



TinkerCAD

# Whistle



# Purpose

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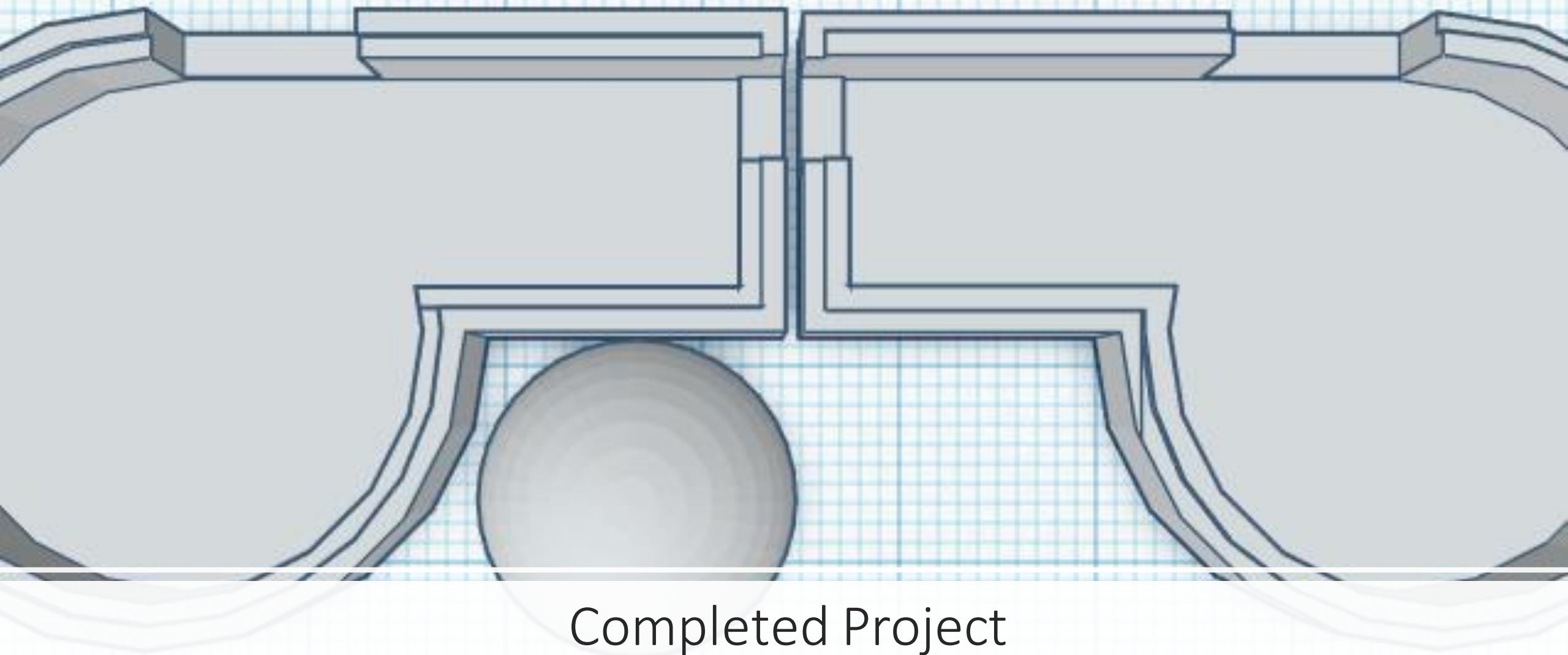
TO CREATE COMPLEX  
COMPONENTS USING  
COMPLEX SHAPES.



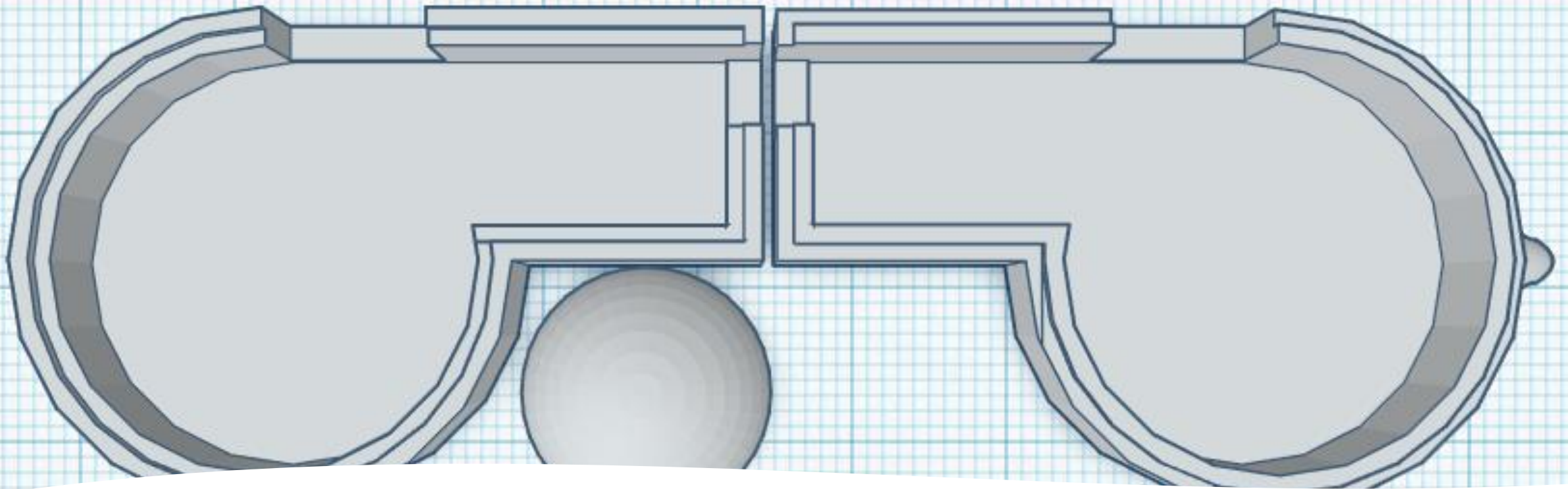
TO VISUALISE HOW PARTS  
FIT TOGETHER IN AN  
ASSEMBLY.



TO FOLLOW A WRITING  
LIST OF INSTRUCTIONS  
WITH SOME VISUAL CUES.



