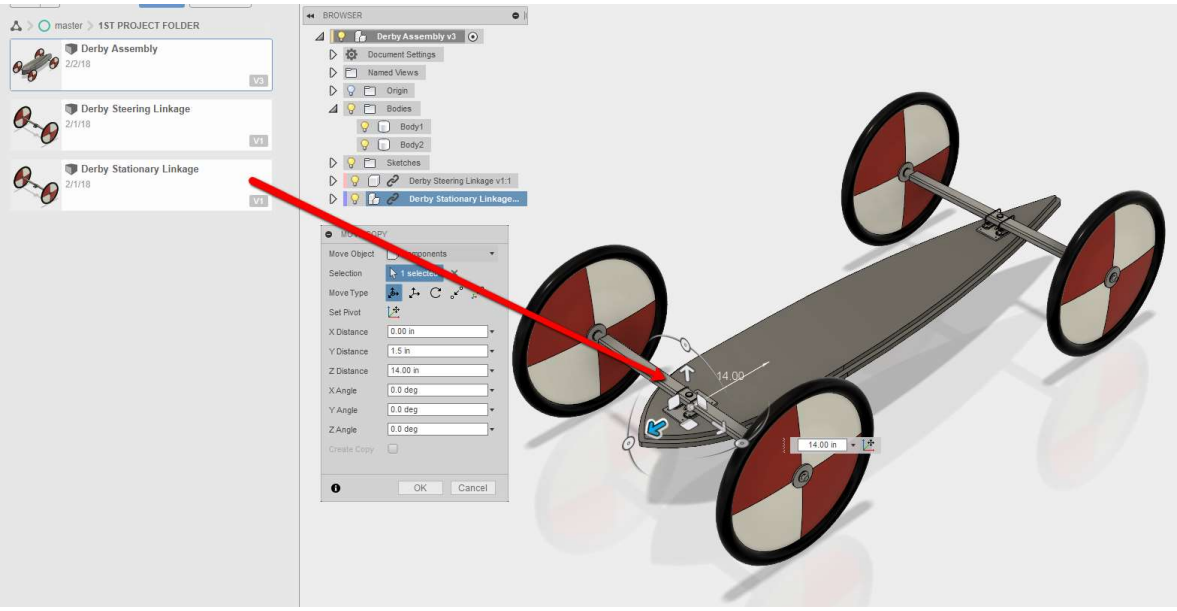
## Add Components to a Design:

### Exercise One: Add the Steering and Stationary Linkage:

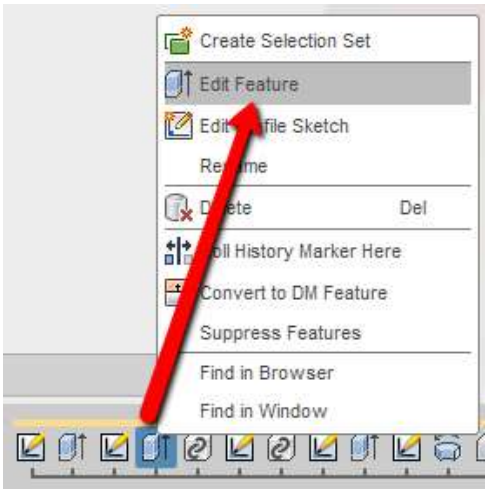
1. Open the Derby Assembly file
2. Drag and drop both stationary and steering linkages into the design
3. Raise both up 1.5 in the Y direction (Up/ Down)
4. Move the steering linkage to 47 inches in the Z direction (Forward/ Back)
5. Move the stationary linkage -14 inches in the Z direction (Forward/ Back)




## Convert Secondary Features to a New Body

### Exercise Two: Convert a Feature to a New Body:

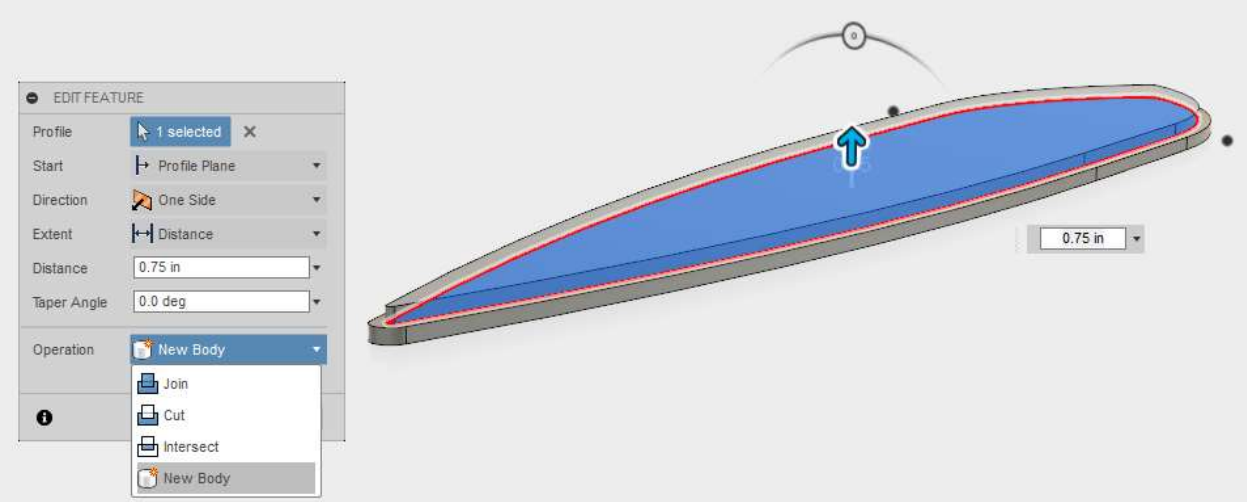
1. Right Click on the second extrusion in the history, from the last session
2. Select Edit Feature, to modify the extrude for the top floorboard



