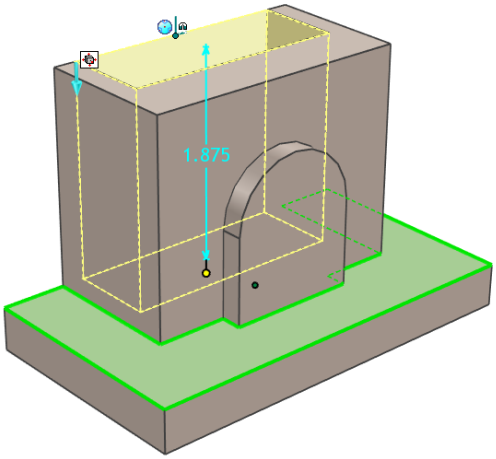
SmartSnap™ Technology

When "snapping" to a edge, face, etc.. when using SmartSnap, you can snap ANYWHERE on the target edge, face etc.. You DO NOT have to get the bright GREEN dot for the task to work. This is only in this lab to provide more ease of reading.

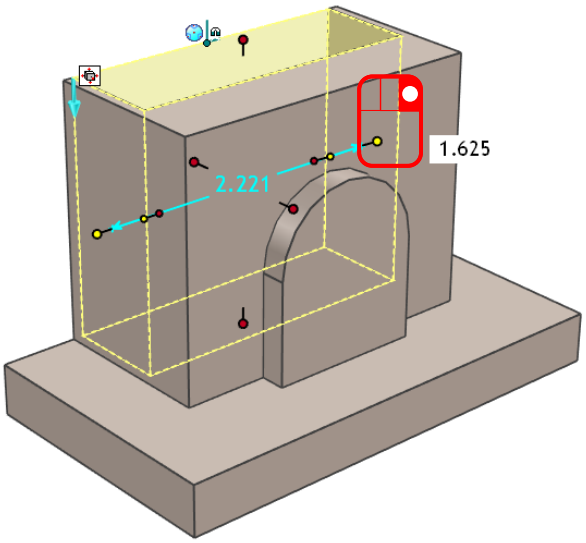


LC on opposite handle you just snapped to back edge and enter value of **.75**

Click **ENTER** key to finish.

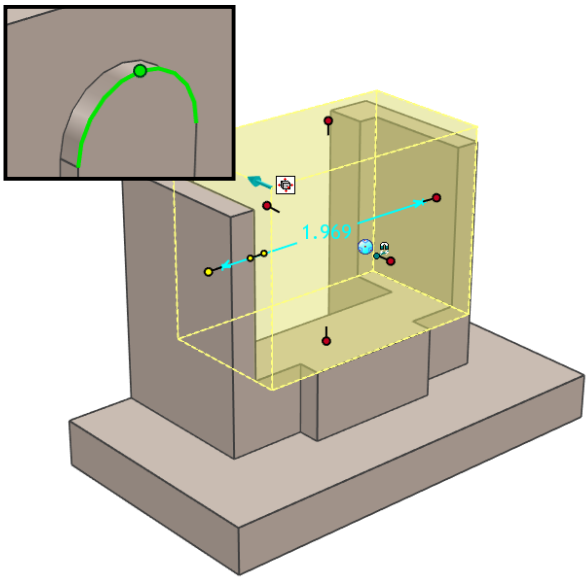


Using SmartSnap (hold SHIFT key) **drag bottom handle** of **CUT EXTRUDE** shape and snap to flat surface of block as indicated with bright **GREEN** highlight.



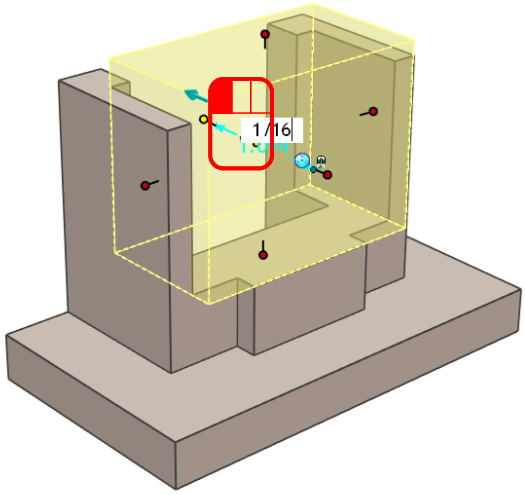
Objective:
Resize length symmetrically

- **RH** right handle and drag (in any direction).
- Release button and enter value of **1.625**
- Click **ENTER** key to finish.

