

Design 0100, Weekly Design Guide

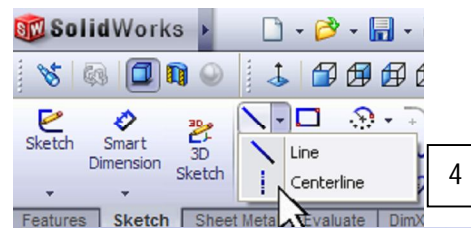
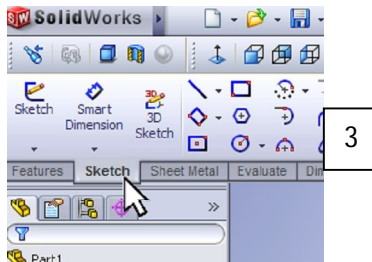
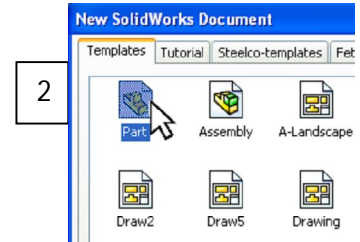
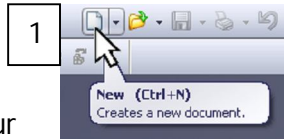
Week 8, Rotation Items, Wheel

This week we will build some items using rotation features. This one will be the Wheel to serve as a hub for the Tire.

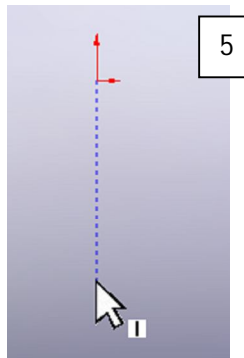
Perform the following steps:

For the Wheel open a new document:

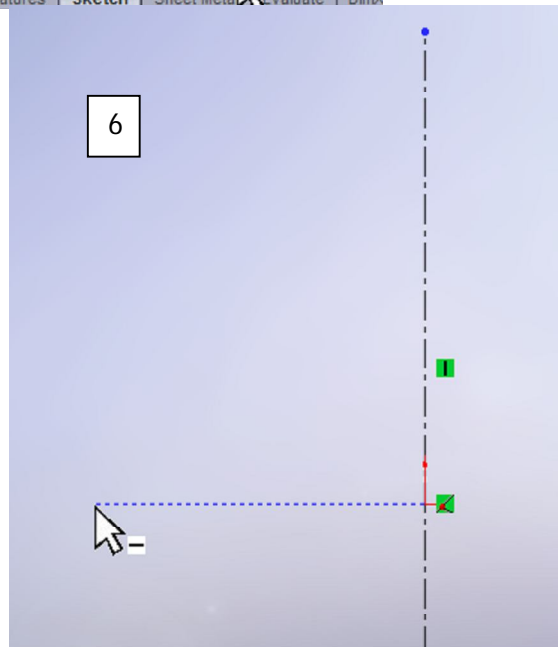
1. Choose "New" then press "OK"
2. Select "Part" from the "Templates" tab. Save this part (even before you do any work) to your thumb drive in the Week 7 folder and name it "Wheel".
3. To start choose the "Sketch" tab from the "Command Manager"



4. Click on the Front 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 which will allow for easier sketching.

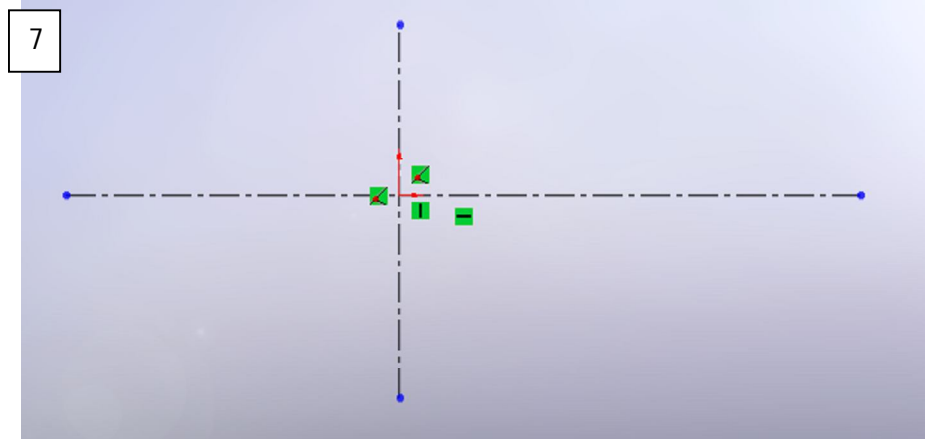


5. Sketch a vertical centerline from below the origin to above the origin in the approximate location shown. When you start this line below the origin a small dashed line will appear signaling that a "vertical" relation will be established with this line to the origin. Do not make any endpoint relations with the origin.