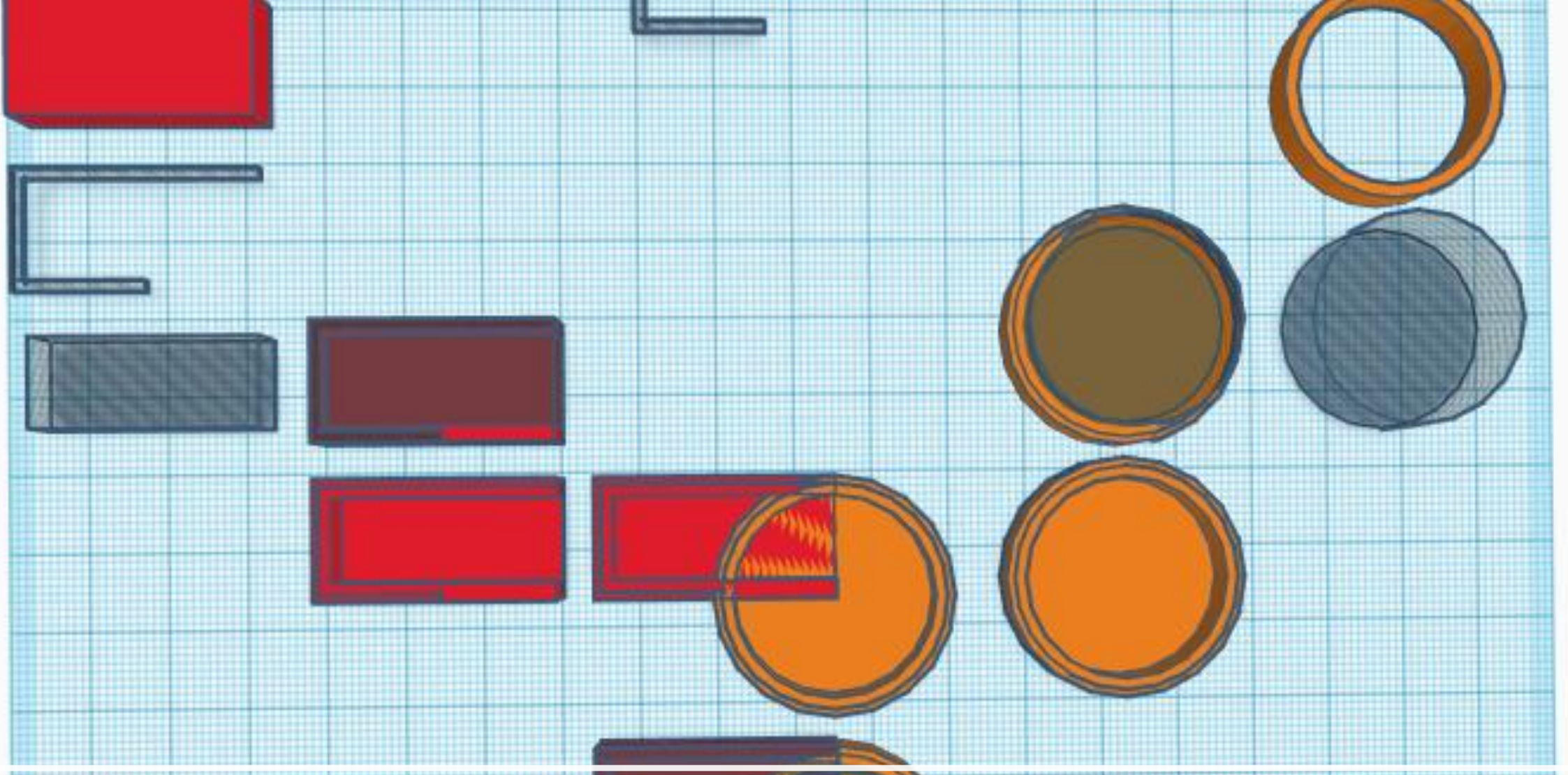
Completed Project



## Completed Project

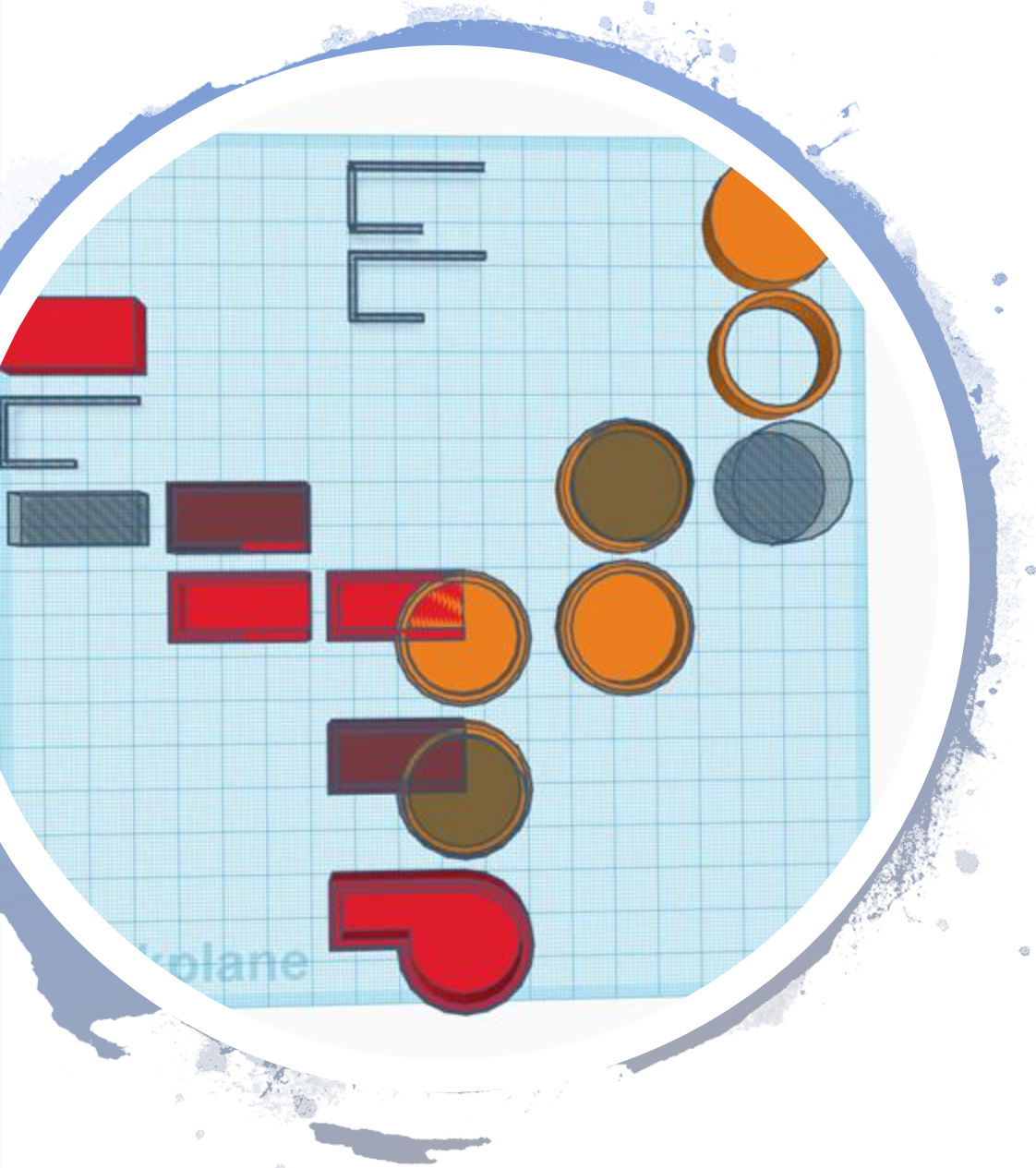
- Once your project is complete, it will look like this. In this project, we are creating the 3D model that will allow us to assemble the final product after the manufacturing process has been completed.
- Be sure to group the following in one workspace once they have been created:
  - Whistle – Left Side
  - Whistle – Right Side
  - Ball
  - Node for Lanyard