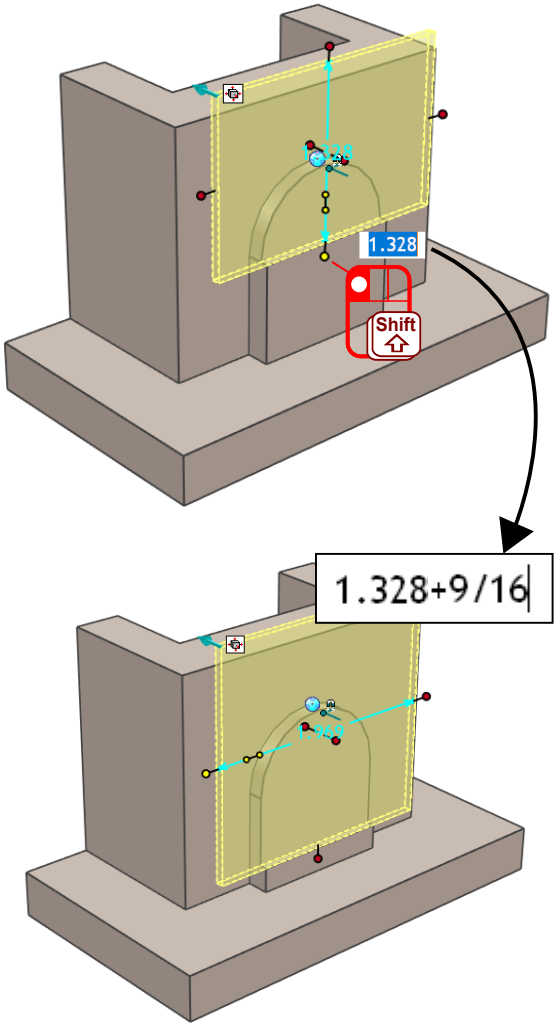


Objective:
Add a "notch" to front boss.

- **Drag** an **CUT EXTRUDE** from the **SHAPES** catalog onto the **midpoint** of the front edge of **CYLINDER** block.



- **LC** on rear handle and enter value of **1/16**
- Click **ENTER** key to finish.



Using SmartSnap **(LHS) drag bottom handle** of **CUT EXTRUDE** shape and snap to **CENTERPOINT** of round shape as indicated with bright **GREEN DOT** highlight.

Release button.

While value field is still highlighted **BLUE**, hit the **RIGHT ARROW KEY** on keyboard.

This will allow you to enter an equation in the value field at the end of the value..

Type **+9/16** at the end of value as shown.

Click **ENTER** key to finish.

If value field does not expand, do not worry, it's OK.

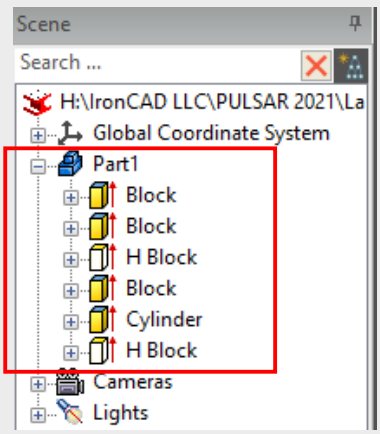
Click in **SCENE BACKGROUND** to deselect everything.