## Convert Secondary Features to a New Body

**Exercise Two: Convert a Feature to a New Body:**

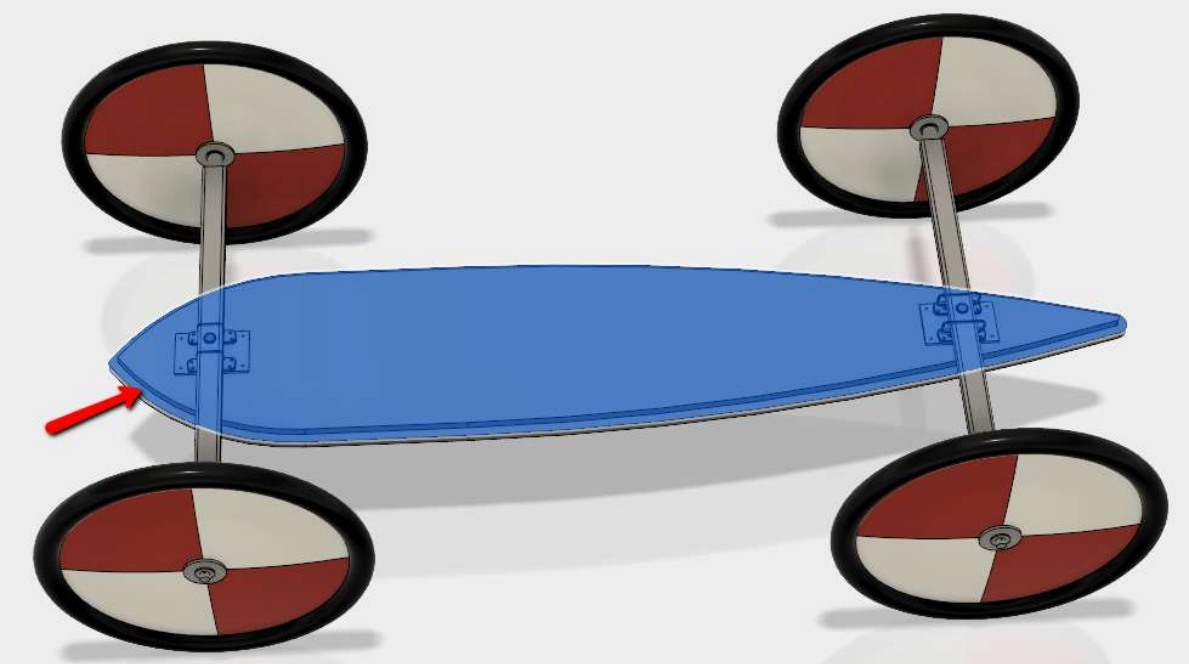
3. Expand the Operations list
4. Select New Body




## Create Multiple Bodies

**Exercise Three: Extrude a New Body:**

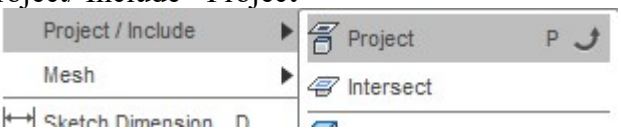
1. Create a new sketch
2. Select the top of the first extrusion as the plane/ face to use



