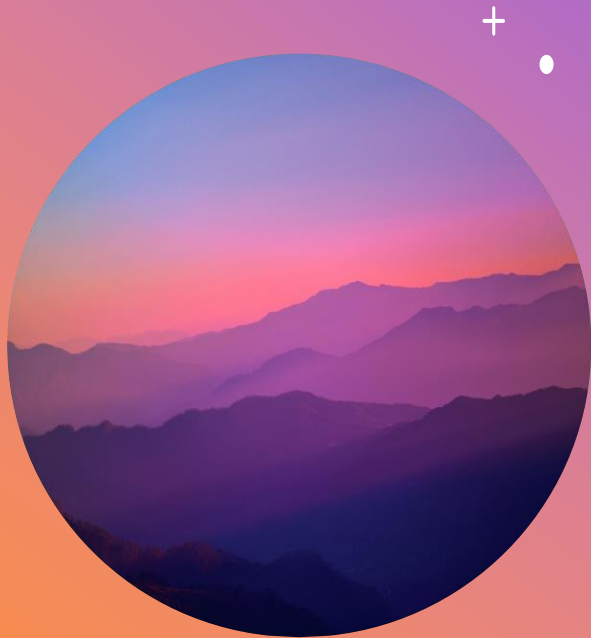


# ARMILLARY SPHERE LAMP



Fall Semester – 2023  
Madelyn McGurk  
Survey of Engineering Graphics  
Lamp Project



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# CONTENTS

- Inspiration
- Design Process
- Sketches
- Mockup
- Technical Drawings
- Materials
- Labor Time
- Price
- Photos of Process
- Final Fabricated Lamp
- Reflection

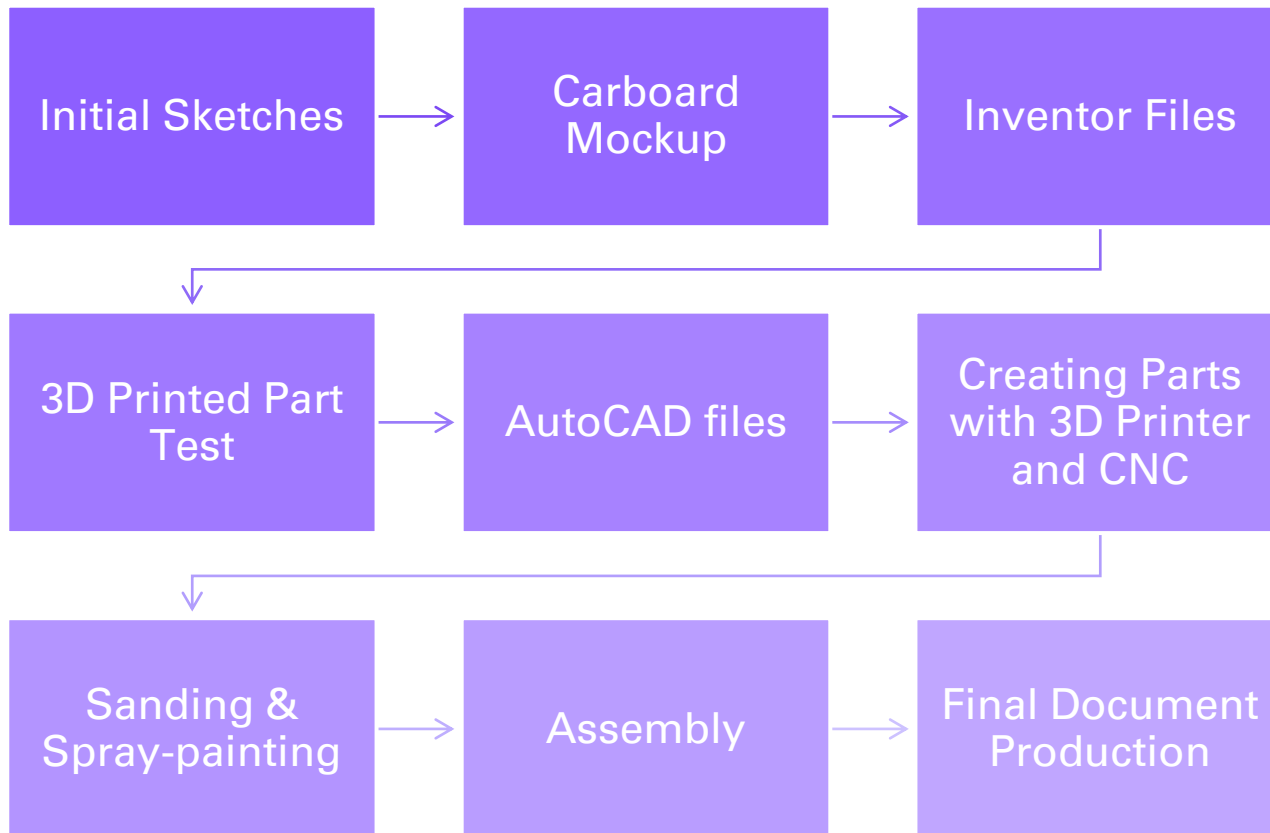


# INSPIRATION

An armillary sphere is an ancient object used by astronomers. It was used to track the orbits of celestial bodies and was a fundamental tool for astronomy for millennia. It consists of a sphere at the center (which represented Earth) and many rings that rotate around it which represented different celestial bodies (especially stars).

