

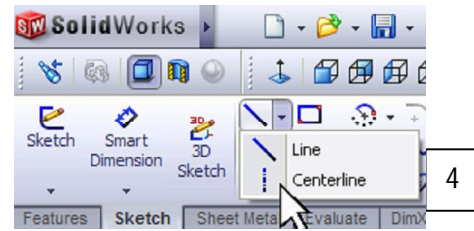
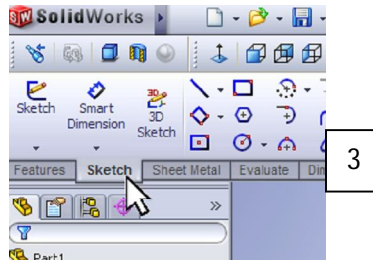
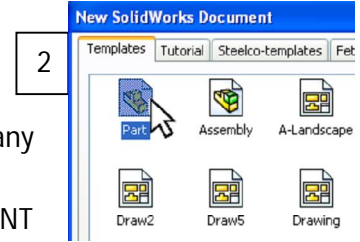
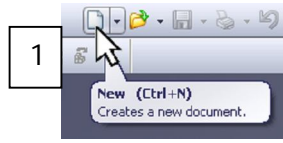
Design 0100, Weekly Design Guide Quarter 3, Week 1, Wheel Mount

This week we will build a Wheel Mount and axle for our Wheel and Tire assembly. The exercise below is for the Wheel Mount.

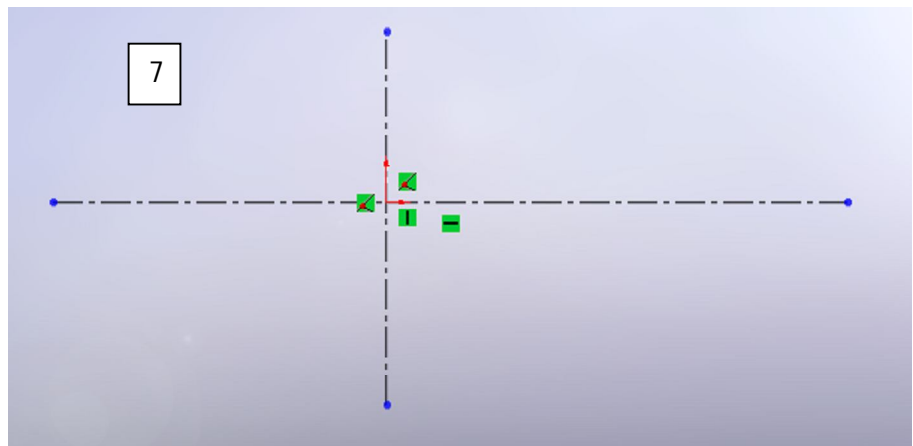
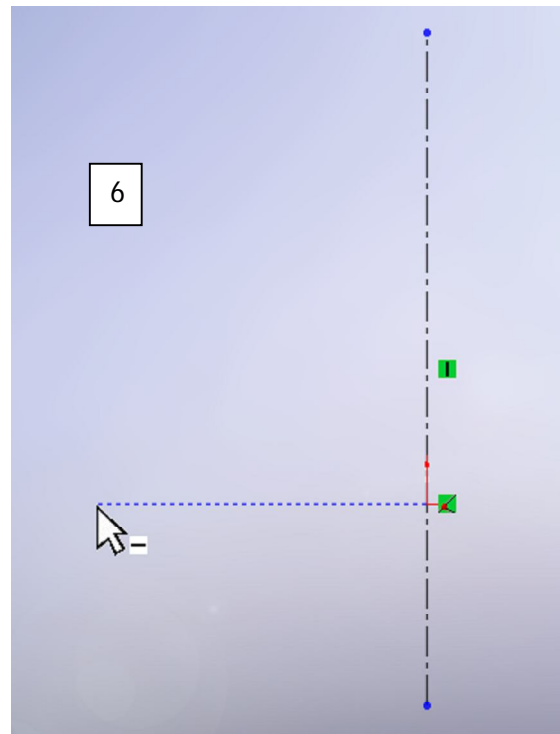
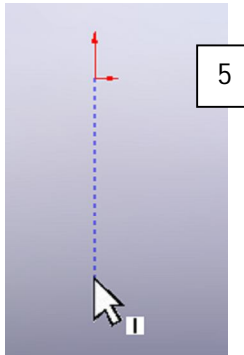
Perform the following steps:

For the Wheel Mount open a new document:

1. Choose "New" then press "OK"
2. Select "Part" from the "Templates" tab. Save this part (even before you do any work) to your thumb drive in the Week 1 folder in the Quarter 3 folder and name it "Wheel Mount". In the Description section name in as WHEEL MOUNT in Capital letters.
3. After saving choose the "Sketch" tab from the "Command Manager"

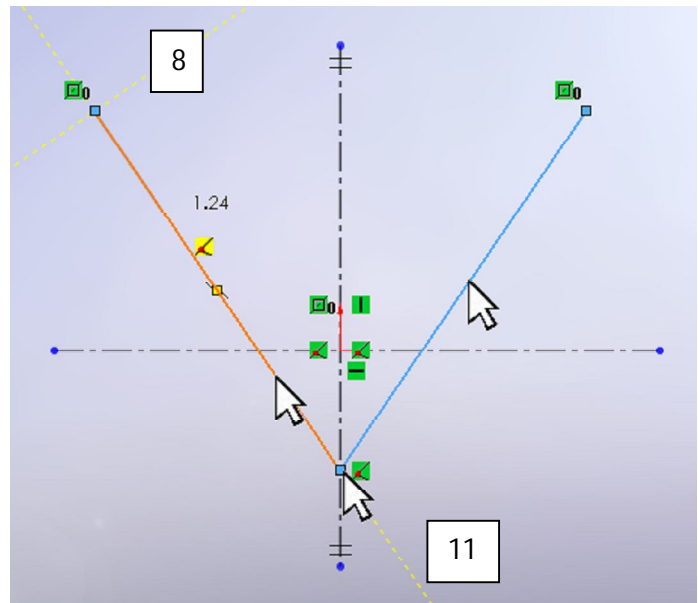
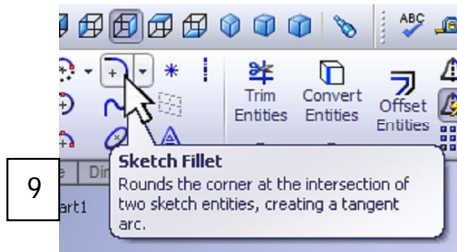


4. Click on the Right Plane first then choose the "Centerline" sketch element on the "Command Manager". Notice that this selection order makes the Front Plane perpendicular to the screen. This will allow for easier sketching.
5. Sketch a vertical centerline from below the origin to above the origin in the approximate location shown. When you start this line below the origin a small dashed line will appear signaling that a "vertical" relation will be established with this line to the origin. Do not make any endpoint relations with the origin.
6. Repeat the above procedure for a horizontal line.
7. The 2 lines should resemble the image nearby with both lines crossing at the origin and black because the lines are fully defined. If not see me. The endpoints will be blue still because the lengths of the centerlines have not been defined.