Left Side Progression Tree





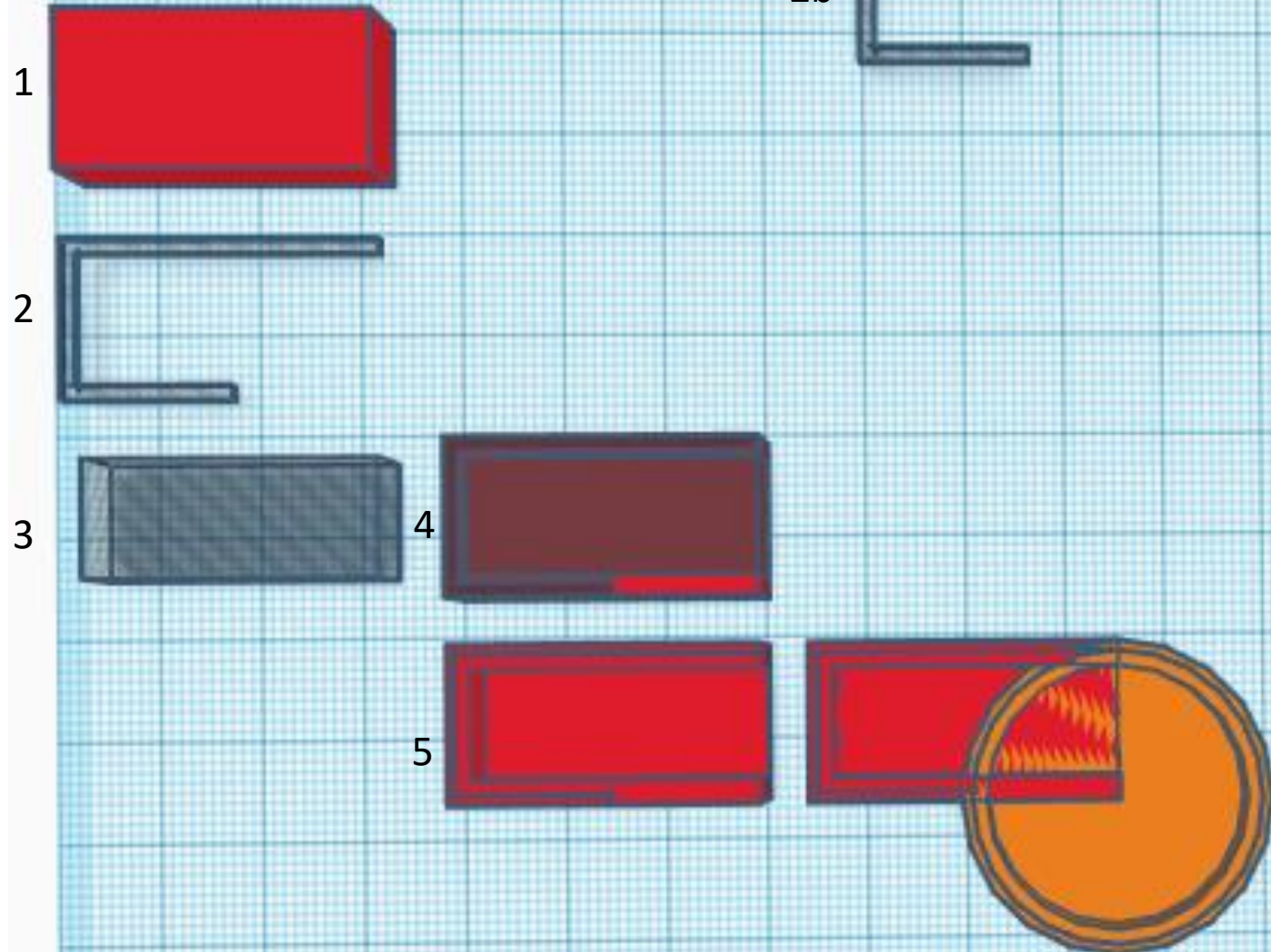
# Left Side Progression

In essence, to create each side of this whistle, you will be creating and assembly 2 unique shapes and joining them in TinkerCAD. From here on these parts will be called Left Mouthpiece (left side in photo) and Left Bulb (right side in photo). Follow the step-by-step instructions on the next slide.

# Left Mouthpiece

Here are the steps to create the left mouthpiece. Measures are (x-axis, y-axis, z-axis).

1. Create a block (30,15,10)
2. A) Create 3 Hole Boxes each raised 9mm above workplane.  
(30, 1, 1) - (1, 13, 1) - (16, 1, 1)  
B) Group the 3 boxes together.
3. Create another box (28, 11, 9) raised 1mm above the workplane.
4. Aligned step 1 – 3.
5. Group the shapes together.

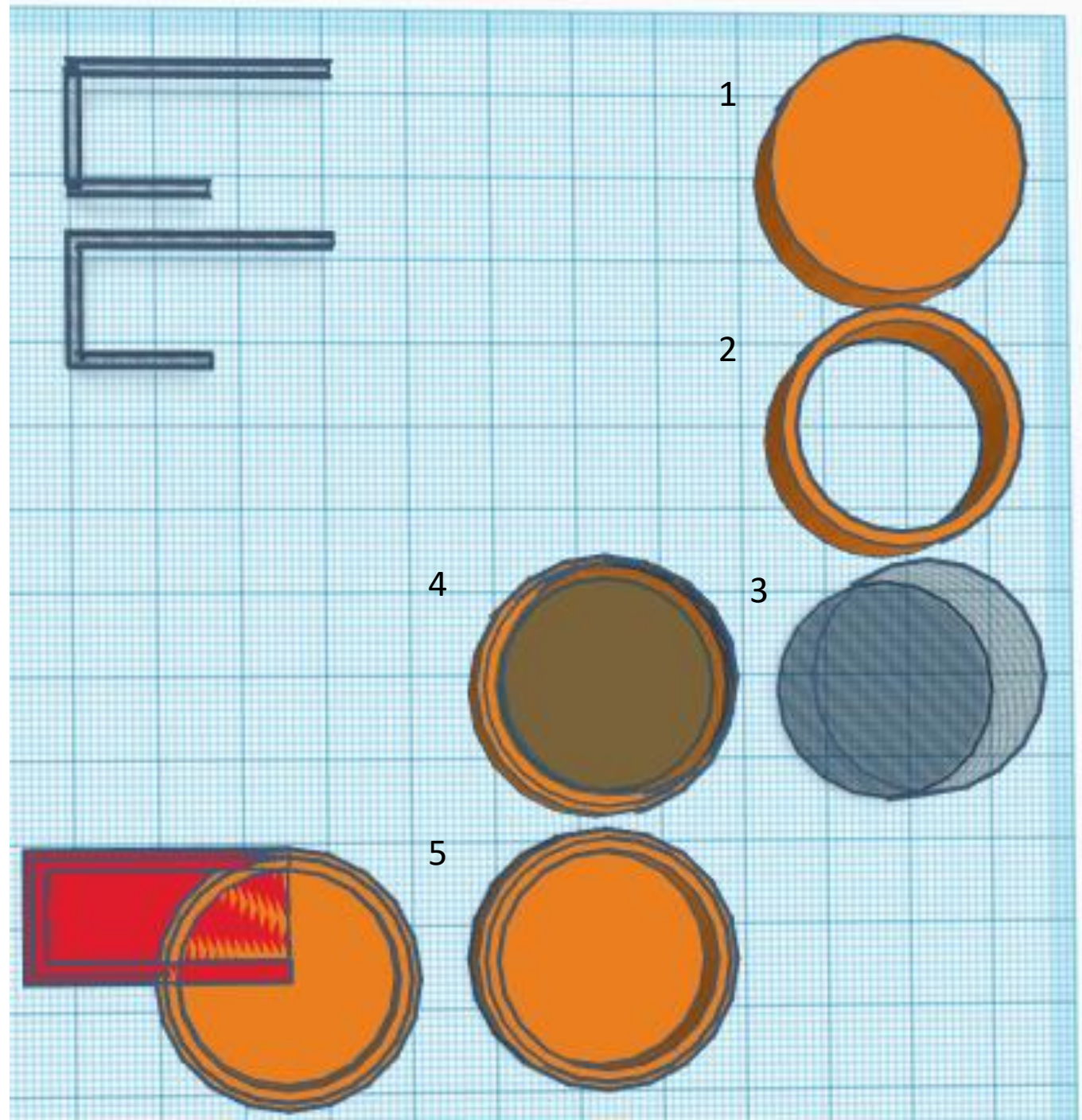




# Left Bulb

Here are the steps to create the left bulb.  
Measures are (x-axis, y-axis, z-axis).

1. Create cylinder (30, 30, 9)
2. Create tube (28, 28, 10) set wall thickness to 1mm.
3. Create cylindrical hole (26, 26, 20) raised 1mm off the workplane.
4. Aligned shapes created in steps 1 – 3.
5. Groups the shapes together.





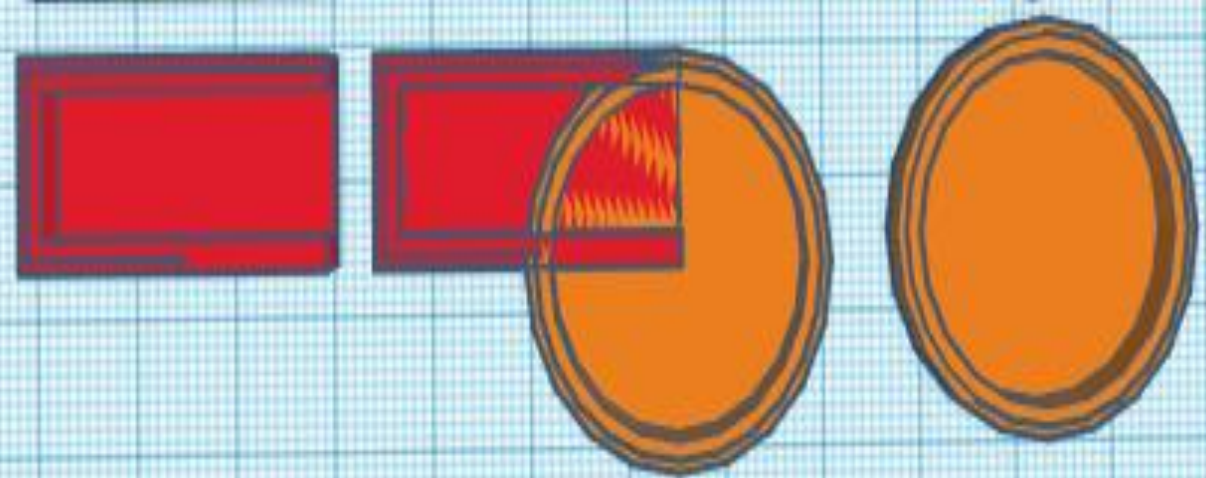
# Life Side Assembly

Here are the steps to assemble your left side mouthpiece and bulb:

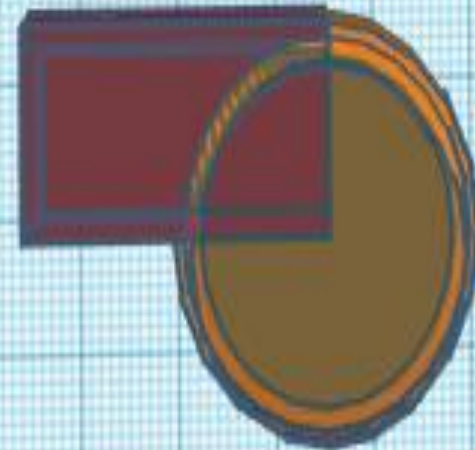
1. Move the mouthpiece so the center of the bulb is in line with the right end of the mouthpiece. (Use the ruler tool for best results)
2. Ungroup both the mouthpiece and the bulb.
3. Select all the components (solids and holes) and group them together.

Your whistle's left side is now complete.

1



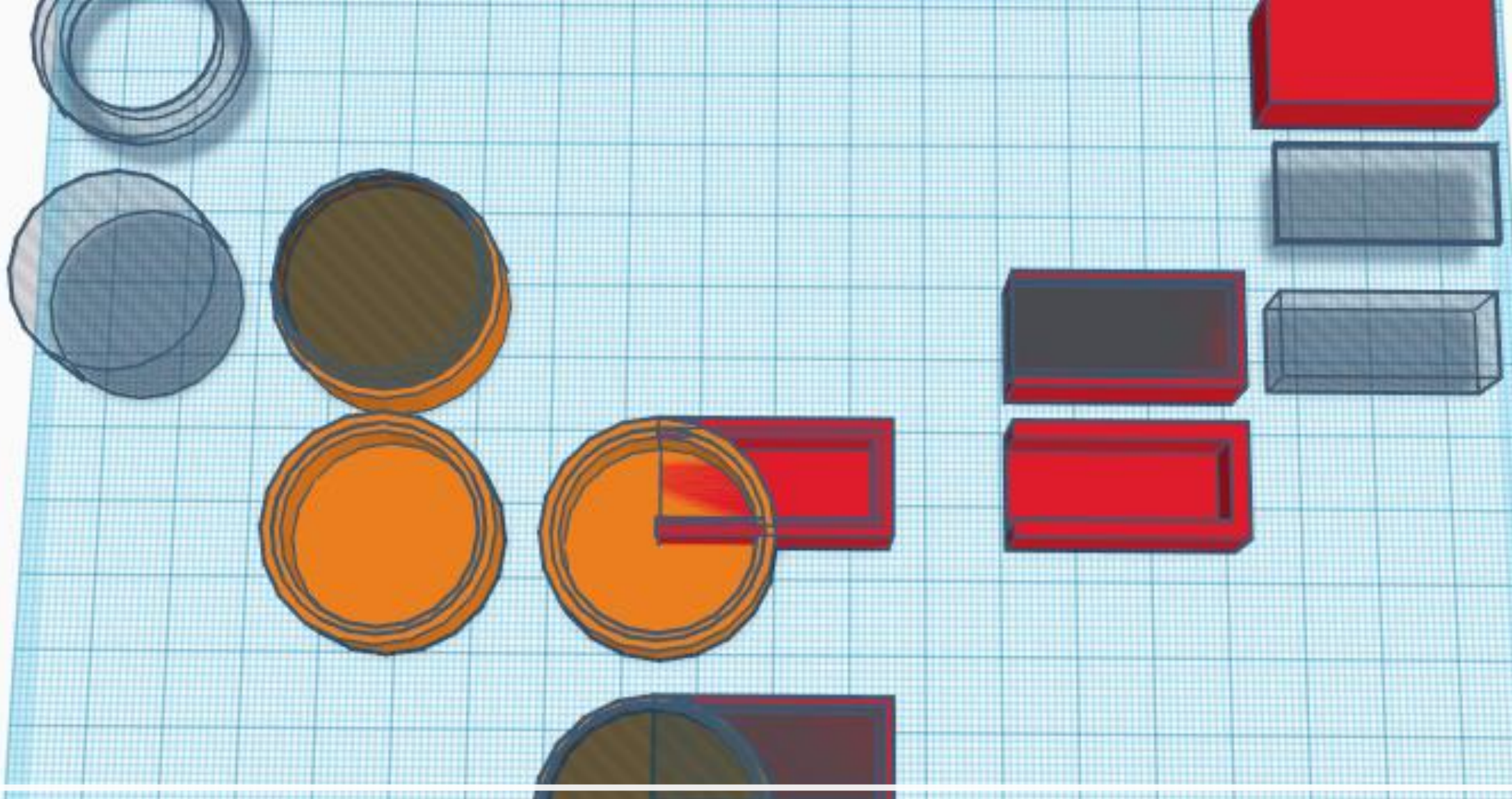
2



3

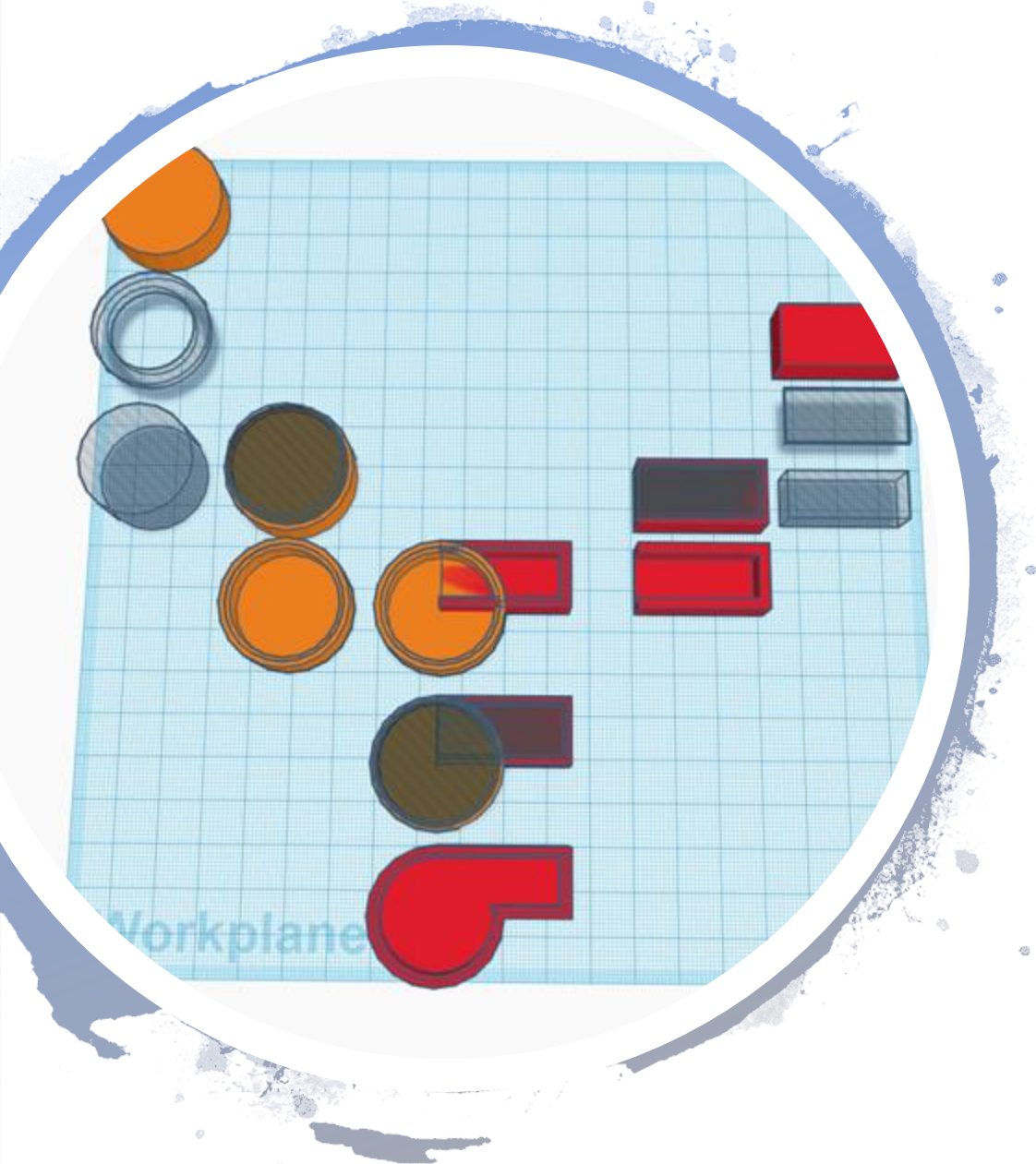






Right Side Progression Tree





# Right Side Progression

Now that you have completed the left side of your whistle, you will be working on the right side. Do not assume this is an exact mirror.

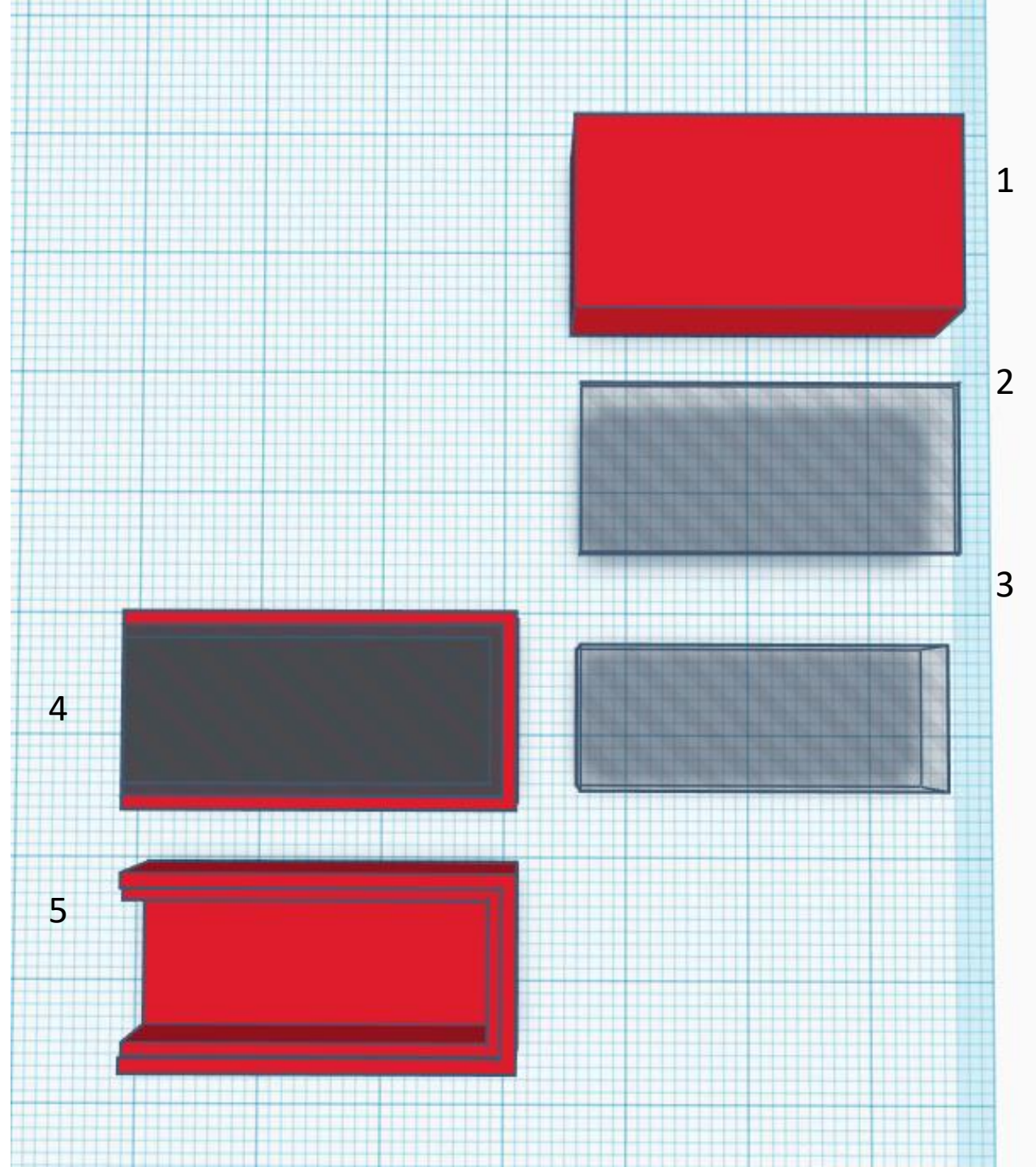
The assemble of the whistle relies on a friction fit between the two sides. On the left side, we have a 1mm border protruding from the inside of the whistle. On the right side, we will a protrusion on the outside.

The basic shapes that we will start with will be the same, but the holes that we create for those shapes will be different.

# Right Mouthpiece

Here are the steps to create the right mouth piece. Measures are (x-axis, y-axis, z-axis):

1. Create a box (30, 15, 10)
2. Create hole shaped as a box (29, 13, 1) raised 9mm above the workplane.
3. Create another hole shaped as a box (28, 11, 9) raised 1mm above the workplane.
4. Aligned the shapes centered on the y-axis of the first block. Make sure all the shapes are aligned to the left side leaving a 1mm border (as shown in the picture)
5. Group aligned shaped together.