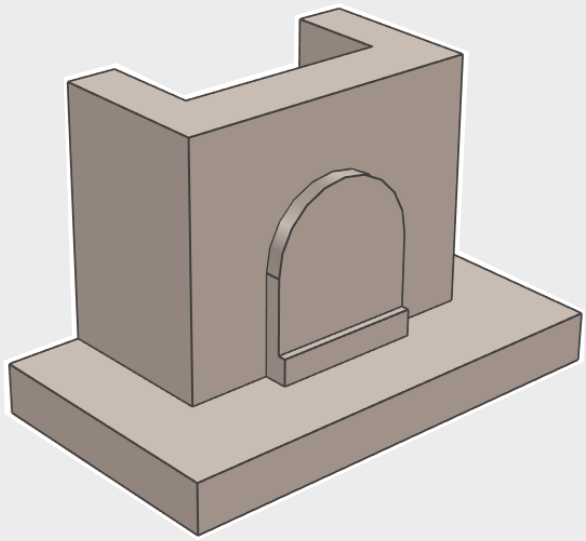
TIP

Calculation Derived Values

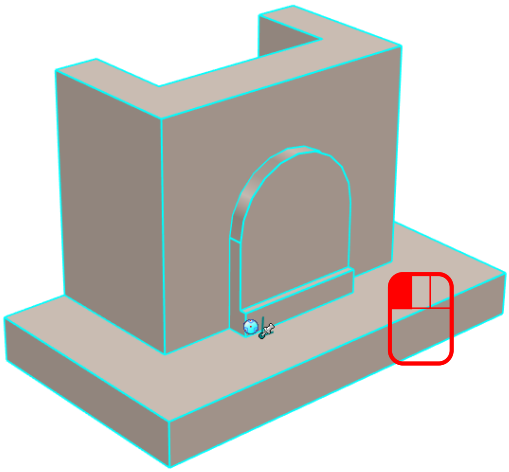
IronCAD allows you to enter equations in value fields through the process shown above. The saves time having to calculate as a side task.

As shown in this lab so far, you can enter either decimal or fractional values to get your desired calculation.





At this point your model should look like this. If not, please review previous steps.

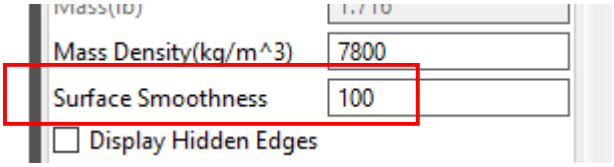


Objective:

Set the Smoothness of the round edge so it isn't "faceted" looking.

Make sure everything is deselected by clicking in the scene background if you haven't already.

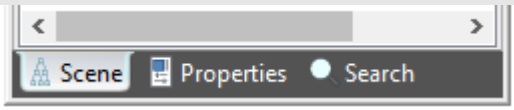
LC anywhere on the Part (so it's highighted cyan)



Go to **"Surface Smoothness"** in the **PROPERTY BROWSER** typically located next to the Scene browser.

Enter **100** for the new value.

Out of the Box - IronCAD has (3) three "browsers" available in TAB form. Simply click on the brower tab required for task at hand.