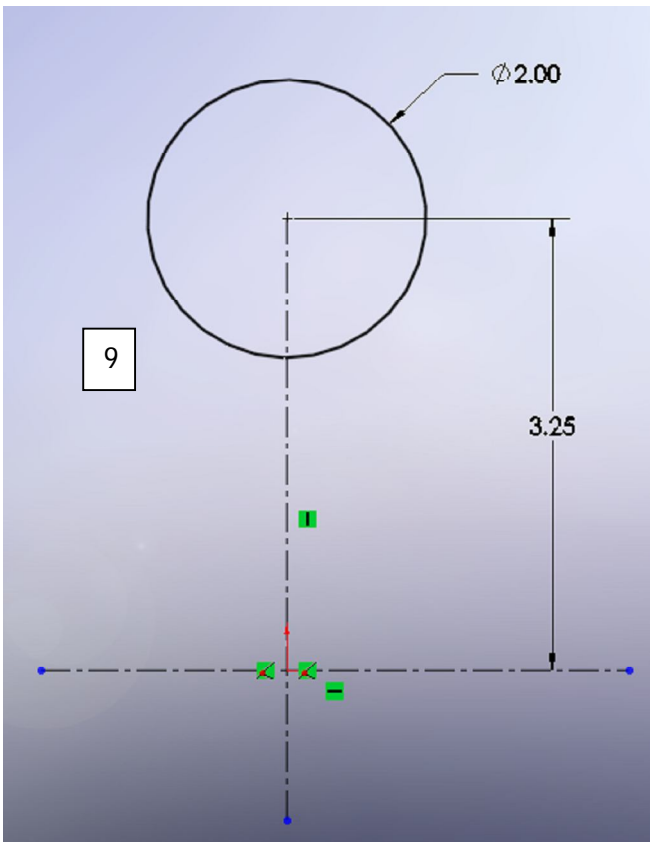
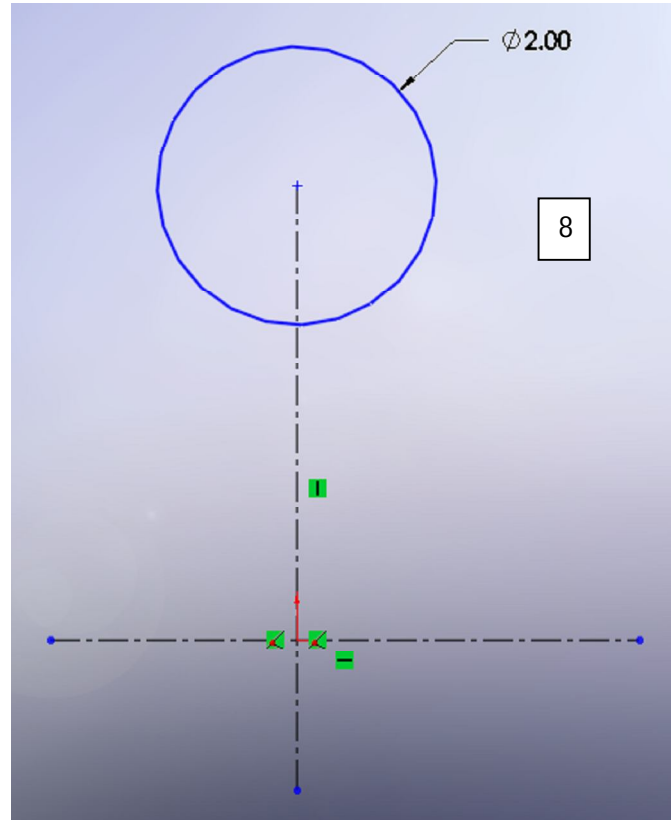
6. Repeat the above procedure for a horizontal line.

7. The 2 lines should resemble the image below with both lines crossing at the origin. If not see me. The endpoints will be blue still because the lengths of the centerlines have not been defined.