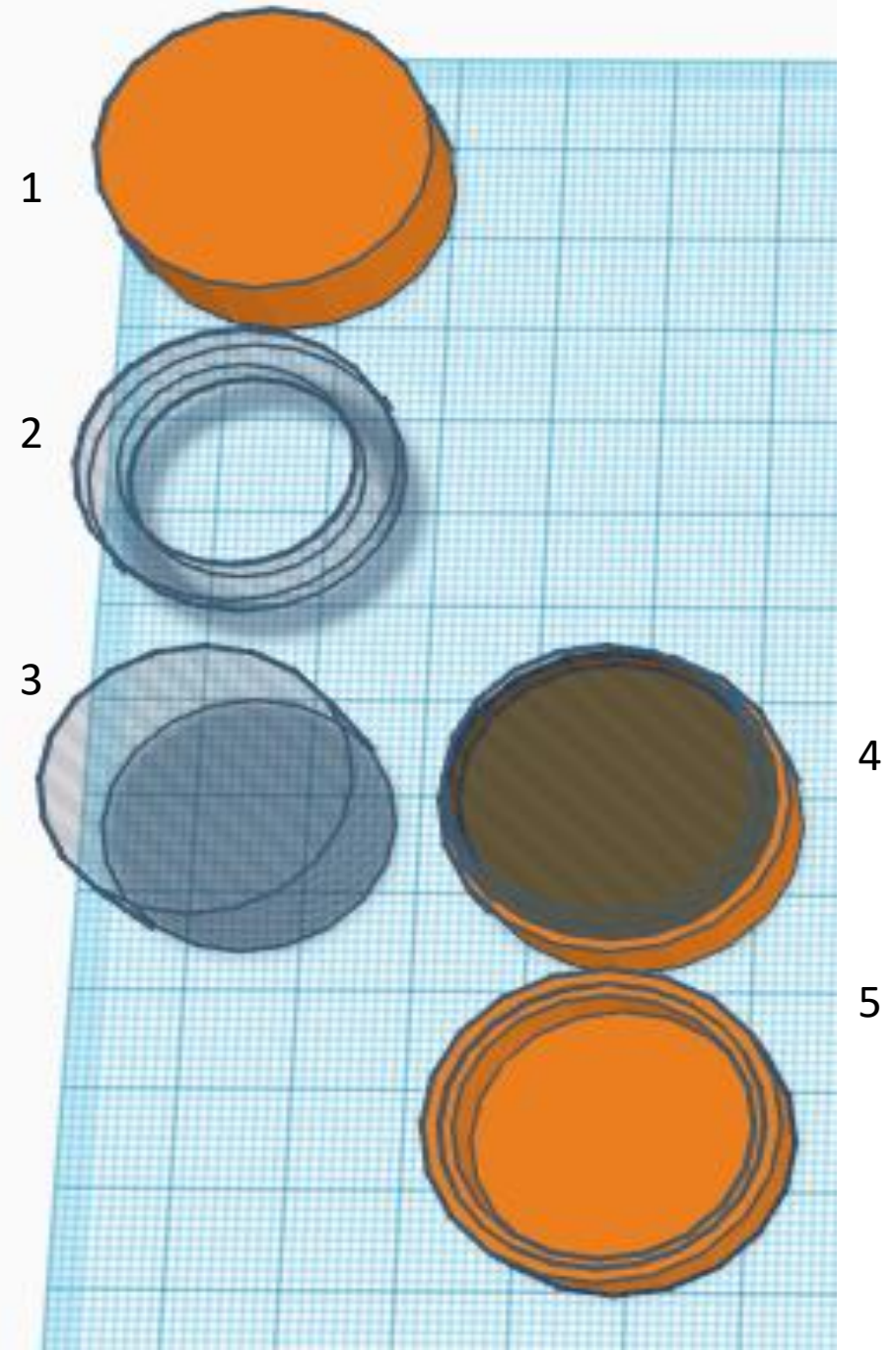




# Right Bulb

Here are the steps to create the right bulb.  
Measures are (x-axis, y-axis, z-axis):

1. Create a cylinder (30, 30, 10)
2. Create a hole in the shape of a tube (28, 28, 3) raised 9mm above the workplane.
3. Create another hole in the shape of a cylinder (26, 26, 17) raised 1mm above the workplace.
4. Aligned the shapes on their center points.
5. Group all shapes together.



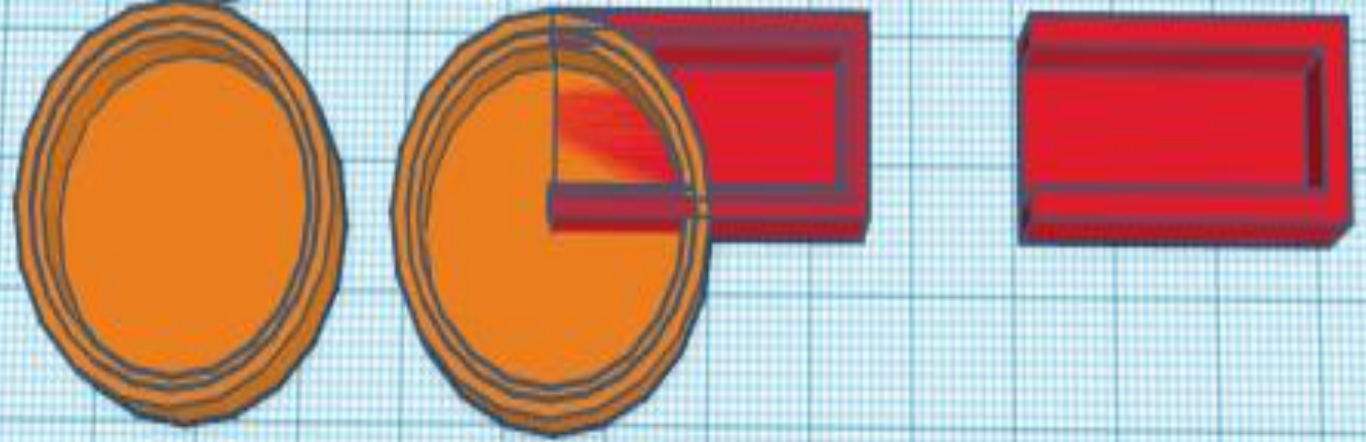
## Right Side Assembly

Here are the steps to assemble your left side mouthpiece and bulb:

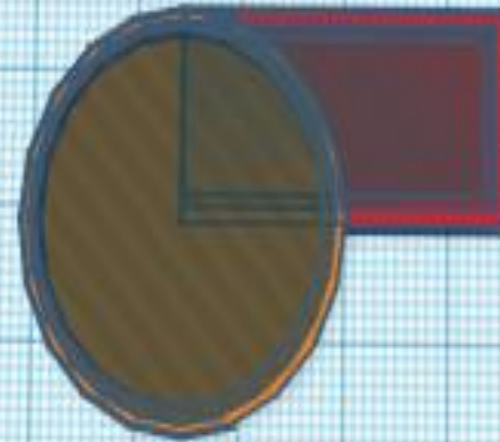
1. Move the mouthpiece so the center of the bulb is in line with the right end of the mouthpiece. (Use the ruler tool for best results)
2. Ungroup both the mouthpiece and the bulb.
3. Select all the components (solids and holes) and group them together.

Your whistle's right side is now complete.