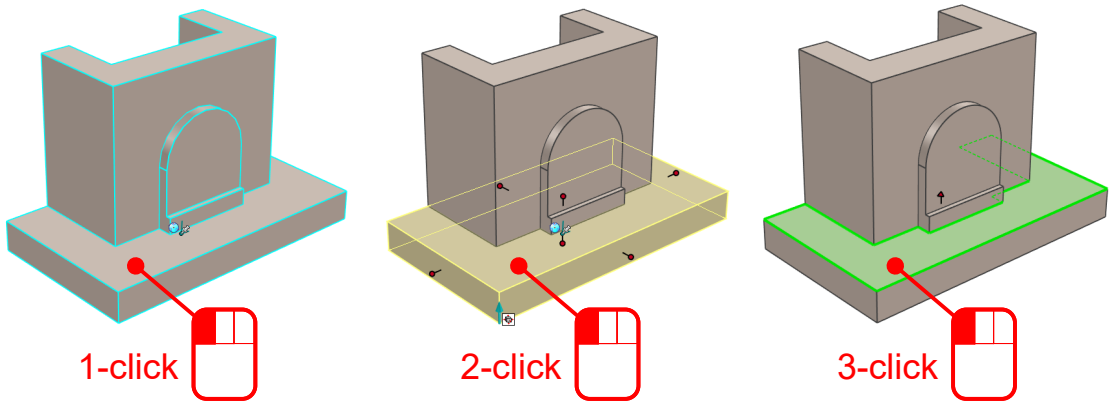


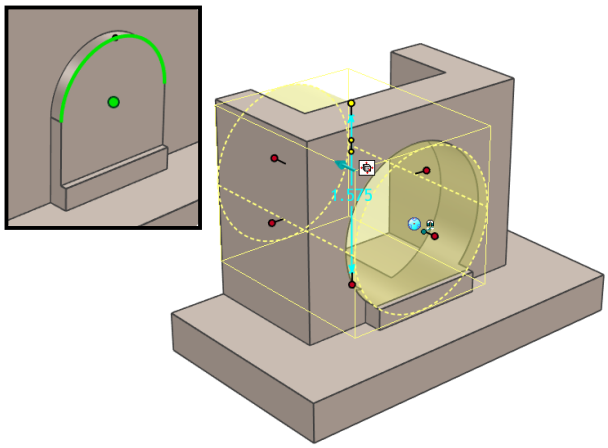
TIP

Model Hierarchy Selection

IronCAD has a mouse-click drill-down approach to selecting Assemblies/ Parts/Features/Faces etc. since it is a single scene design interface.

Selecting Components that are NOT assembled (as in this lab).
1st Left Mouse Click = Part (Cyan highlight)
2nd Left Mouse Click = IntelliShape (Yellow highlight with red handles)
3rd Left Mouse Click = Face (surface) of Part, (Green highlight)

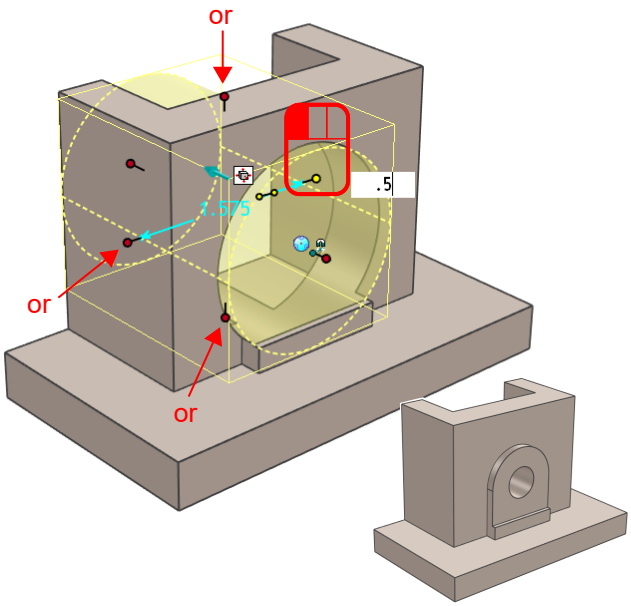




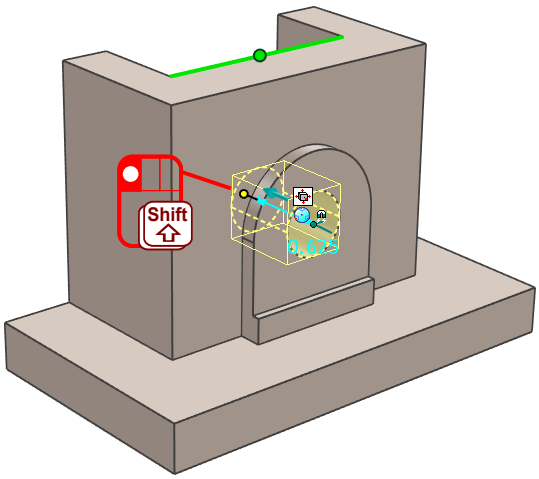
Objective:

Add a hole at the center of the rounded boss.

- **Drag** a **CUT CYLINDER** from the **SHAPES** catalog onto the **CENTERPOINT** of the rounded edge.
- **RELEASE** when bright **GREEN DOT** appears.