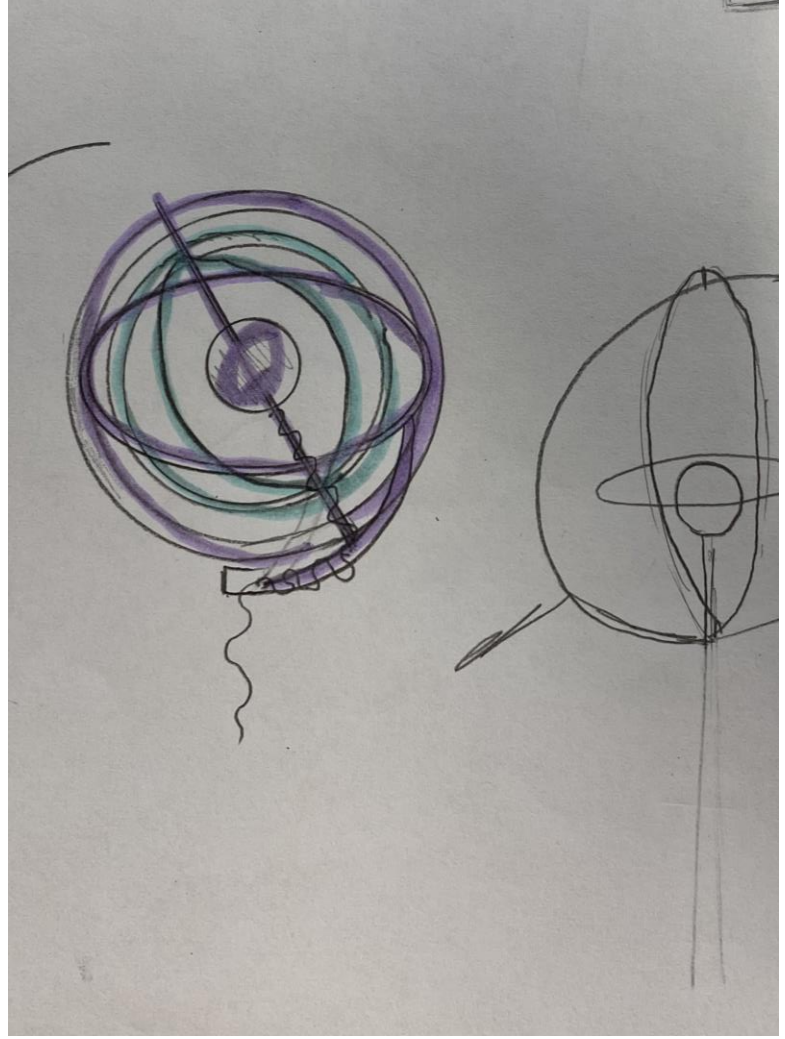
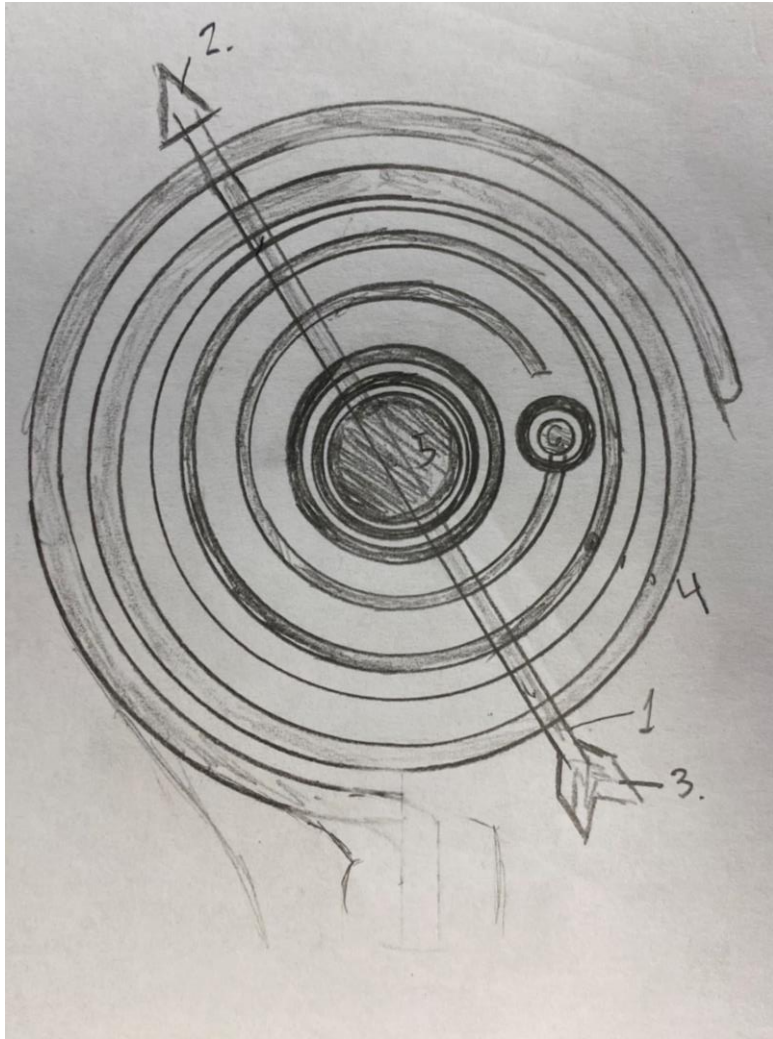