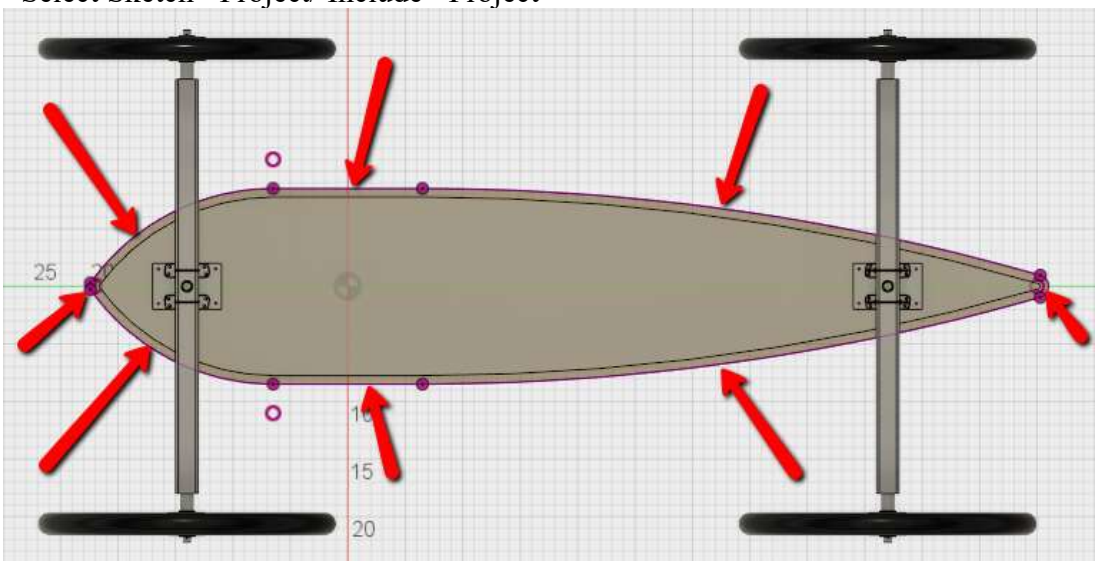
## Create Multiple Bodies

**Exercise Three: Extrude a New Body:**

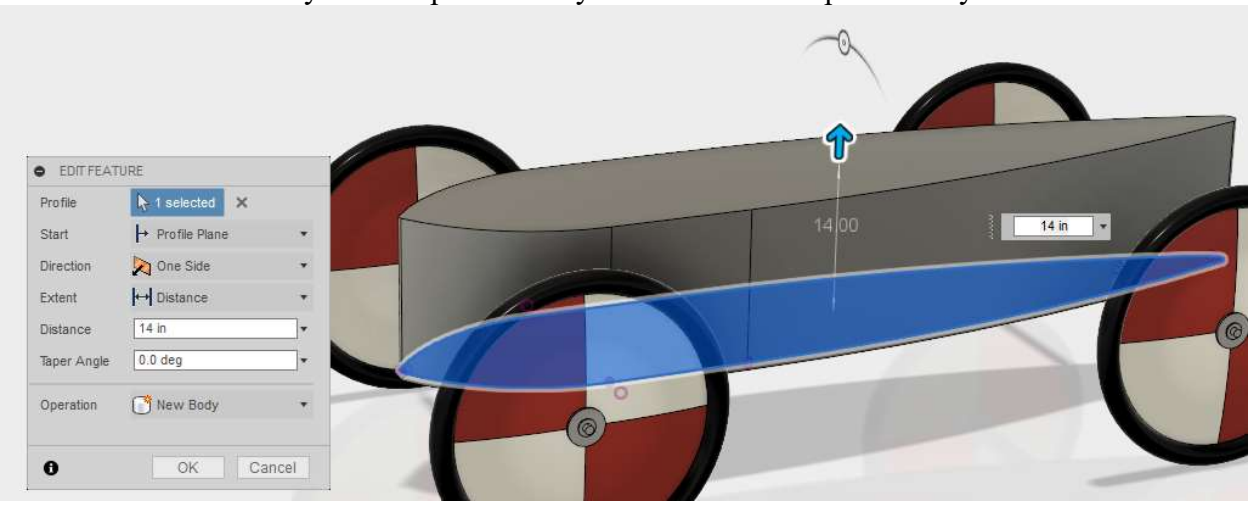
3. Select Sketch> Project/ Include> Project




4. Select Sketch> Project/ Include> Project



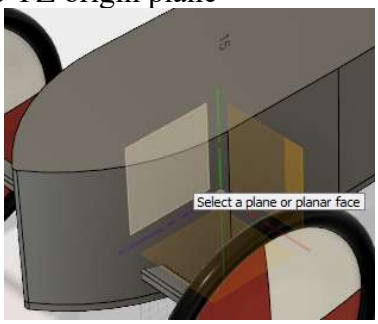

5. Extrude the outer profile that was create on the sketch 14 inches
6. Select New Body in the Operations flyout to make it a separate body