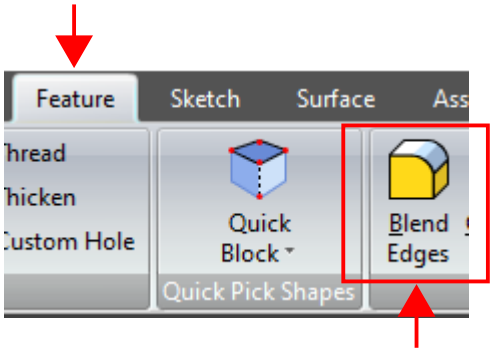
- Edit **DIAMETER** by **LC** on any handle on the "diameter" and enter **.5** for value
- Click **ENTER** key to finish.



Objective:

To keep model "clean". Do this only if you are a neat freak, otherwise not really necessary.

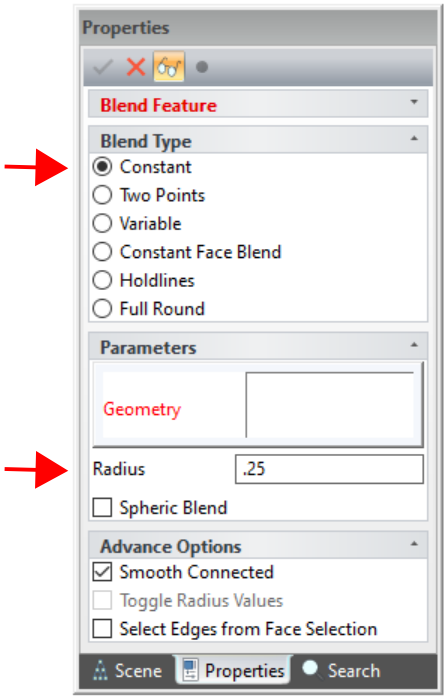
- **(LHS) Drag** rear handle of **CYLINDER** and using SmartSnap, snap to edge as shown. This serves no modeling purpose other than keeping model "organized".



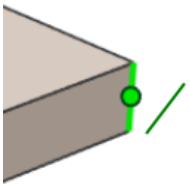
Objective:

Add radius to four corners of the "base portion of model.

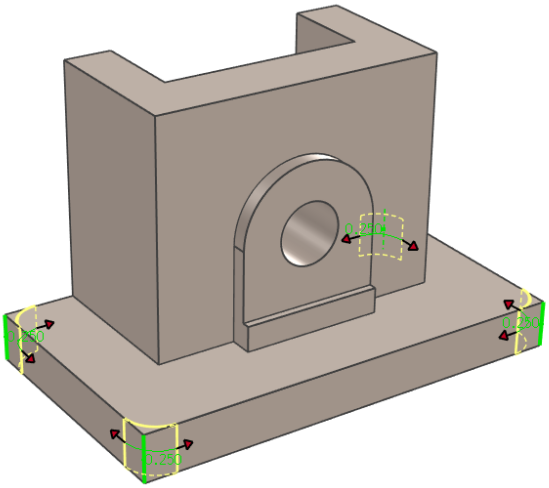
Select the **FEATURE** tab on top ribbon bar and then select the **BLEND EDGES** too.



In the resulting **PROPERTIES** Browser pop-up, enter **.25** in the **Radius** field. Make sure Blend Type is defaulted to **Constant.**



Move cursor over any vertical bottom edge of base until you see a line pop-up next to your mouse pointer, this indicates that IronCAD “sees” an edge, then **left click.**



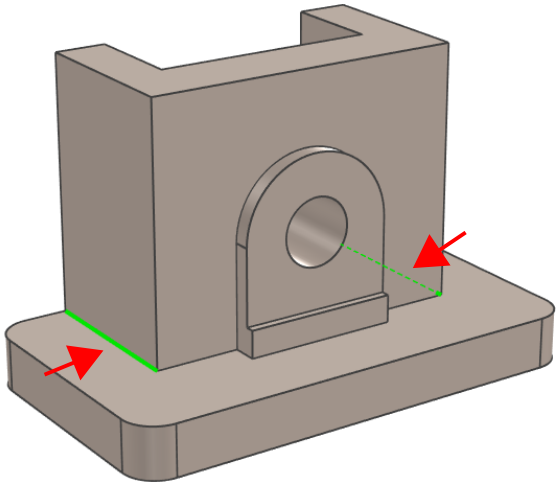
Holding the **SHIFT** (multiple selector) select the remaining **3** vertical edges of base portion of model.