# Design Process



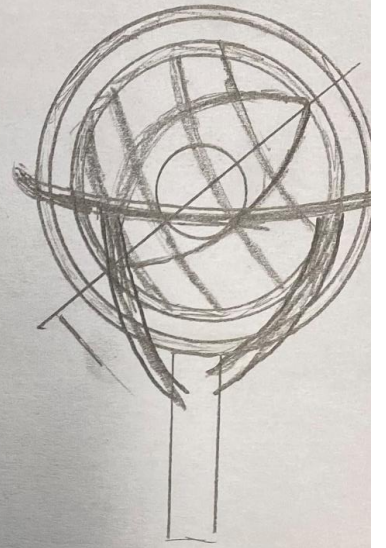
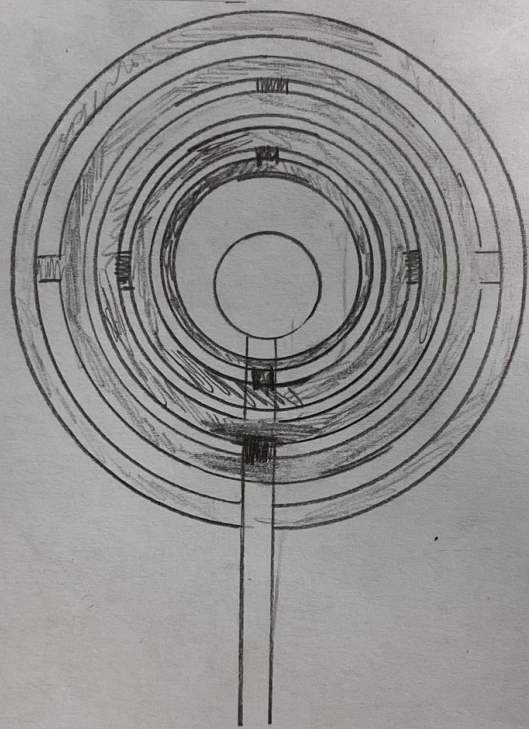
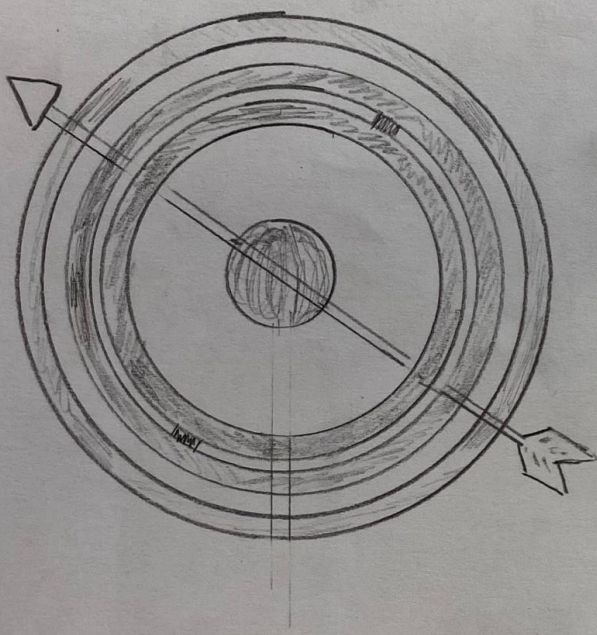
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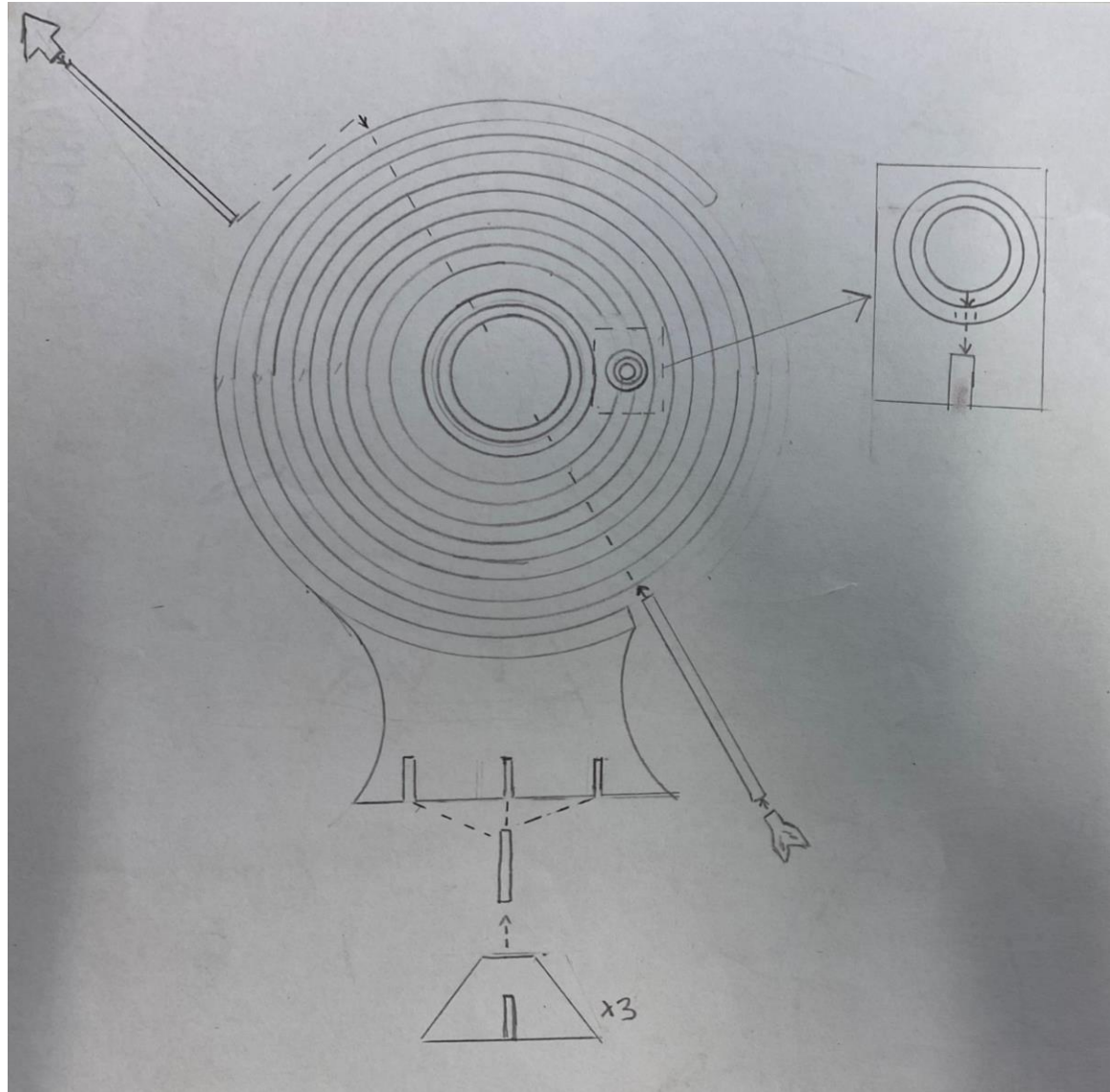