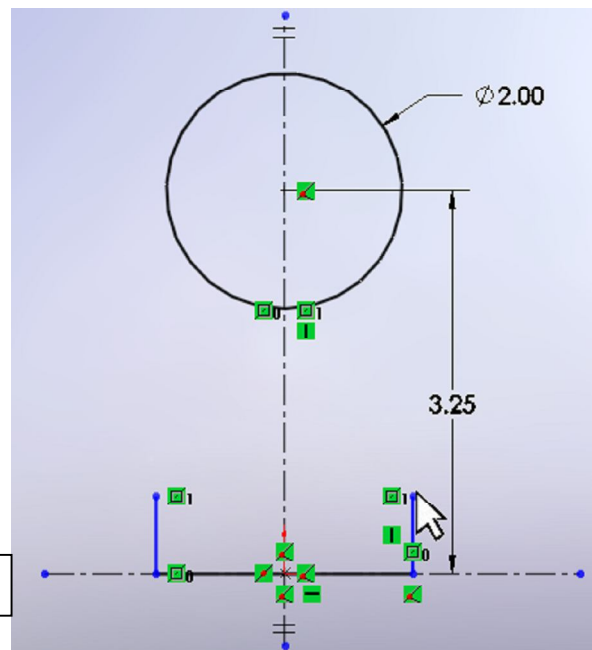
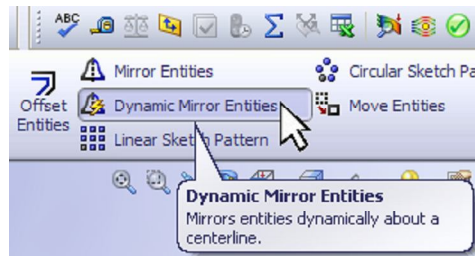
Design 0100, Weekly Design Guide
 Week 8, Rotation Items, Wheel

8. Draw a circle on the top endpoint of the vertical centerline and "Smart Dimension" it to 2 inches in diameter. We need one more dimension to make this circle fully defined and unable to freely move.
9. Using the "Smart Dimension" make the center of the circle 3.25" from the horizontal centerline. The " " symbol refers to inches ' is for feet. Remember to click on the edge of the circle not the center for this dimension.



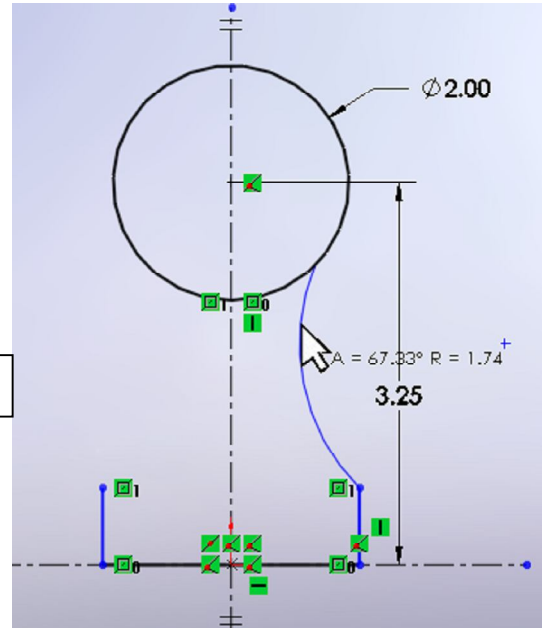
10. Now we will be drawing some additional sketch elements before we revolve this sketch for the Wheel. Go to the "Command Manager" and select the "Dynamic Mirror" sketch entity. Select the vertical centerline.