TIP

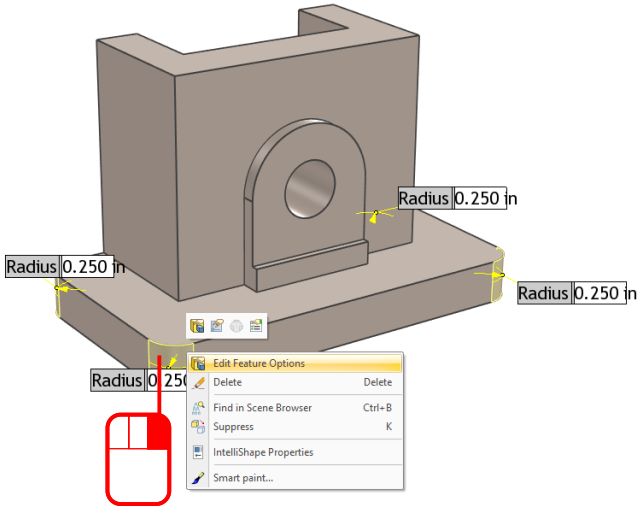
View Rotation

To rotate your view in the scene simple hold down middle mouse button or scroll wheel and drag your mouse as desired.

Click **ENTER** key to finish.

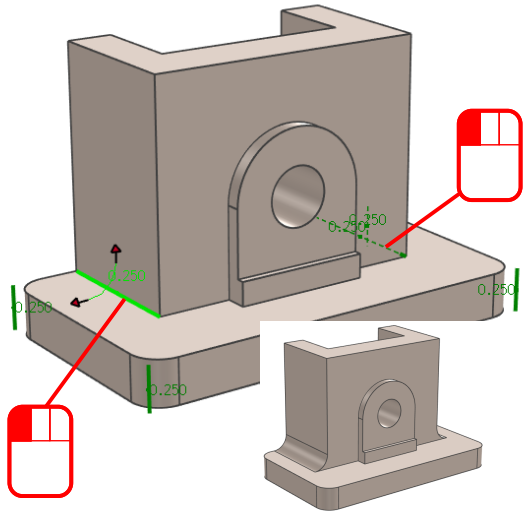


Objective:
Add radius to the two edges shown using the previous BLEND feature.



Select the **BLEND** Intellishape whether from the scene browser OR click **2 TIMES** on the blend on the model to "drill-down" to the Intellishape feature.

RC on any highlighted feature and select the **"Edit Feature Options"** from resulting pop-up menu.

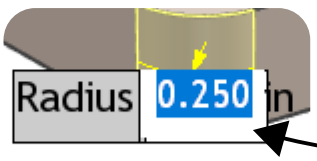


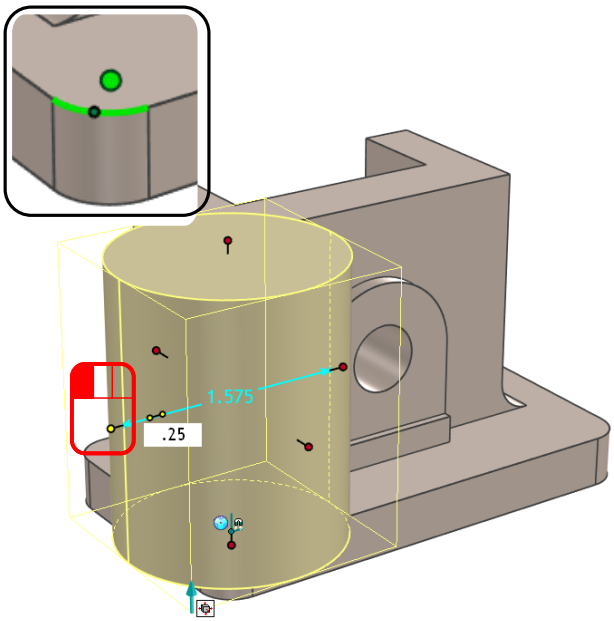
LC the 2 edges and click **ENTER** key or the green checkmark in the Properties browser to complete task.