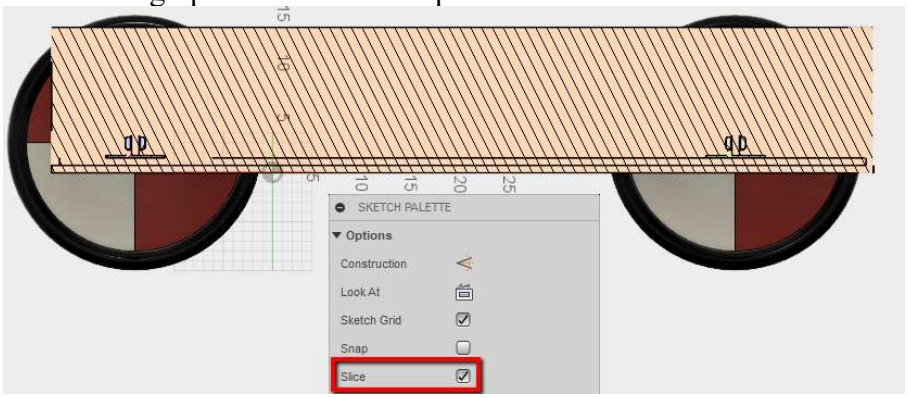
## Create Multiple Bodies

**Exercise Four: Revolve Cut a Contour:**

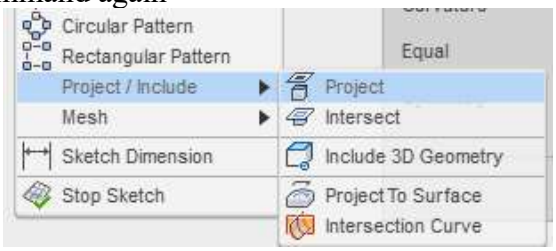
1. Create a new sketch on the YZ origin plane




2. Turn on the slice graphics in the sketch palette




3. Start the Project command again

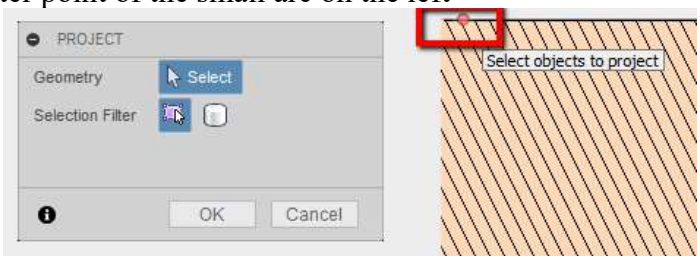



4. Project the edge of the large arc on the right

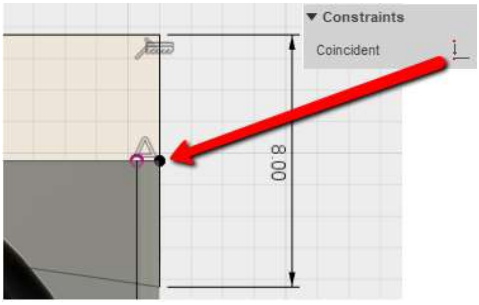
## Create Multiple Bodies

**Exercise Four: Revolve Cut a Contour:**

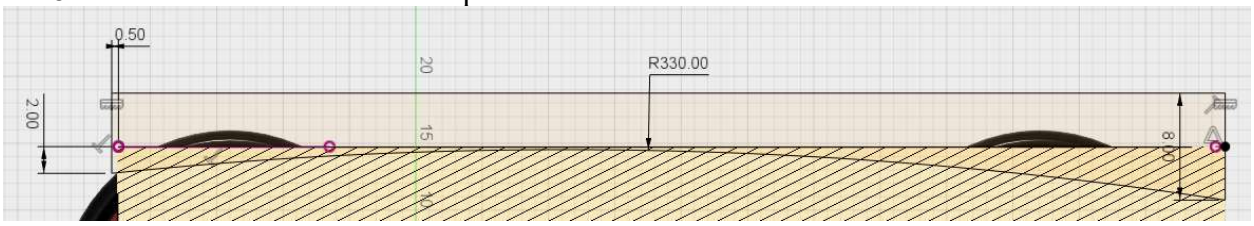
5. Select the center point of the small arc on the left




6. Create an 8 inch vertical line
7. Apply a coincident constraint to the midpoint of the vertical line and the right point of the far right projected line