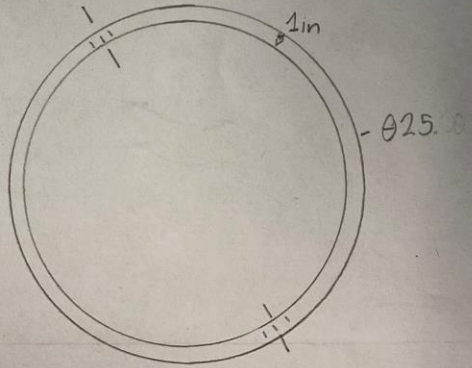
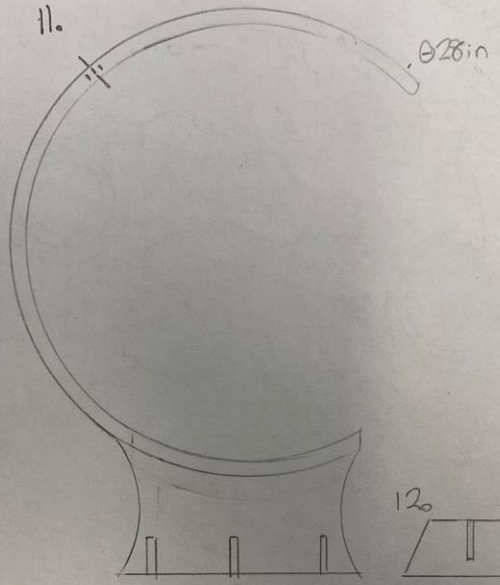
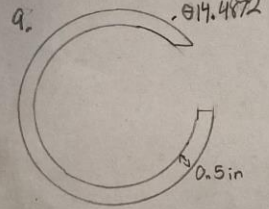
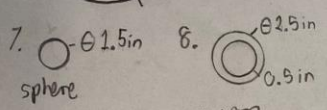
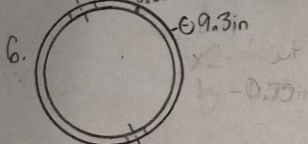
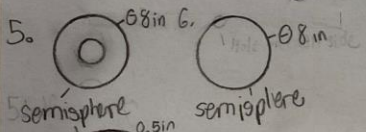
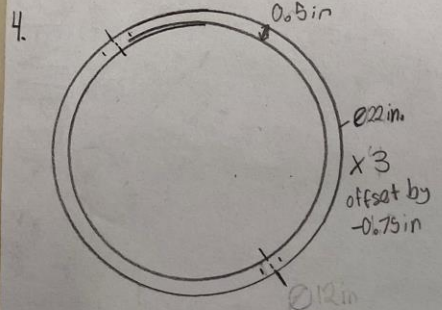
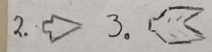
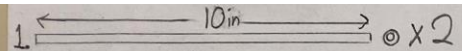


# Armillary Sphere Lamp Sketches

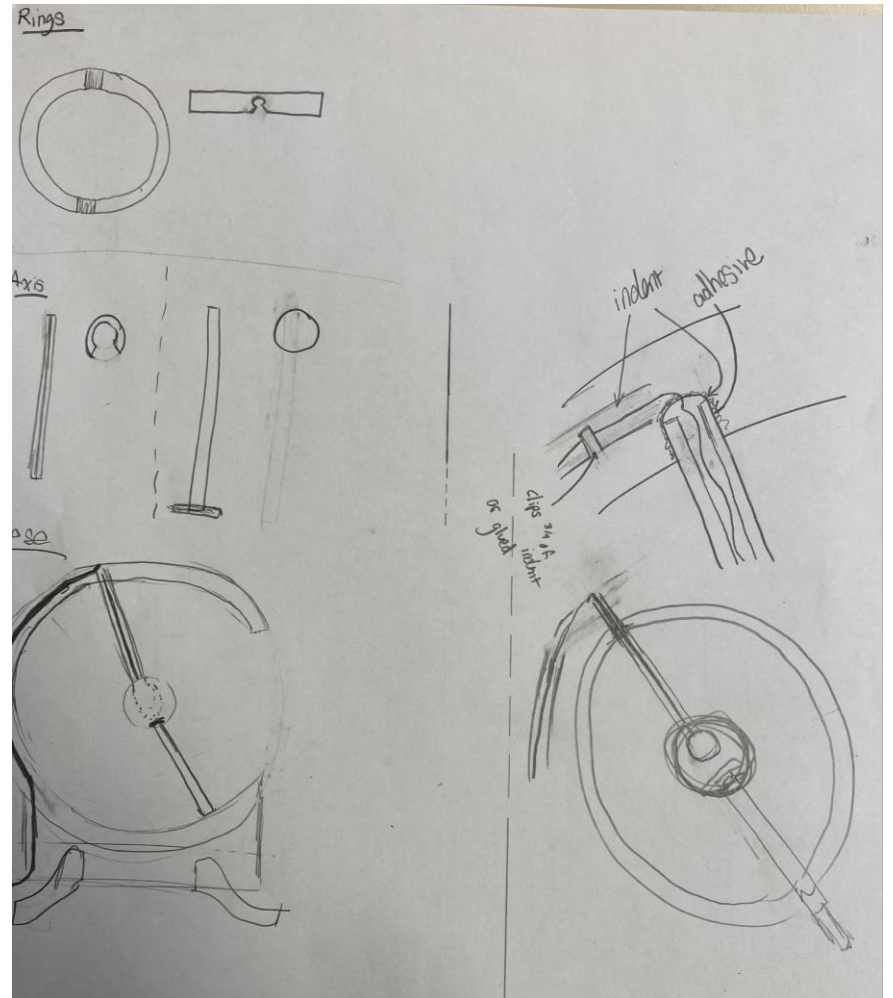
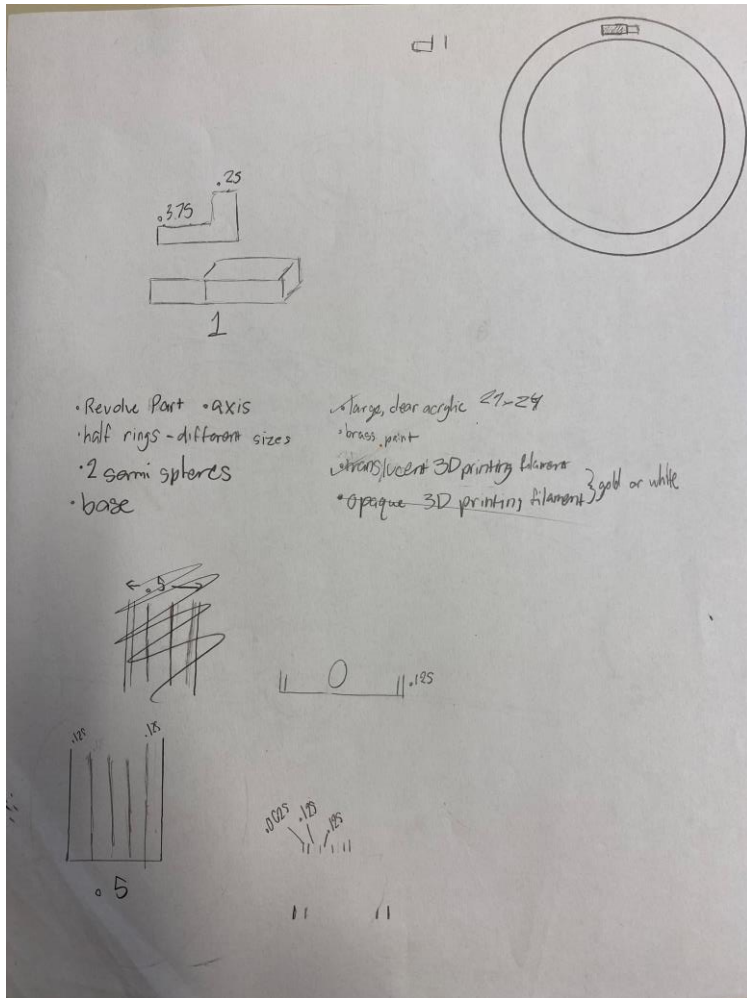