TIP

Edit BLEND Values Independently

You can assign different blend values to each edge you select within a single blend function. Simply "drill-down" to feature (2 clicks) or select from Scene browser, double-click to select enter old value in the value field associated with the edge you wish to change and enter a new value. Click ENTER to complete task.

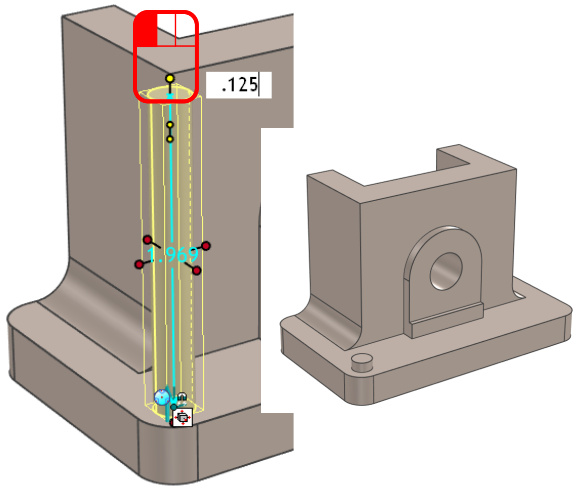




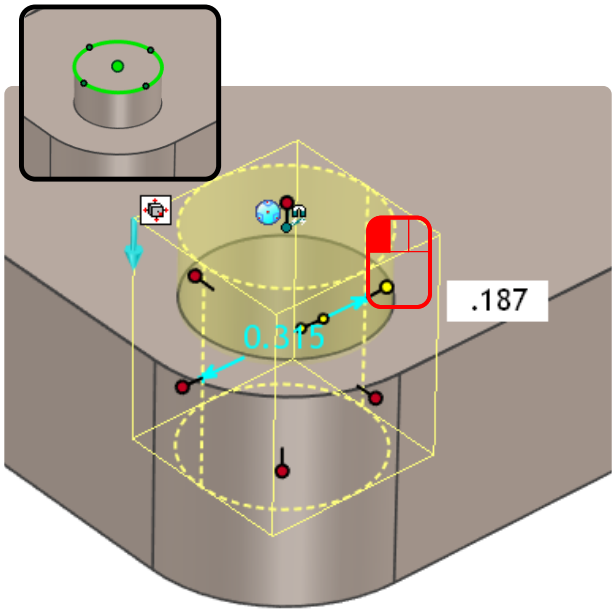
Objective:

Add round bosses that have through holes on them at each of the front corners.

- Drag a **CYLINDER** onto the **CENTERPOINT** of the front left radius. See Inset
- Edit **DIAMETER** of cylinder boss by **LC** on any handle on the "diameter" and enter **.25** for value
- Click **ENTER** key to finish.

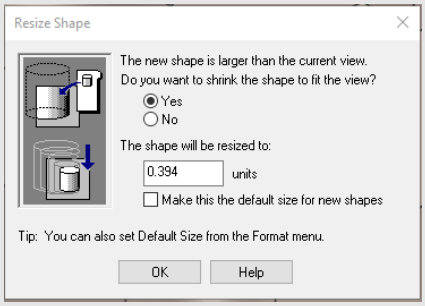


- **LC** top handle of **CYLINDER** and enter **.125** for value
- Click **ENTER** key to finish.