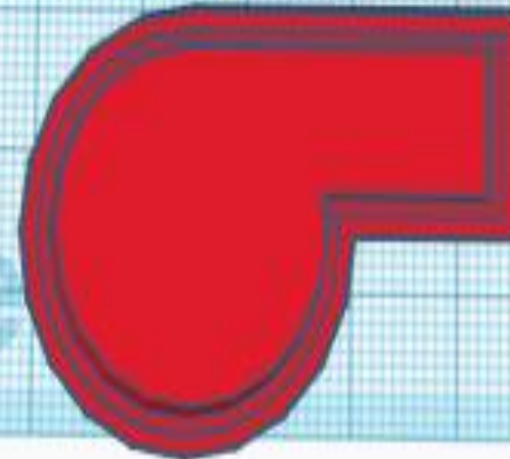
1



2

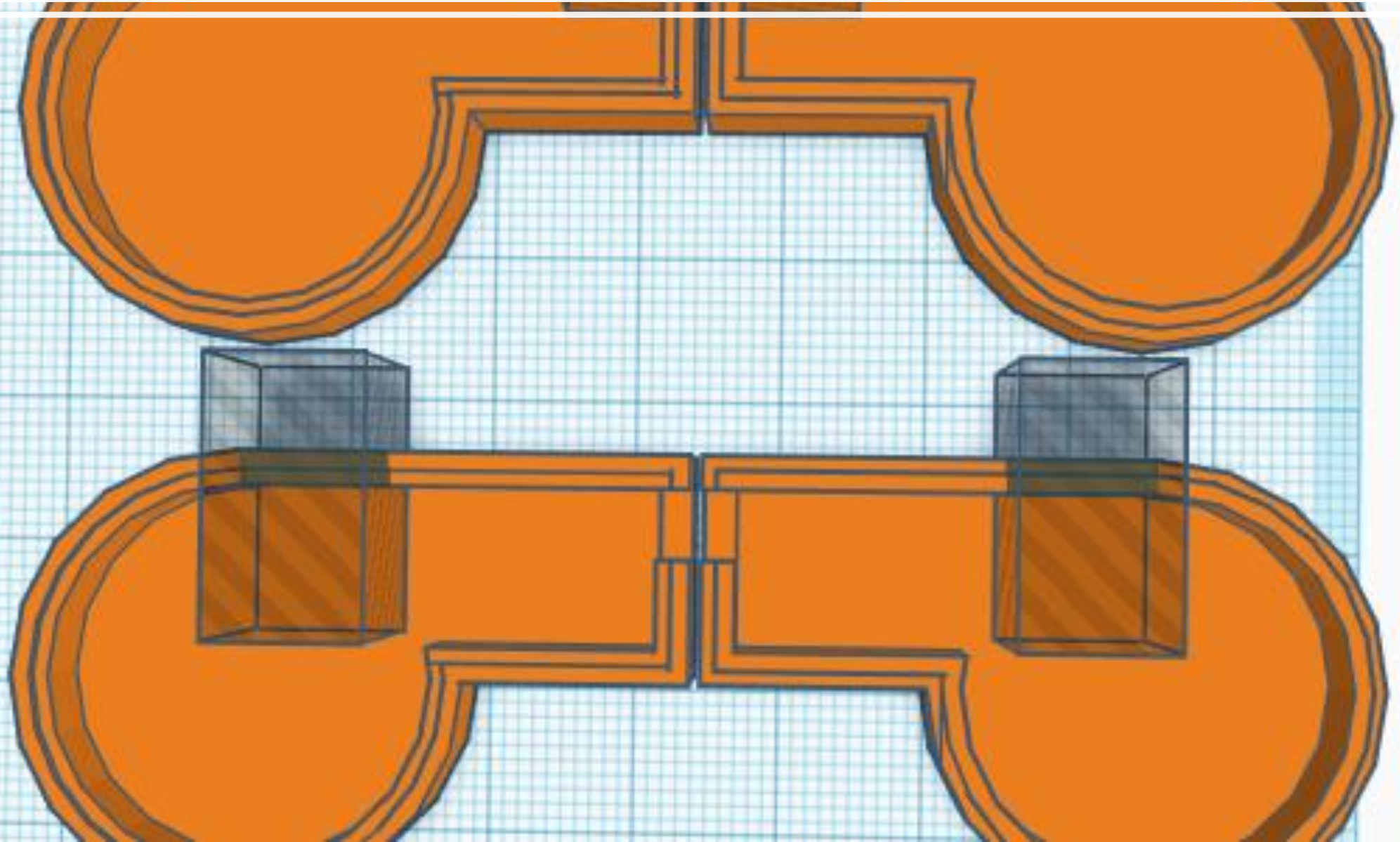


3



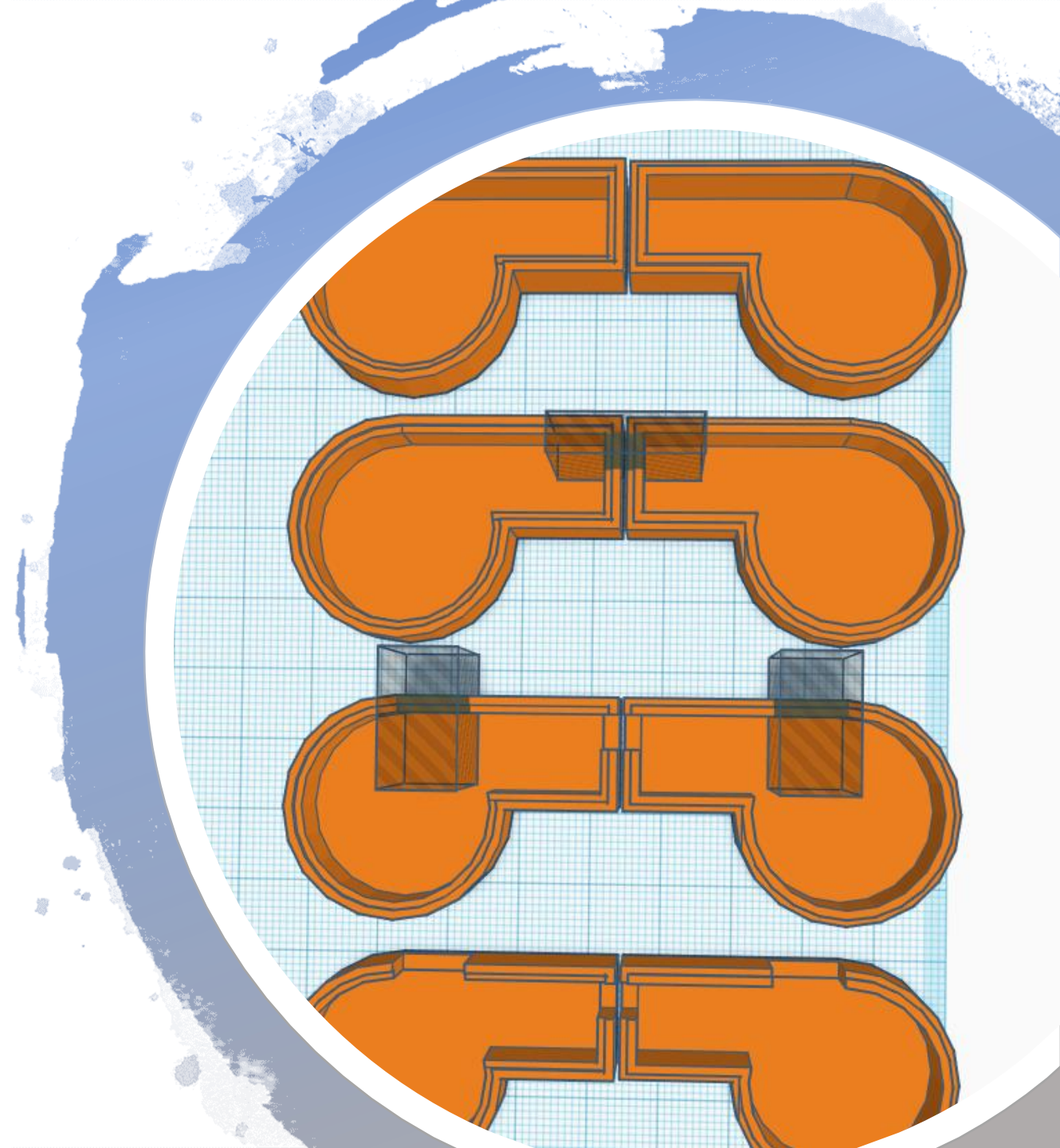


# Assembly Progression Tree



# Assembly Progression

- You've now been able to create the left side and the right side of your whistle. Now, it's time to lay them out for printing.