11. Start at the Origin and draw a line about a half inch to the right then up about 1/2 inches.

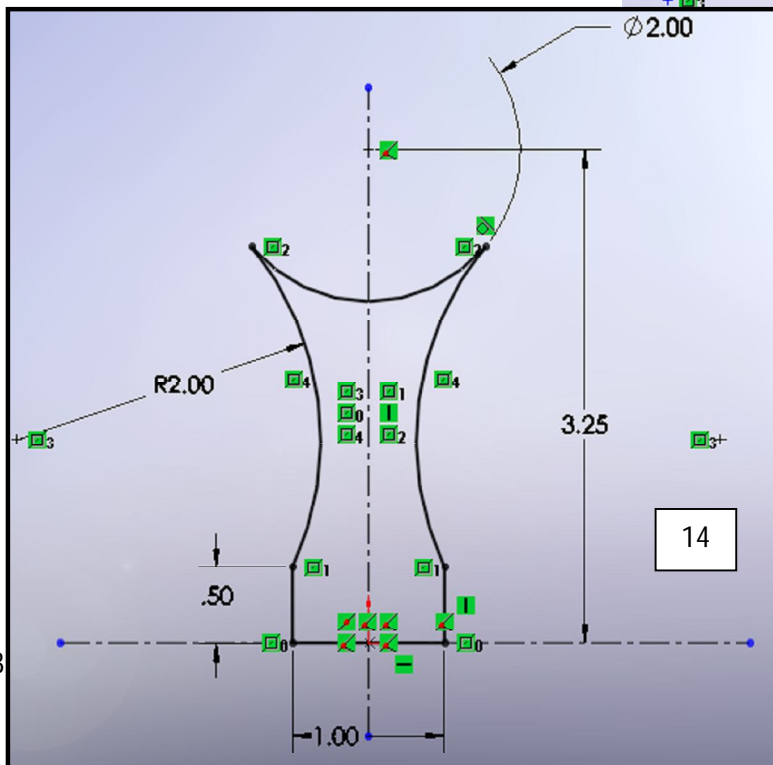
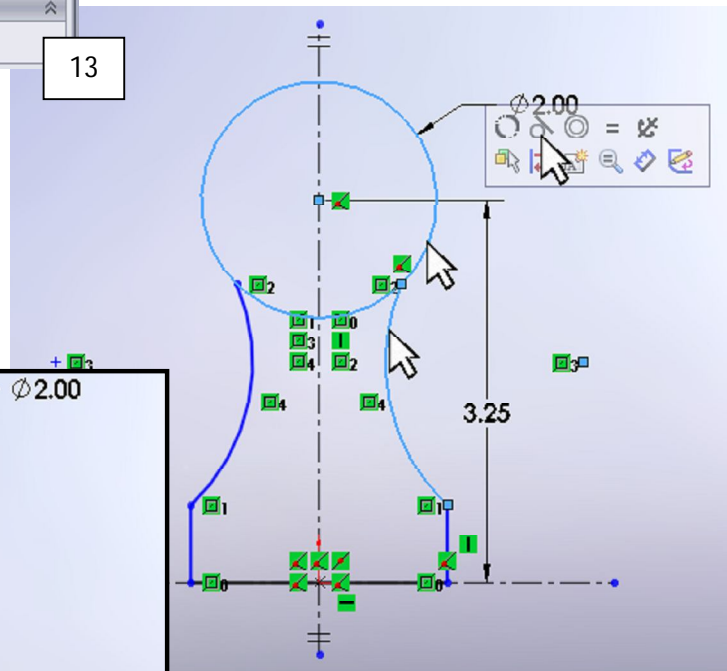
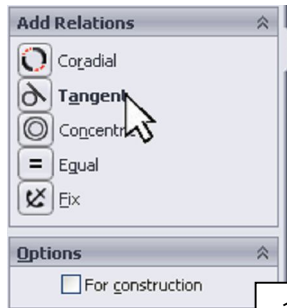


Design 0100, Weekly Design Guide
 Week 8, Rotation Items, Wheel

12. Now draw an arc. Select the "Three Point" arc and make the first point at the endpoint of the vertical line that you just drew, the second line somewhere on the large circle representing the surface for the outside edge of the Tire, make the third point in the approximate location shown.
13. Select the arc that you just sketched and with the "Ctrl" key depressed select the top circle and choose the "Make Tangent" relation by selecting it with either the small popup menu or going to the Properties Manager and selecting Tangent.



14. Notice all of the relations that we are making, the little icons next to the sketch lines. If you have any questions about these let me know. There are more relations to come including Smart Dimensions. Smart Dimension the bottom of the Wheel sketch on the horizontal line and make it 1 inch in total length. Dimension the side vertical lines to be 1/2 inch and make the two side arcs 2 inches in radius.