PARTS LIST





**MOCKUP**





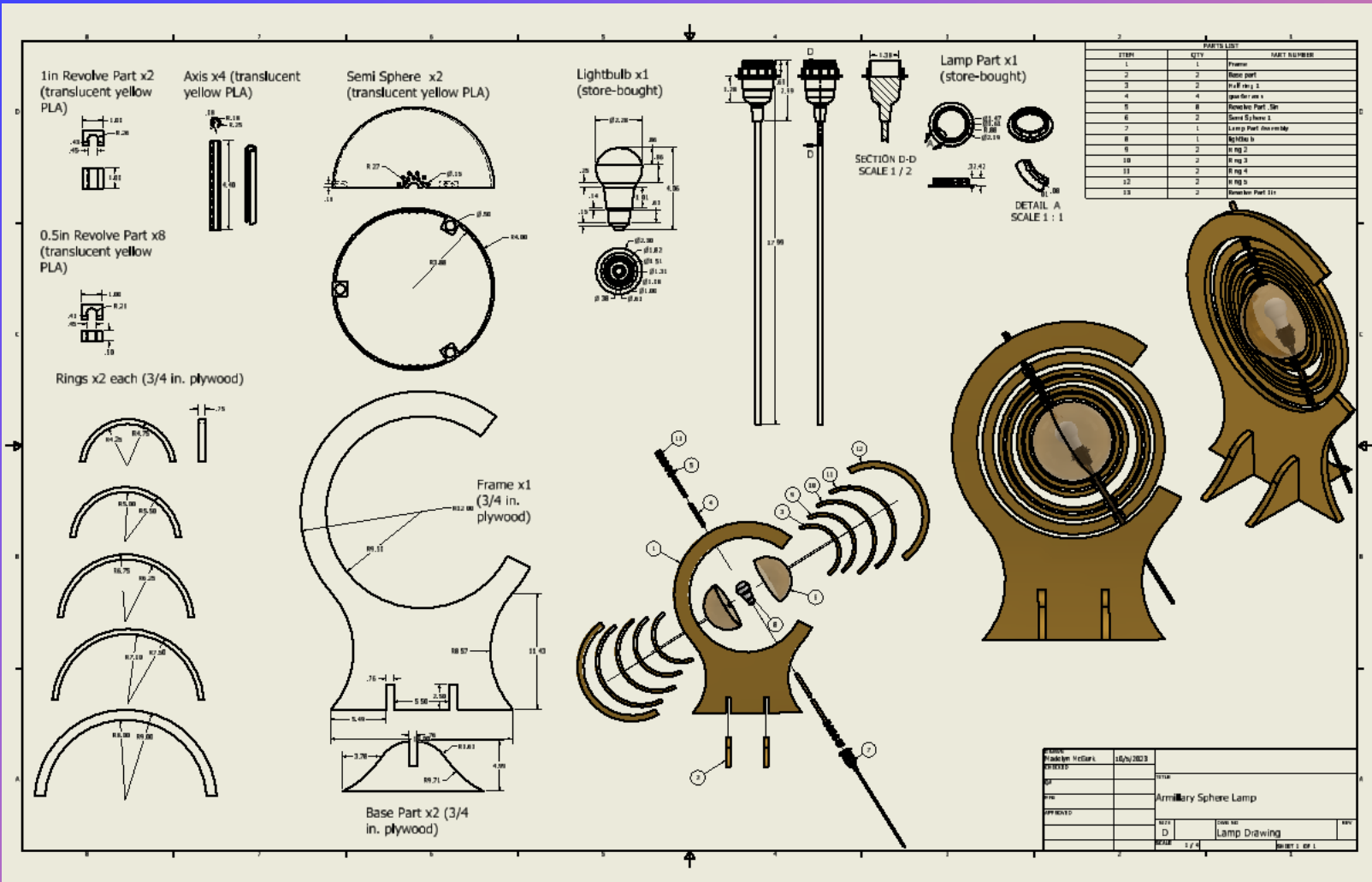
Made by hand cutting  
cardboard with an exacto  
knife.