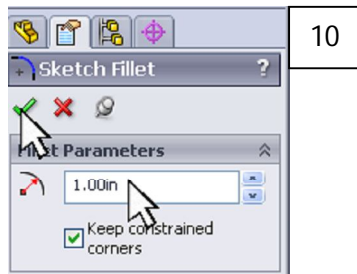


Design 0100, Weekly Design Guide
Quarter 3, Week 1, Wheel Mount

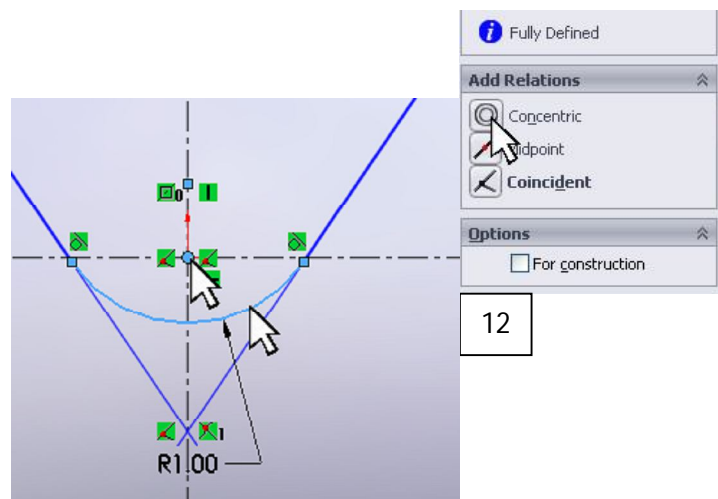
8. Go to the Sketch tab on the "Command Manager" and choose the "Dynamic Mirror" entity. Select the vertical centerline. Click on "Line" and draw a diagonal line starting on the vertical centerline in the approximate location shown. What you will be sketching here is a triangle with some Sketch Fillets.
9. Select the "Sketch Fillet" entity.



10. Go to the Properties Manager and enter the value of 1 for a 1" sketch fillet. You need to do this before you select your lines.

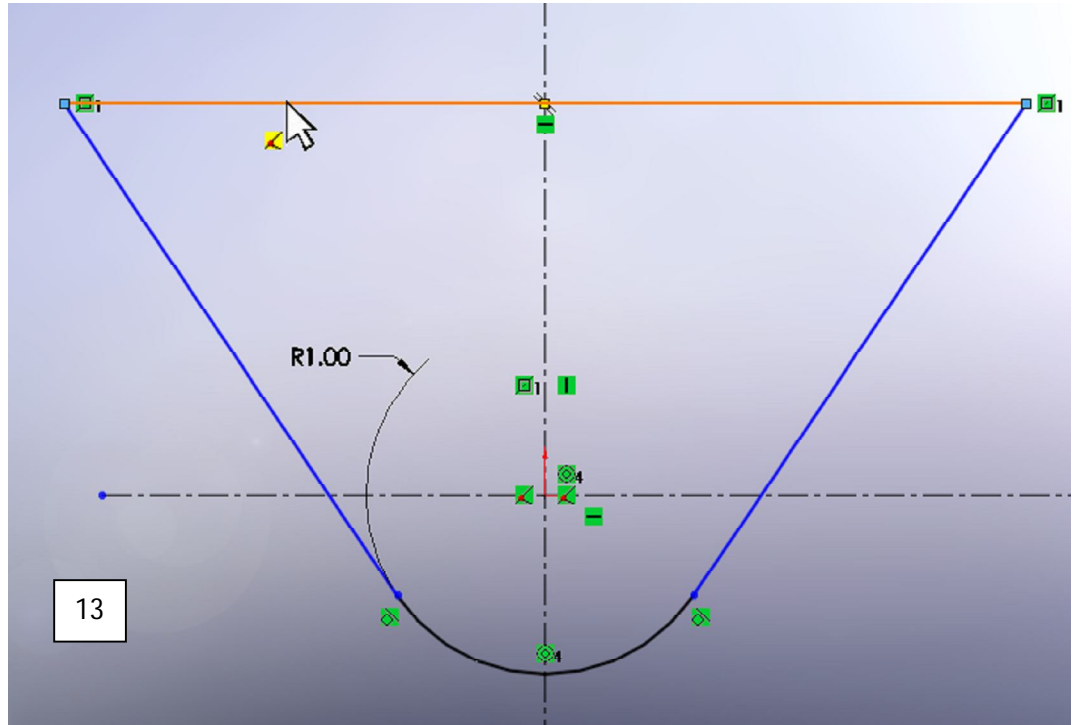


11. With the "Ctrl" key depressed select both lines or click on the point of intersection of those lines then click the green checkmark in the Properties Manager.
12. Select the arc derived from the fillet and with the "Ctrl" key depressed choose the Concentric relation from the "Properties Manager". This will make the arc color black because it is fully defined and cannot move. If the items mentioned above are not working, see me.