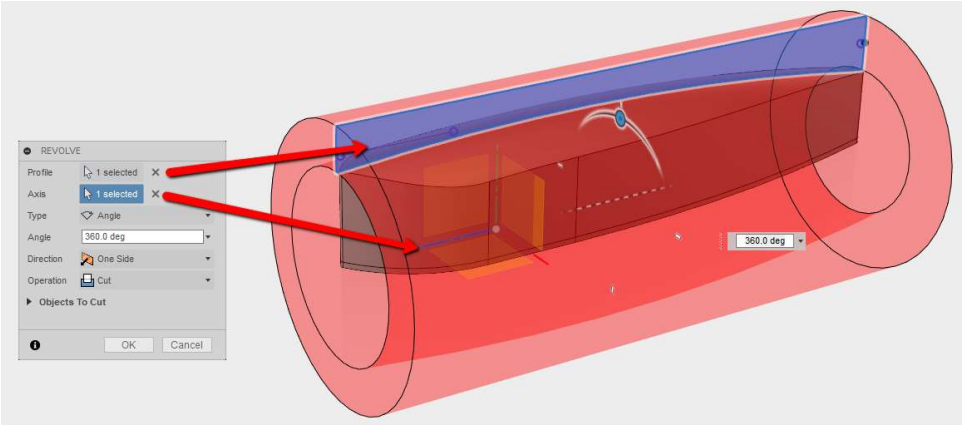



8. Create the rest of the closed profile shown below




9. Do a revolve cut of the profile about the Z axis

**Note:** turning off the other bodies and components is optional for a better visual



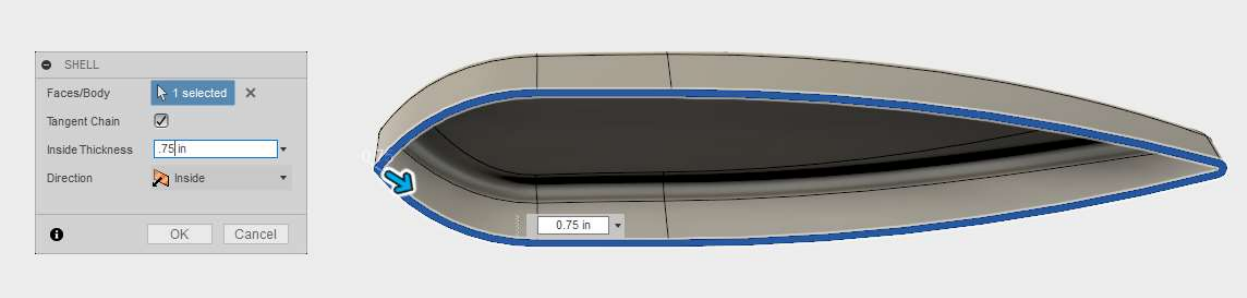
## Create Multiple Bodies

**Exercise Five: Fillet the Contour:**

1. Add a 4 inch fillet to the top edge of the fuselage


Exercise Six: Shell the Fuselage

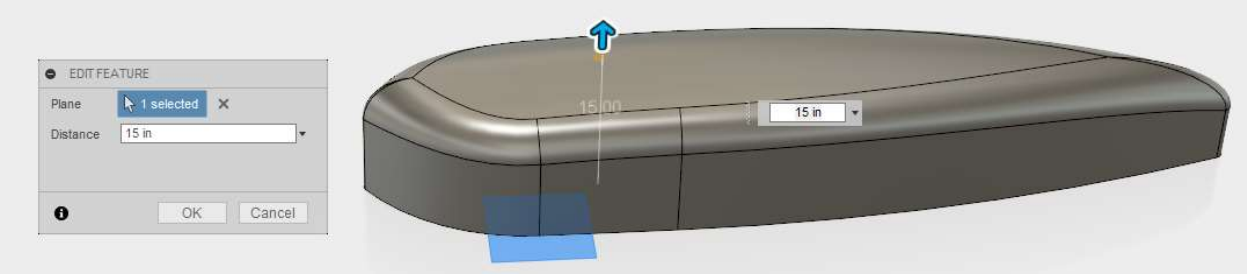
1. Turn off all bodies except for the fuselage
2. Rotate the view and shell the fuselage to a thickness of .75 inches
3. Removing the bottom face




## Create Multiple Bodies

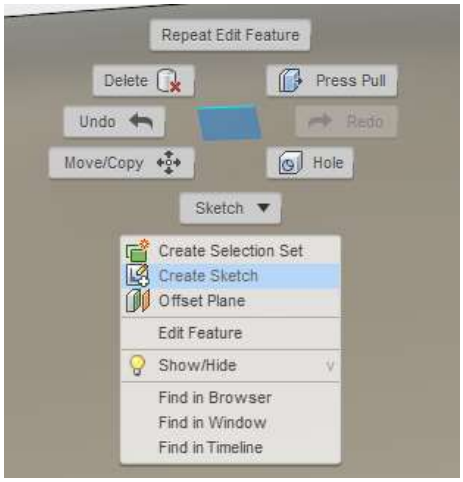
**Exercise Seven: Create the Cockpit Opening:**