# TECHNICAL DRAWINGS

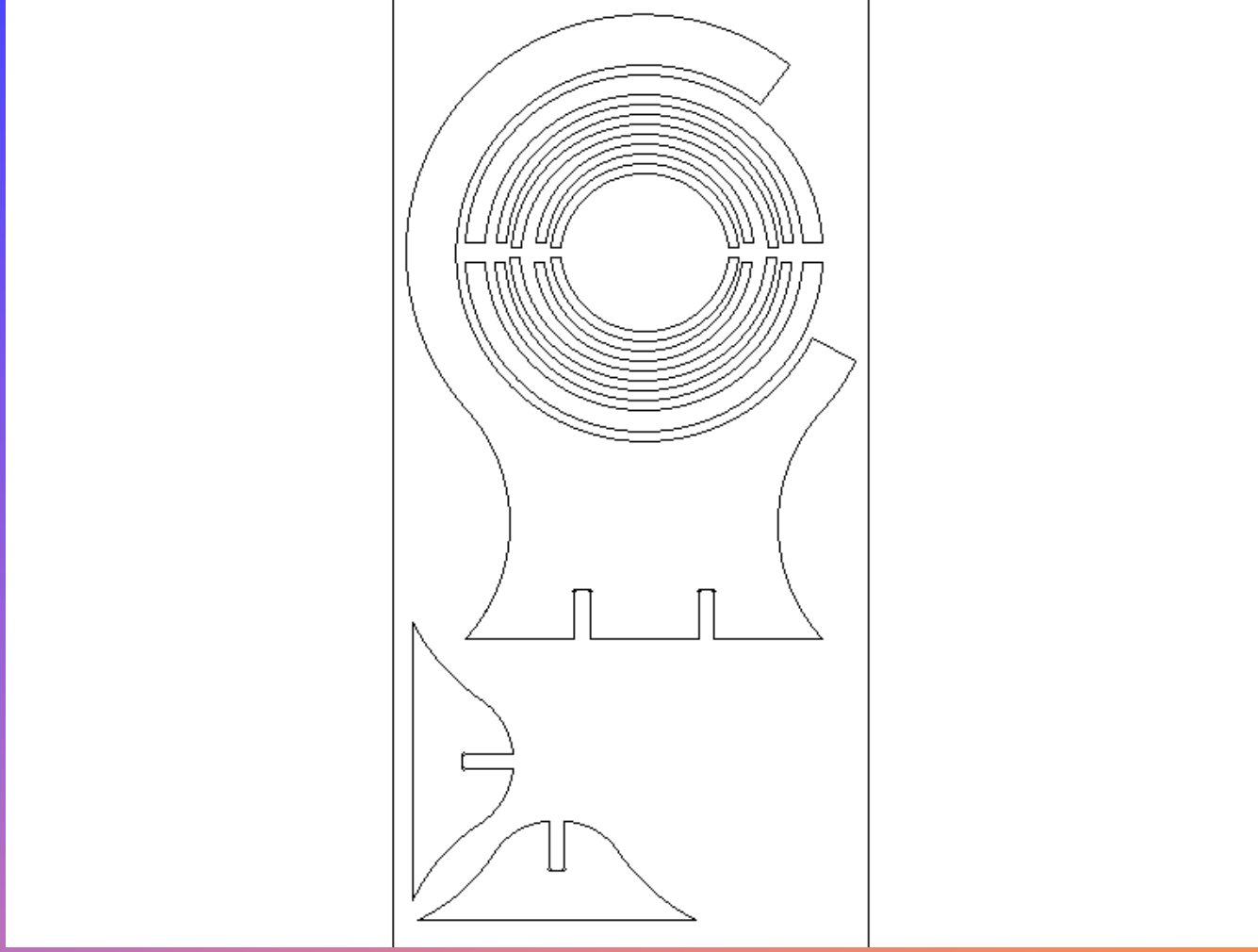


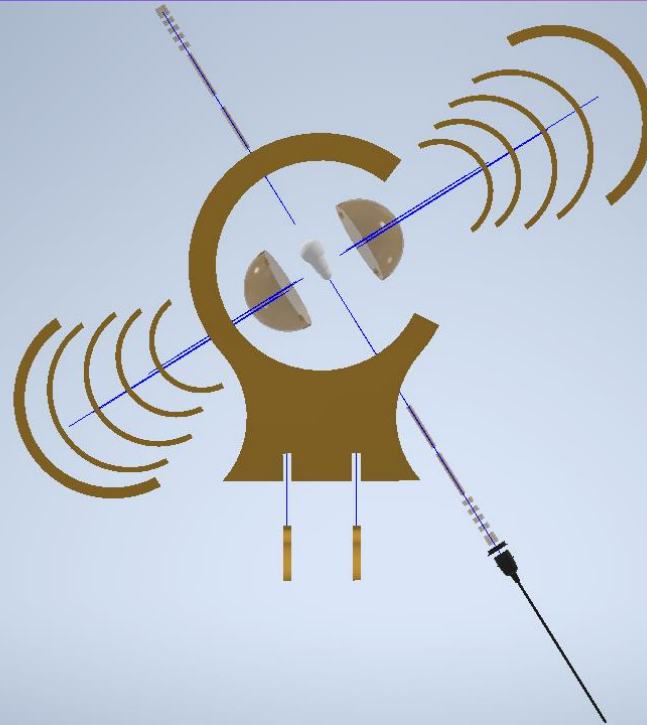
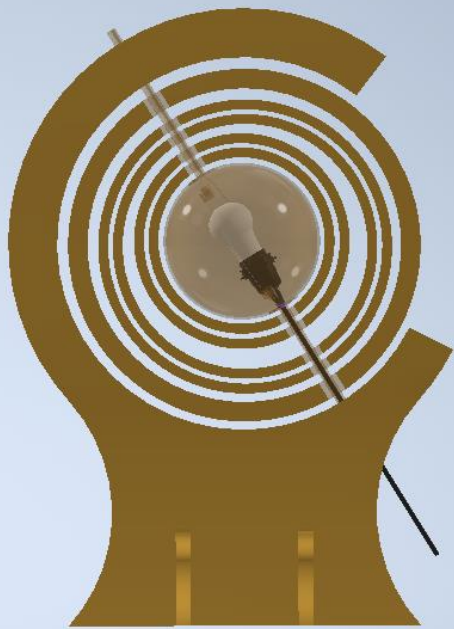