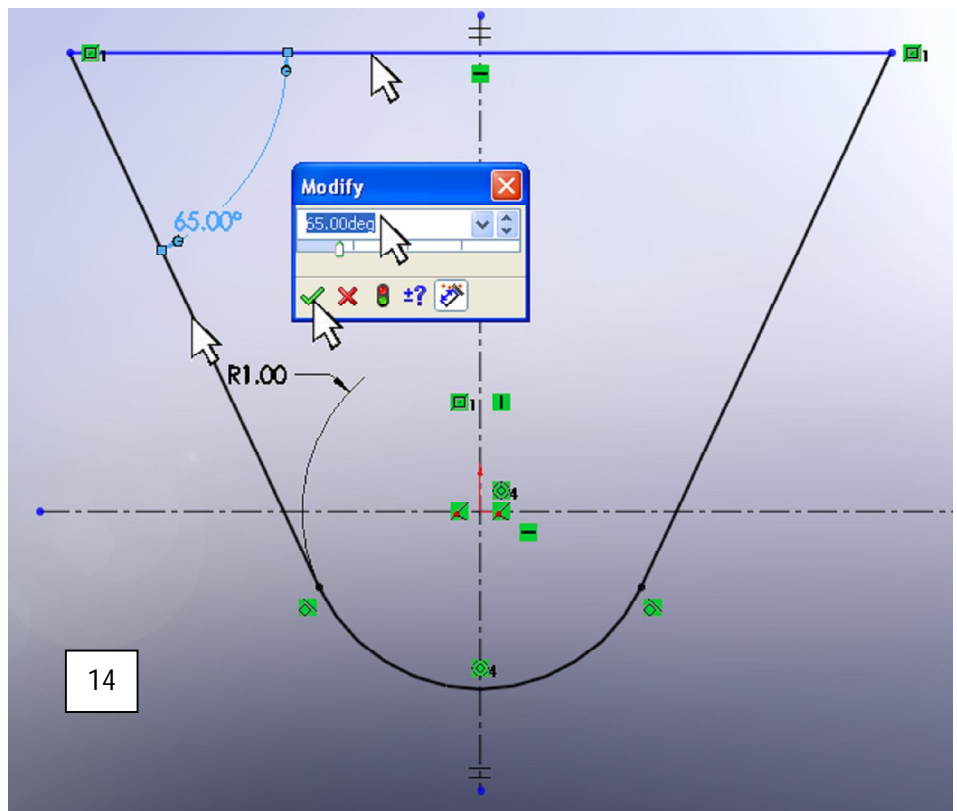


Design 0100, Weekly Design Guide
Quarter 3, Week 1, Wheel Mount

13. Draw a horizontal line from each of the endpoints of the diagonal lines drawn.



14. Make certain the “Dynamic Mirror” entity is selected for this operation. Choose the “Smart Dimension” and put a dimension between the two diagonal lines. This will be an angular dimension since the lines are not parallel. Type in the value of 65 for 65 degrees for this the angle.