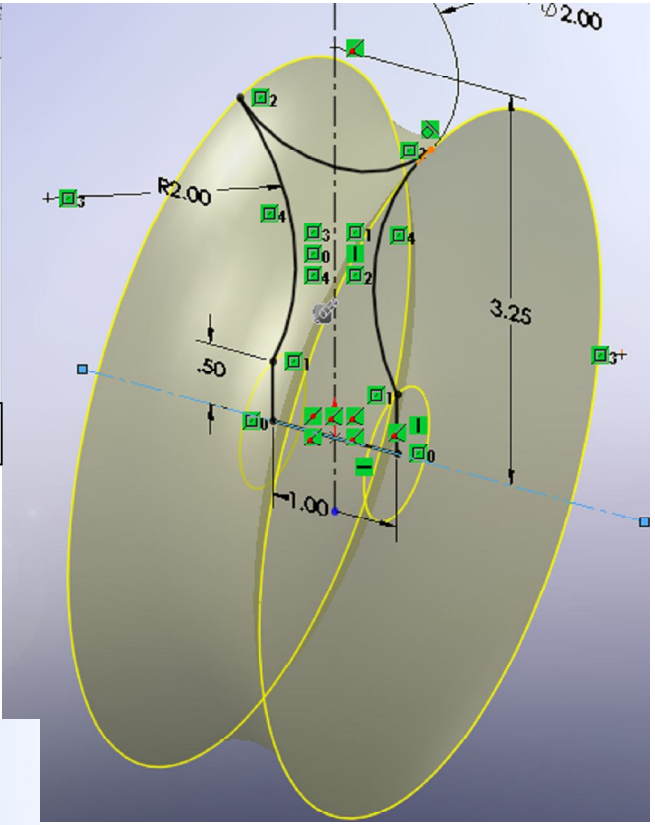


Design 0100, Weekly Design Guide
Week 8, Rotation Items, Wheel

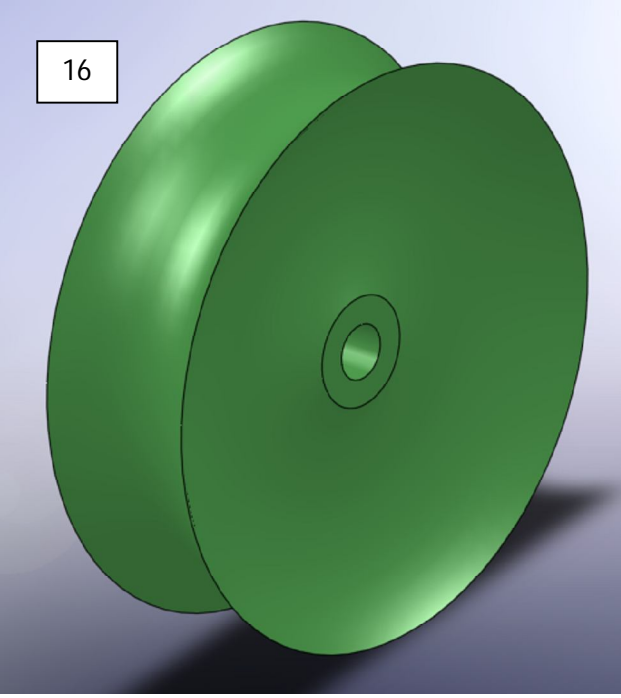
15. We are now ready to revolve this monkey. Go to the "Command Manager" and select the "Revolve Boss/Base". Choose the horizontal centerline for the Axis of Revolution and let the magic begin (by clicking the green checkmark).



15

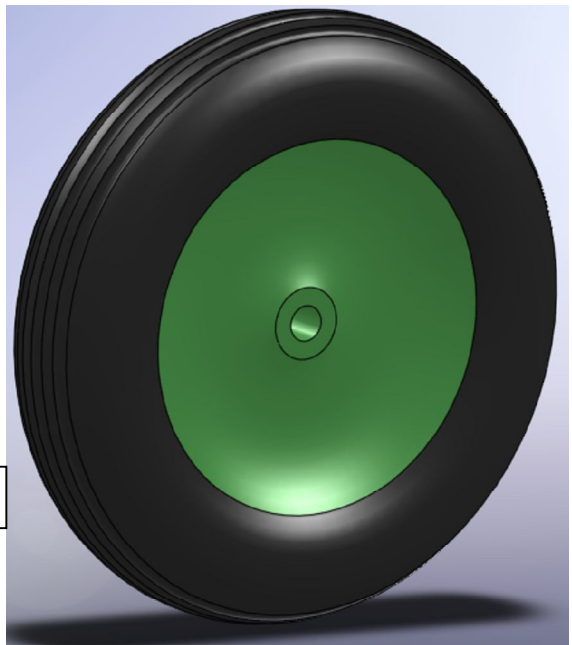


16. Make the material "Plain Carbon Steel". Insert a hole in the center of the Wheel of a half inch. Color it whatever color you desire. Your wheel should now look like the image below.



16

17. Put the Wheel and Tire together in an assembly.



17