# FINAL DRAWING

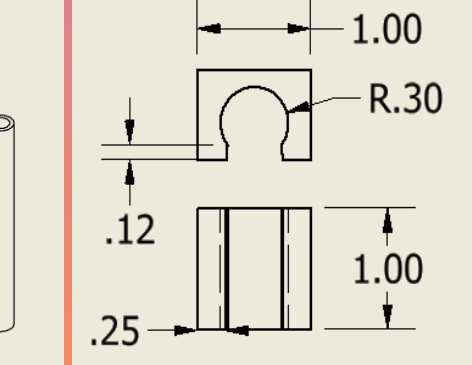
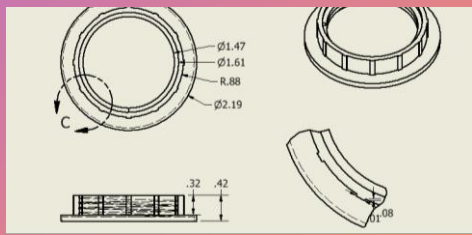
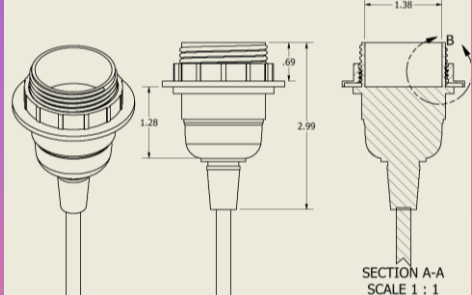
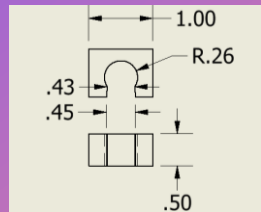
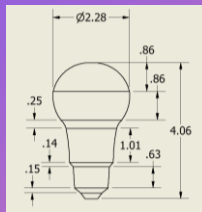
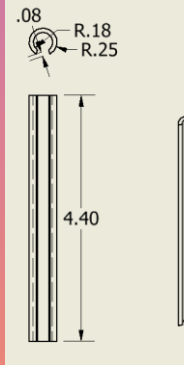
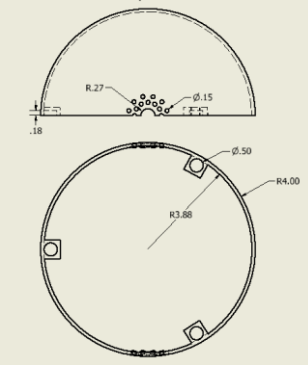
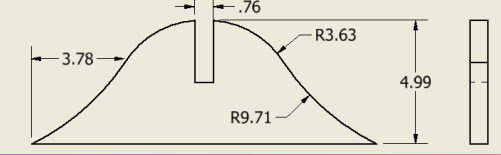
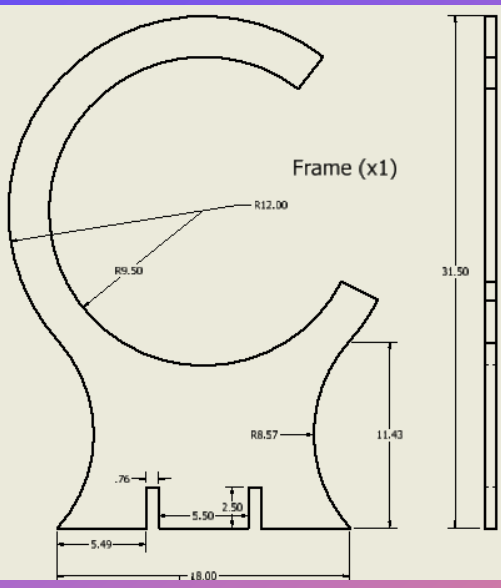
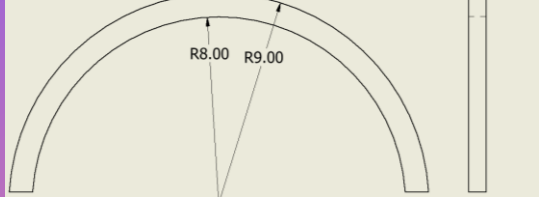
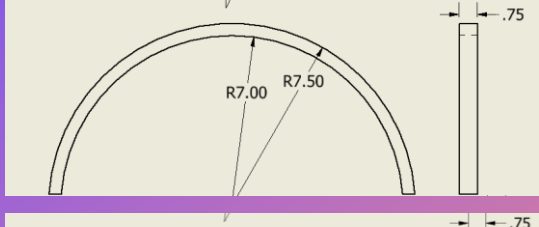
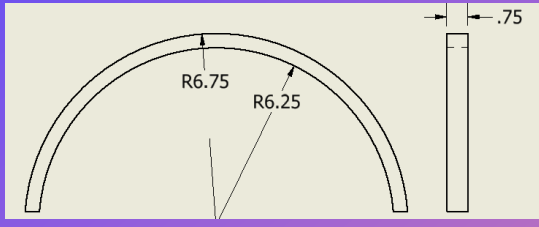
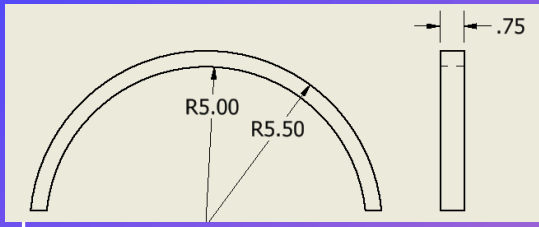
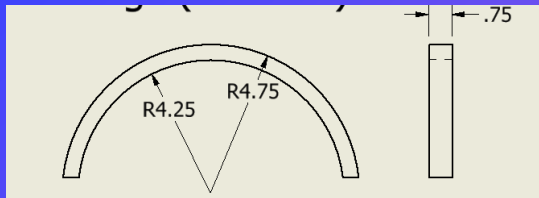