1. Create a new offset plane 15 inches from the XZ plane



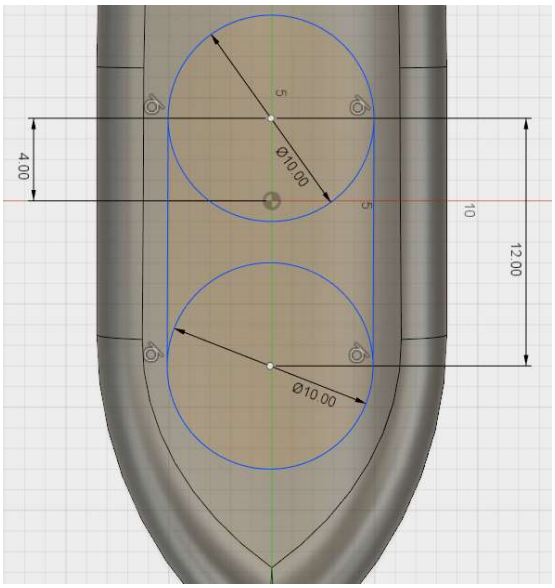
## Create Multiple Bodies

**Exercise Seven: Create the Cockpit Opening:**

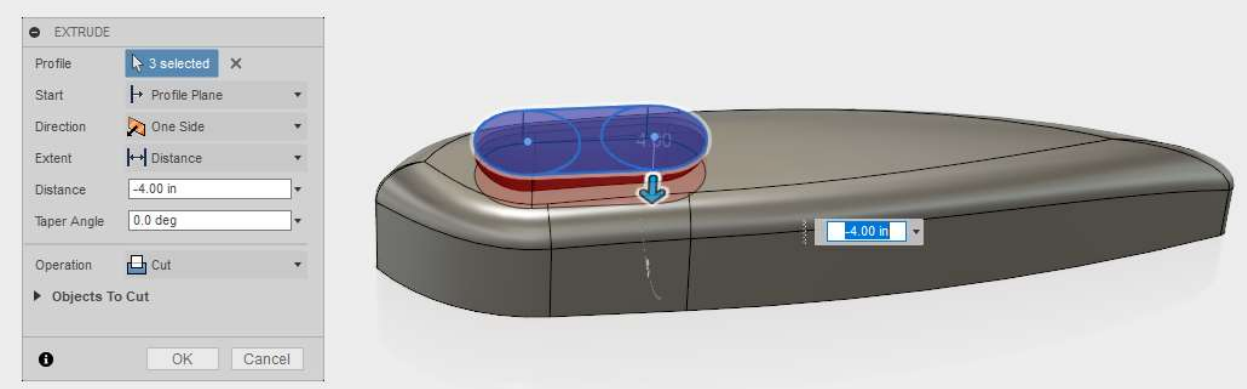



2. Create a new sketch on the offset plane

3. Create two 10 inch circles
4. Vertically align the center of the circles to the origin center point
5. Create tangent lines on each sides of the circle
6. Dimension the front circle 4 inches from the center point
7. Dimension the both circle's center points 12 inches apart