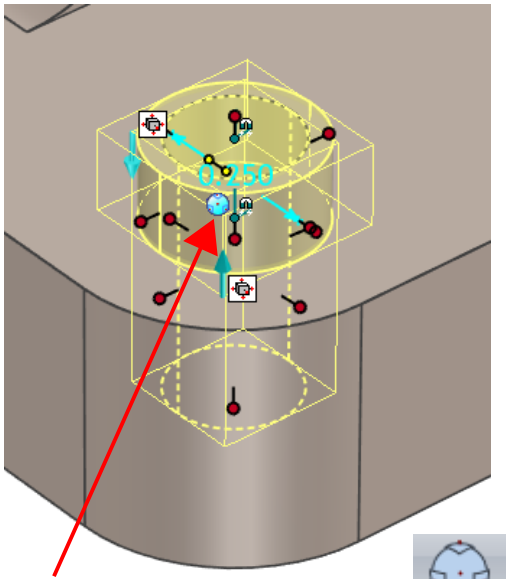


- **Drag** an **CUT CYLINDER** onto the center of the cylinder you have just created.

If a dialog pops up simply click OK, This dialog is asking if you wish to resize your feature. This happens if your zoomed in very tight on your model. It's part of the "View Sensitivity Modeling Intelligence" outlined earlier in this lab.



- **LC** any "diameter" handle of **CYLINDER** and enter **.187**
- Click **ENTER** key to finish.



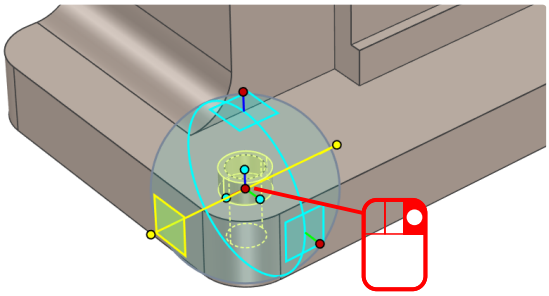
Objective:

Make linked copies of the two cylinder shapes you just created at the other corner radius.

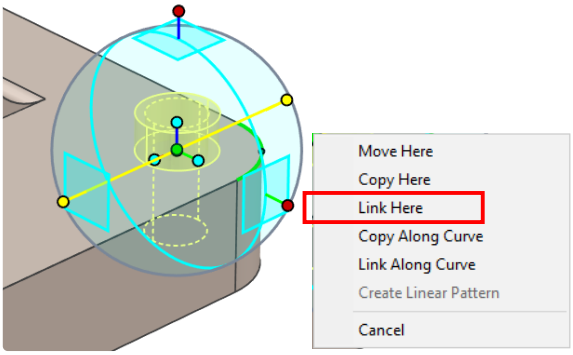
Holding the **SHIFT** key, click on the **CYLINDER** feature first and then click the **CUT CYLINDER** feature until they both highlight in yellow.

It is important to order of selecting shapes becuase when they are copied IronCAD adds them in the order they were selected. Ie. You do not want a "hole" then a cylinder, that would cover up the hole.

Click on the **TRIBALL icon** to turn it on. *(Alternately you can turn on TriBall by selecting the F10 key or selecting from the very top menu above ribbon bar).*



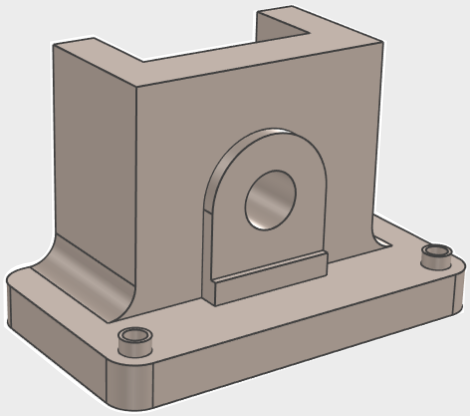
RC the left **OUTER HANDLE** of the **TriBall**. This turns that axis yellow indicating it is temporarily constraint to move along.



RH the **CENTER HANDLE** (center red dot) of the **TriBall** and **drag** to the right until it **SNAPS** to the **CENTERPOINT** of the other radius indicated by bright GREEN dot and radius edge highlight GREEN.

Release and select **LINK Here** from resulting pop-up menu and **OK** on resulting pop-up menu.

Click in scene background to clear all selections and **F10** to turn off TriBall if needed.



YOU HAVE COMPLETED THIS LAB, CONGRATULATIONS!!