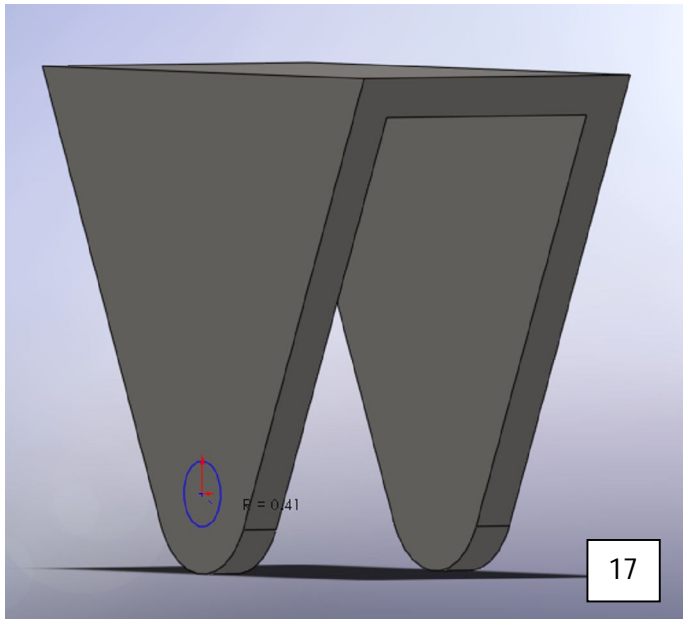
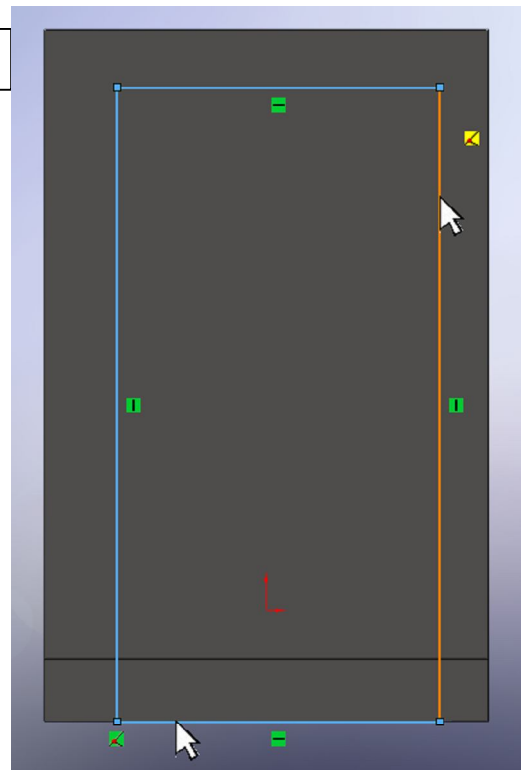
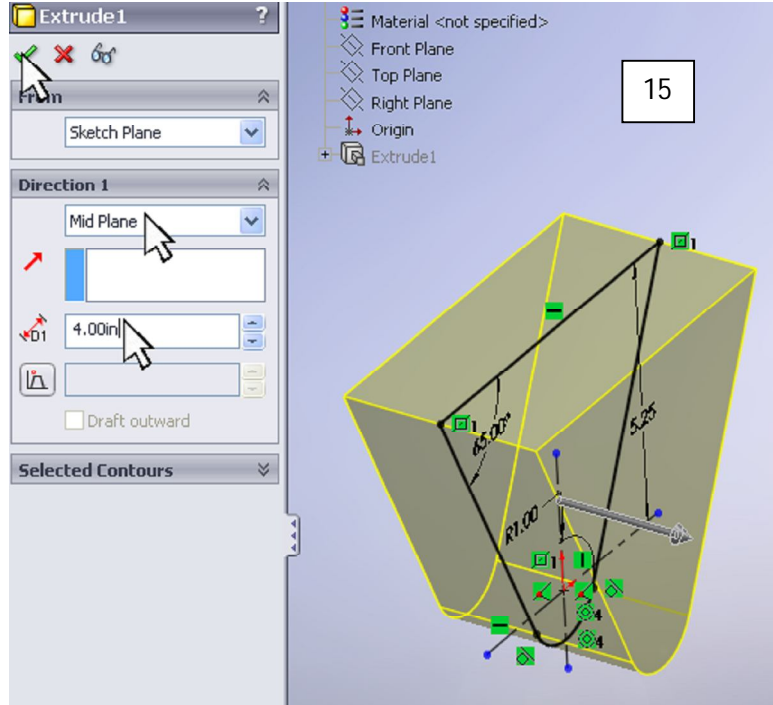


Design 0100, Weekly Design Guide
 Quarter 3, Week 1, Wheel Mount

15. Now we need to define the height of the wheel mount. Use a "Smart Dimension" between the horizontal center line and the top line of the triangular sketch. Type in the value of 5.25 for 5 ¼ inches. Your sketch should be fully defined and black in color. If not see me. Extrude this sketch and make it 4 inches wide using the Mid Plane option. Choose Plain Carbon Steel for a material selection if you have not done so yet.