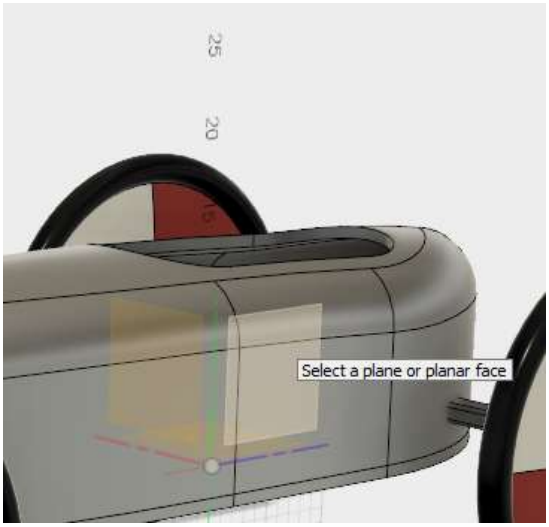



8. Extrude and cut 4 inches into the fuselage



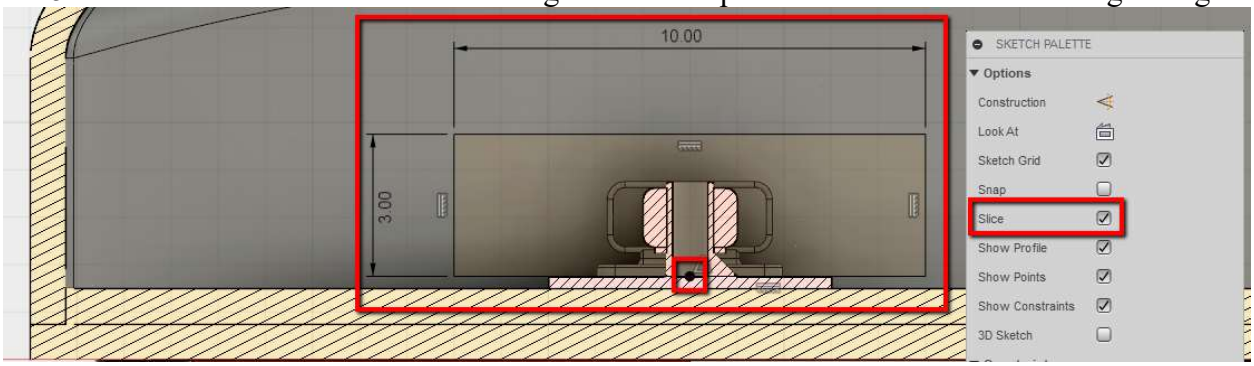
## Create Multiple Bodies

**Exercise Eight: Create the Steering Linkage Opening:**

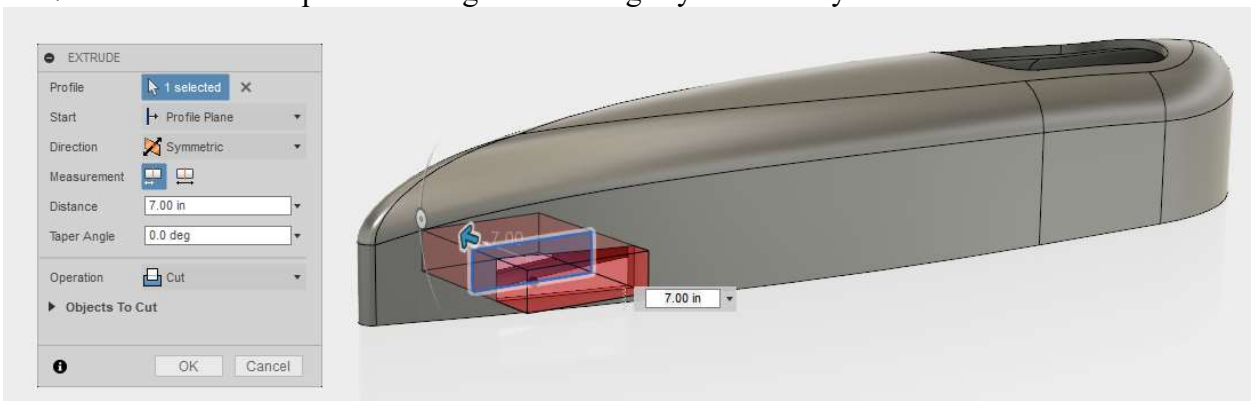



1. Create a new sketch on the YZ origin plane
2. Create a new sketch on the YZ origin plane
3. Activate the slice graphics in the sketch pallet
4. Create a 10 X 3 inch rectangle at the front of the fuselage

5. Constraint the middle of the rectangle to the midpoint of the base of the steering linkage



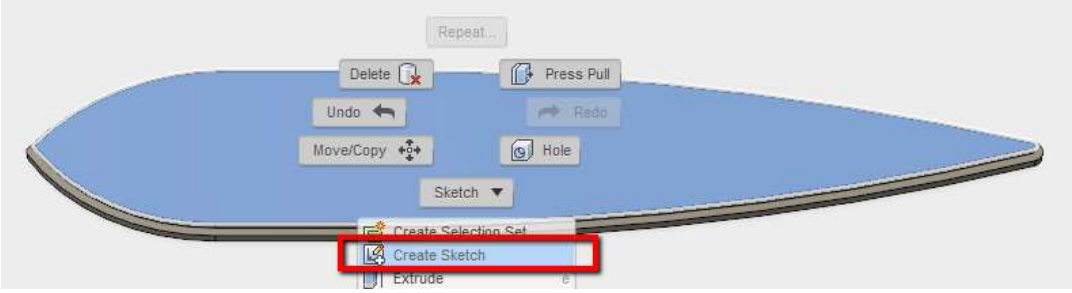

6. Turn off all bodies and components, except for the fuselage body
7. Extrude cut the profile through the fuselage symmetrically



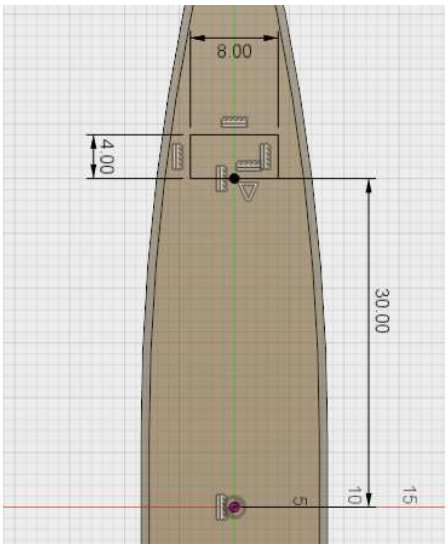
## Create Multiple Bodies

**Exercise Nine: Creating a Foot Stop:**

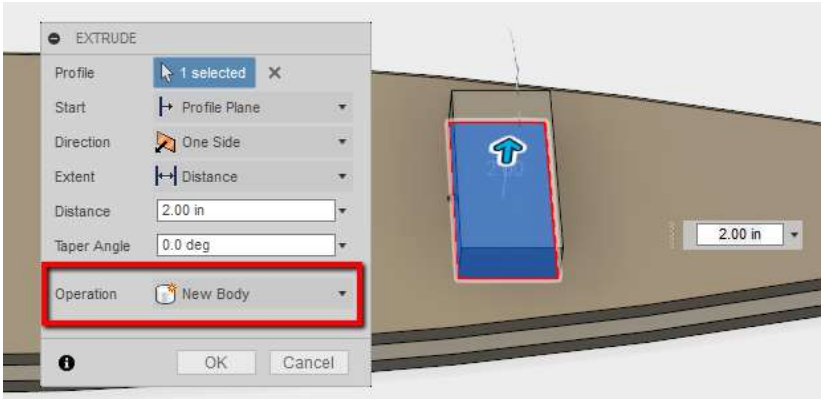
1. Turn off the fuselage body
2. Create a new sketch on the top floorboard




