Purpose

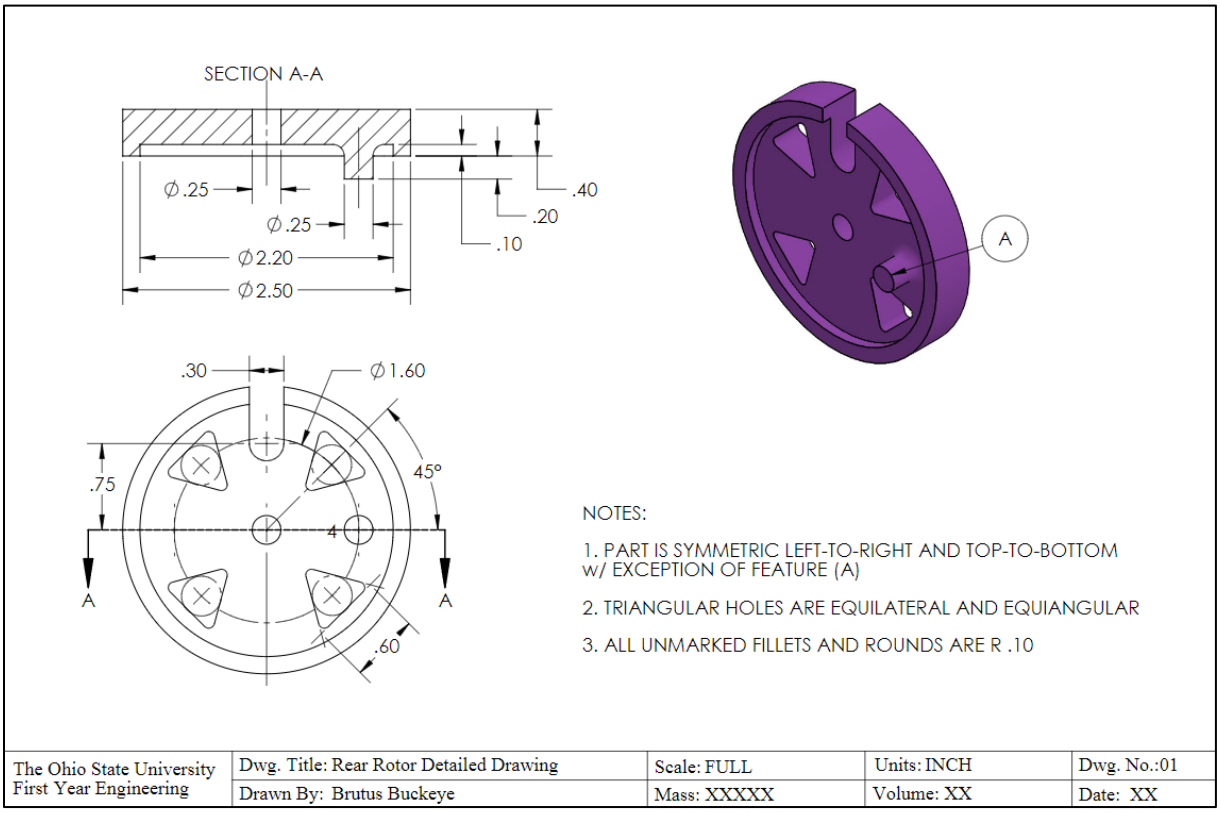
This assignment provides an opportunity to continue developing part creation skills in SolidWorks using newly introduced advanced sketching and feature tools.