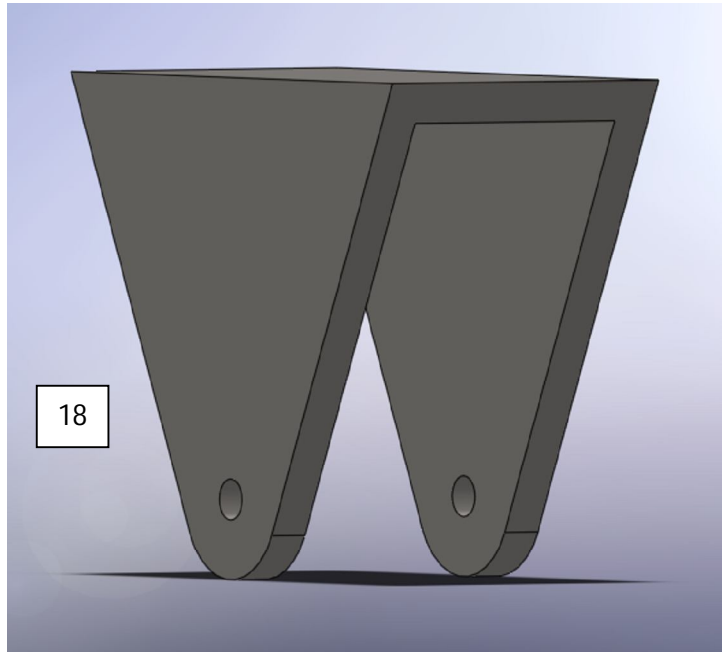
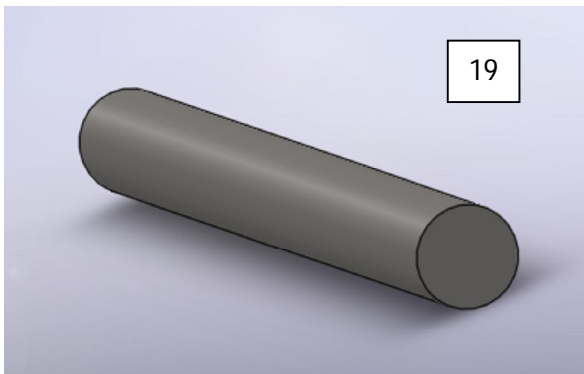
16. Select the Front Plane and select the Sketch button on the "Command Manager" then select the "Corner Rectangle" entity. Choose the bottom edge of the Wheel Mount modeled so far for the bottom left corner of the rectangle then pull it up to the upper right so that it resembles the sketch shown nearby.

17. Dimension this so that it is ½" on all sides except for the bottom. Extrude cut this using the "Through All" option for both Direction 1 and for Direction 2 in the Properties Manager. On either exterior face draw a "Center Circle" from the projected origin. Smart Dimension this to be ½".



Design 0100, Weekly Design Guide
Quarter 3, Week 1, Wheel Mount

18. Extrude cut this circle using the “Through All Option”. The Wheel Mount is done! Let’s start the axle.
19. Start a new part like we usually do and save it as the Axle. In the Description section name it “AXLE” in Capital letters. To start choose the Right Plane and draw a circle. Make this circle $\frac{1}{2}$ ” in diameter. Extrude it using the Mid Plane option to be 1 inch longer on both ends than the width of the wheel mount. Choose the material to be Plain Carbon Steel.



20. Now let’s put all four of these components together. Create a new assembly and insert the wheel mount to the Origin. Next insert the axle, again to the Origin. The next component will be the Wheel and Tire subassembly. So that the Wheel and Tire subassembly can freely rotate we will only “Mate” them on two of the three planes using the following procedure. Using the View selection on the pull down menu turn on the “Temporary Axes”. Insert and Mate the Wheel and Tire sub assembly to the axis that defines the holes in the Wheel Mount. Next, Mate the two right planes for both the assembly and the Wheel Tire subassembly. Save the assembly as the WheelMount-Wheel assembly. In the Description section, name this the “WHEEL MOUNT-WHEEL ASSEM”. We will cover the details of assemblies in class.