3. Create an 8 X 4 rectangle towards the front of the floorboard
4. Vertically constraint the midpoint of the rectangle and the center point of the design
5. Dimension the bottom of the rectangle to the center point of the design



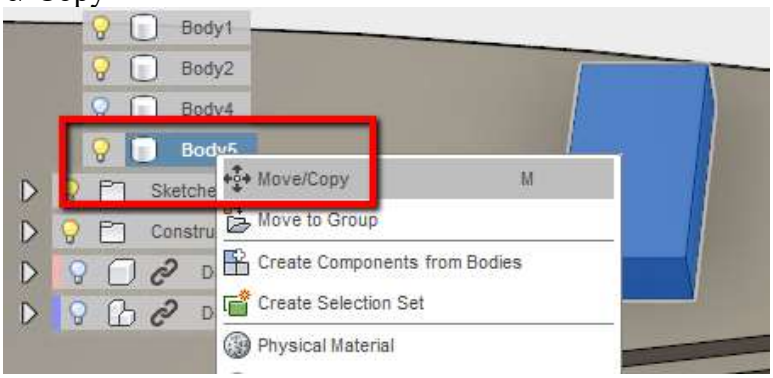

6. Extrude the profile 2 inches
7. Select New Body in the operations flyout



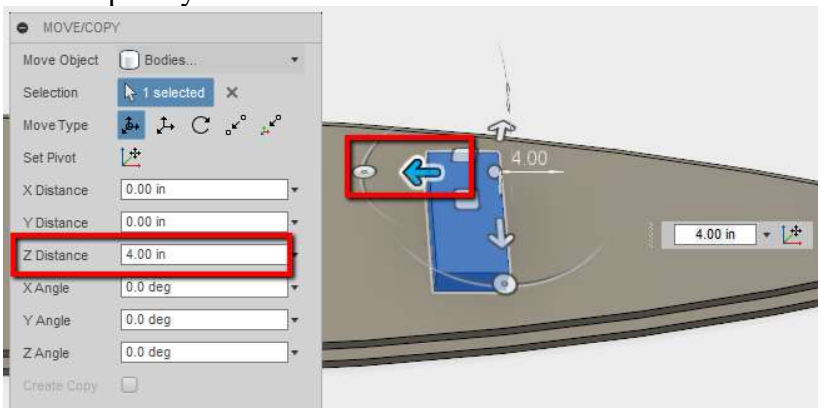
## Move and Align Bodies

**Exercise Ten: Moving the Foot Stop:**

1. Right click on the newly extruded body for the foot stop
2. Select Move/ Copy




3. Move the foot stop body 4 inches in the Z direction




## Create Components from Bodies

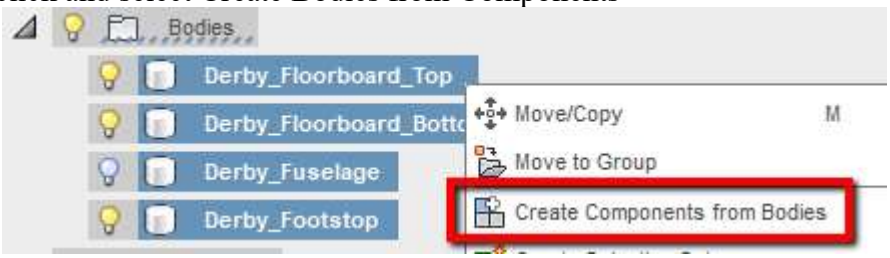
**Exercise Eleven: Convert Bodies to Components:**

1. Slowly pick twice on each of the bodies to rename them:
   - Derby_Floorboard_Bottom
   - Derby Floorboard_Top
   - Derby_Fuselage
   - Derby_Footsteps

**Create Components from Bodies**

**Exercise Eleven: Convert Bodies to Components:**

2. Select all four bodies using the Shift key
3. Right click and select Create Bodies from Components




The bowser should now show the bodies as components in the design


For Session Three: From session two we learned to add components to a design, convert existing and new bodies into components and how to manipulate their location. In session three, we will learn the following:

1. Apply Joints
2. Create Patterns
3. Sub-Assemblies
4. Inspect
5. Drawing and Annotation