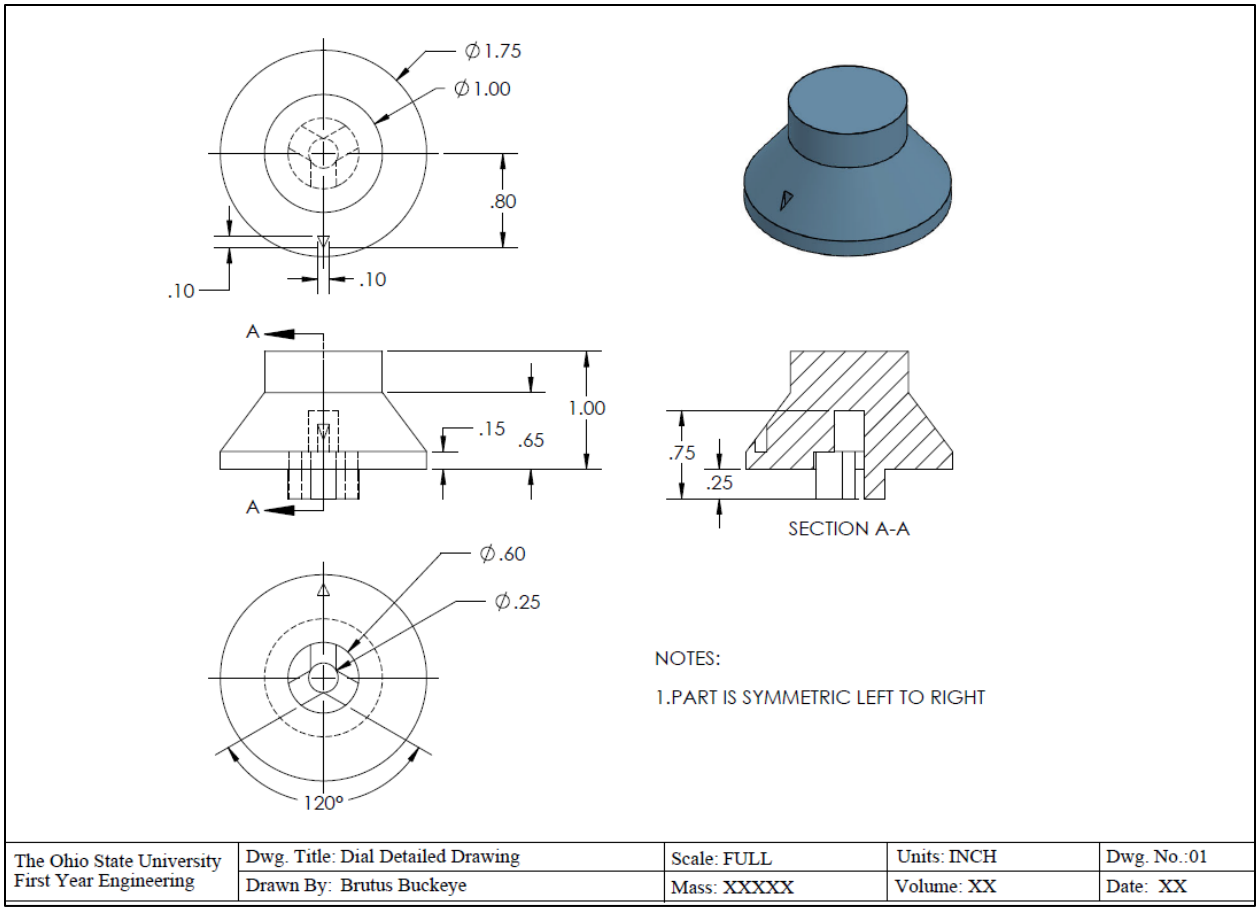
By completing this assignment, you will be able to:

- Use basic (line, rectangle, circle, etc.) and advanced (trim/convert/offset entities, linear & circular pattern, etc.) sketch tools to create a 2D sketch (SLO 2a)
- Apply constraints and dimensions to fully define a 2D sketch (SLO 2b)
- Use basic positive and negative extrusions, edge features (3D fillets & chamfers), and advanced 3D feature modeling (revolve, loft, linear & circular pattern) to create 3D models (SLO 2c)
- Create accurate 3D models from provided physical objects and/or dimensioned technical drawings (SLO 2d)
- Interpret and identify pertinent information from detailed working drawings such as dimensions of parts (SLO 4h)

Task

Using the provided dimensioned layout drawings below and the physical components at your table as a reference, create accurate part files of the Rear_Rotor using at least **1 revolve feature** and **1 circular pattern feature** and the Dial using at least 1 **loft feature**. Set the material for the Rear_Rotor and the Dial to ABS.





The Ohio State University First Year Engineering	Dwg. Title: Dial Detailed Drawing	Scale: FULL	Units: INCH	Dwg. No.:01
	Drawn By: Brutus Buckeye	Mass: XXXXX	Volume: XX	Date: XX

Discuss the use of the loft, revolve, and circular pattern tools in creating these parts and future parts. At a minimum, your response should address the following questions:

- Are there other methods/tools that could have been used to make these parts?
- What are the pros and cons of using a loft, revolve, and/or circular pattern vs. the alternative methods/tools you described?
- What types of parts/geometries do you see each of these tools being useful?
- How do these tools impact your design for the missing connector?
    - Provide an updated concept sketch of your design.

Submit

For each part, submit a screenshot of the entire SolidWorks window following the guidelines in the *SolidWorks Submission Standards* document in Carmen. Your submission should include the part in isometric view, expanded model tree (features), and the mass properties window as shown below in the *Criteria for Success* section. Also submit a word document or pdf containing your answers to the questions posed above.

Criteria for Success

Grading of this assignment will be based on:

1) Adhering to the submission standards.
2) Proper use of the loft, revolve, and circular pattern tools to create each component.
3) Correctly setting the appropriate material for each component.
4) Accuracy of dimensions of each component as determined by the mass and volume in the *Mass Properties* window.
5) Reasonable and well thought out responses to the questions posed.

For detailed descriptions of the grading criteria for this assignment, please see the rubric on Carmen.