# AUTOCAD FILE





**ASSEMBLY**



# PARTS

# MATERIALS





# Material/Fabrication Cost

(1) Sheet of ¾"x2x4 Plywood	\$34.83
(1) Lamp Cord	\$5.33
(1) A4 Lightbulb	\$0.95
CNC	\$100
3D Printing	\$182.89
(2) Gold Metallic Spray Paint	\$16.96
Epoxy Resin	\$18.27
Total Cost	\$359.23



# LABOR TIME



# Labor Time

Design Time	20 hours
Material Planning	2 hours
Sanding	3 hours
Painting	6 hours
Assembly	14 hours
Labor Total	45 hours

**PRICE**

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# Cost Calculations

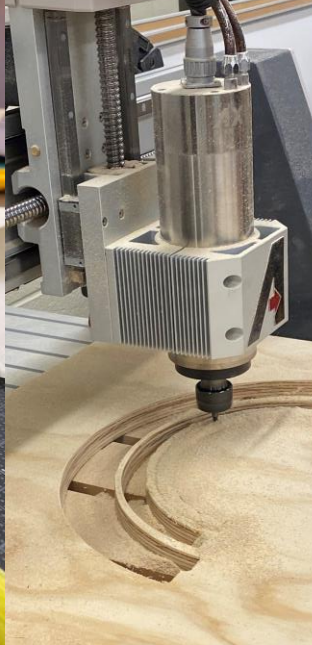
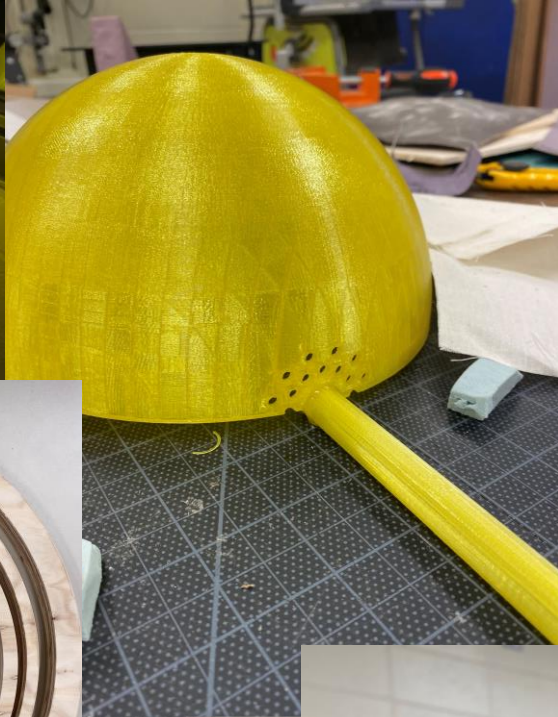
Labor Cost	Total Cost	Price with 40% Gross Profit
45 Hours	\$359.23 Material Total	\$2159.23 Total Cost
x <u>\$40.00</u> Dollars per Hour	+ <u>\$1800.00</u> Hardware Total	x <u>1.4</u> 40% Gross Profit
\$1800.00 Labor Costs	\$2159.23 Total Cost	\$3022.92 Total Price

The total price for this lamp is \$3022.92. This is the price for this design spraypainted gold. It includes 5 rotating rings and a plastic sphere that contains the lightbulb. The rings and part of the base can be removed to make transportation easier. The lightbulb can be easily replaced by removing half the sphere.



# PHOTOS OF PROCESS

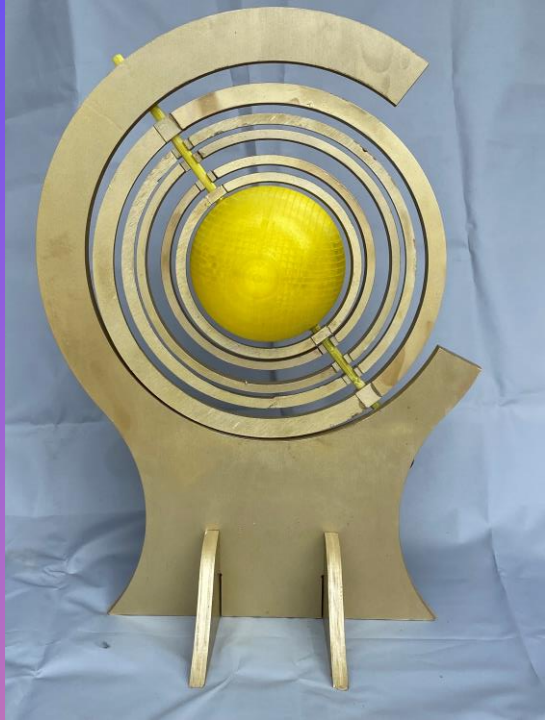




# FINAL FABRICATED LAMP







# Reflection

My lamp was an overall success. The light passes through the translucent PLA sphere well, resulting in the perfect glow. The base is very stable. The rings eventually worked, although, in hindsight, I would have designed a part to prevent the rings from slipping down the axis. I also would have printed the axis as two parts instead of four so that I would not have to adhere them to each other, which created two weak points. I would have designed more mechanical connections between my pieces instead of relying on adhesive.