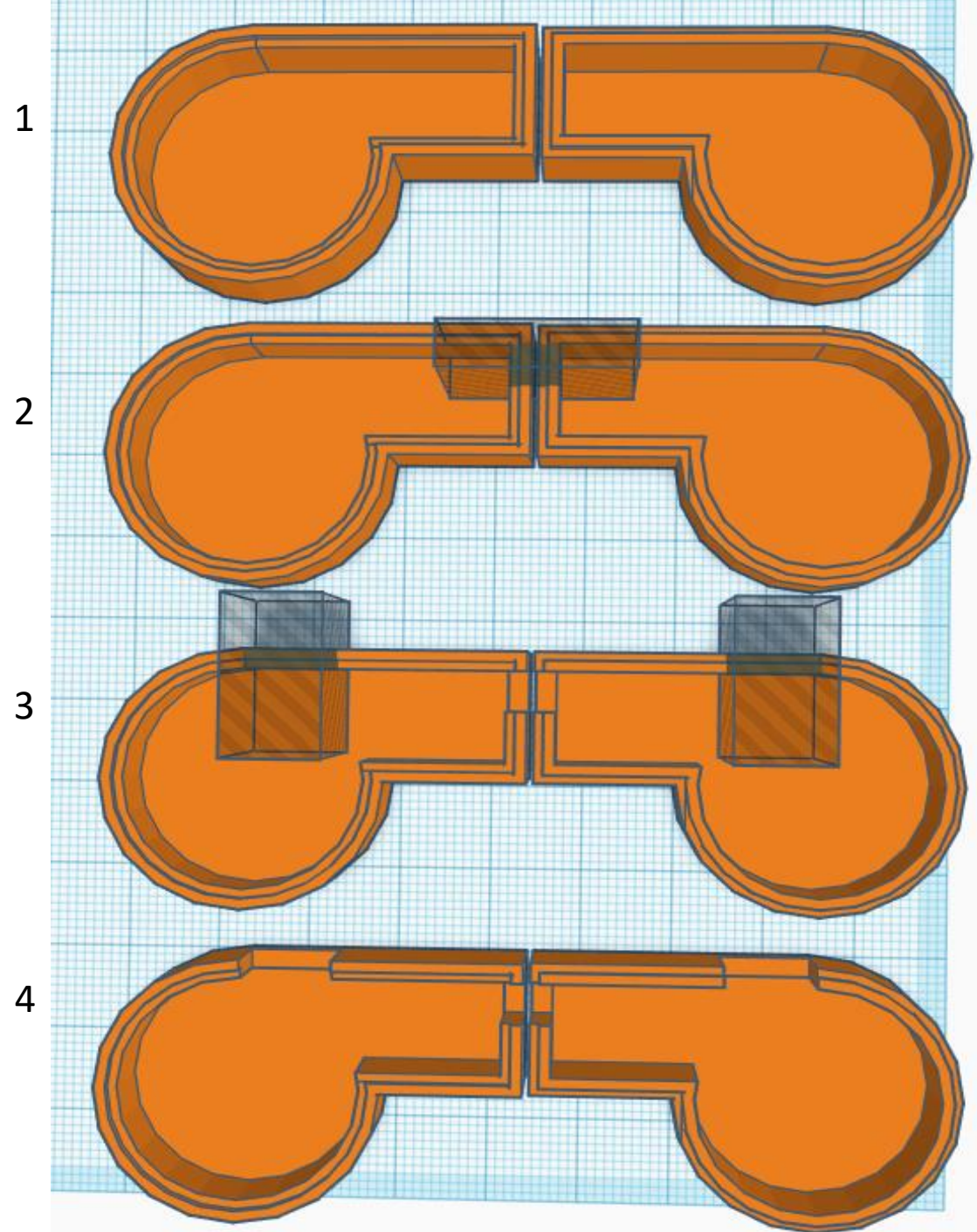


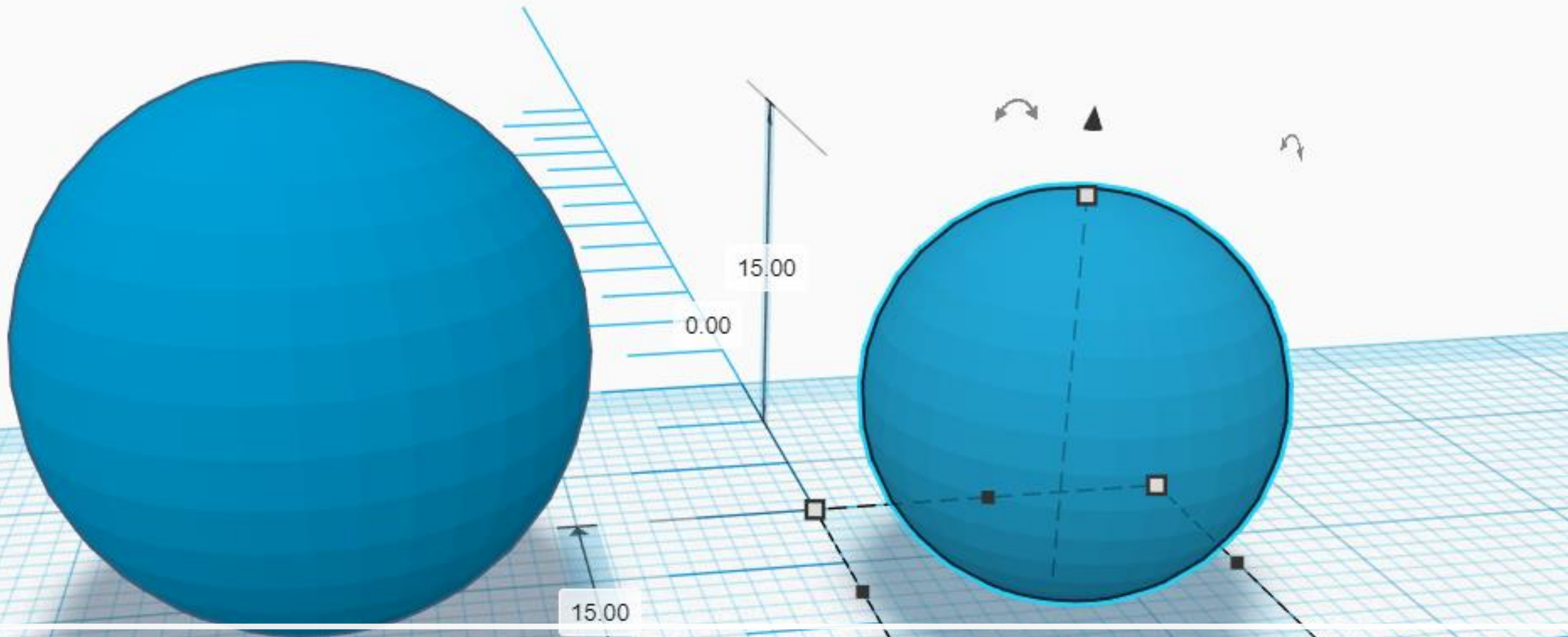


# Assembly

Here are the steps to assembling your whistle to get ready for print:

1. Place the side of your whistle on the same workplane so the mouthpieces are about 1mm apart.
2. Create a box shaped hole (20, 5, 20) raised 2mm above the workplane. Place it in-line with the top (inside) of your whistle.
3. Create two more box shaped holes (10, 18, 20) raised 2mm above the workplane. Place the 15mm from the end of the bulb at the top of your whistle.
4. Group all 3 holes and both sides together.





Ball

0.00

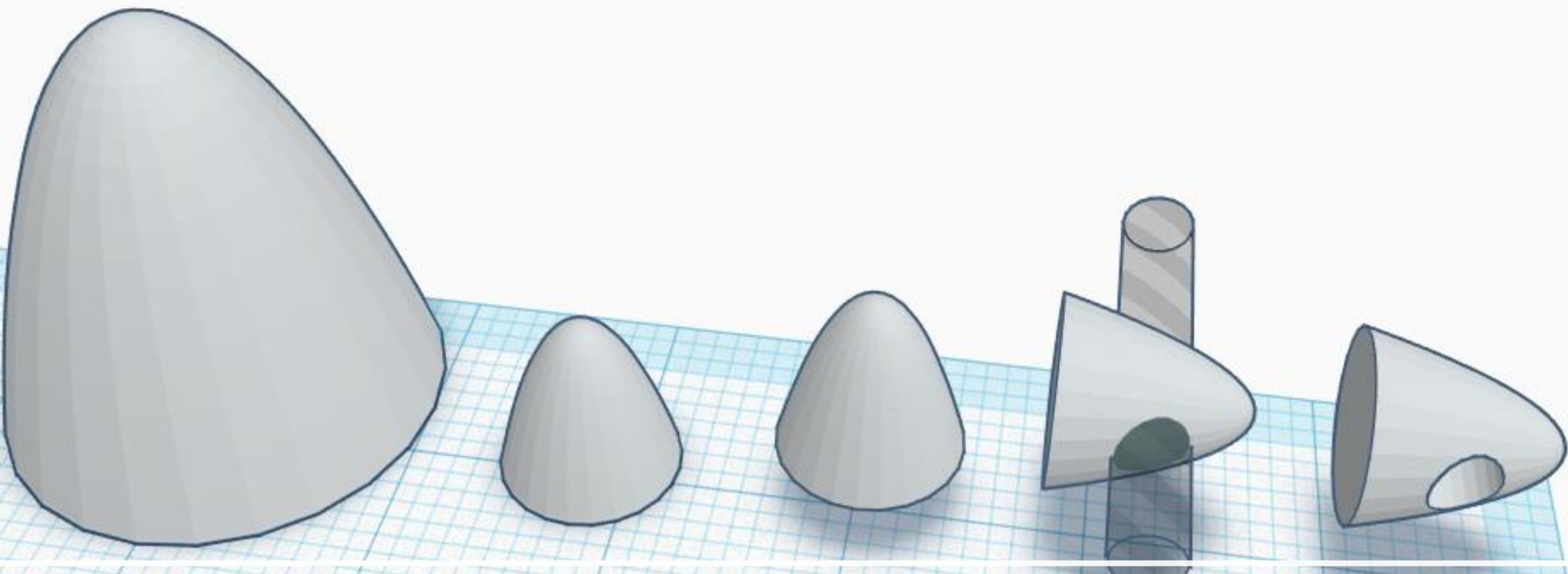
15.00

15.00

0.00

15.00



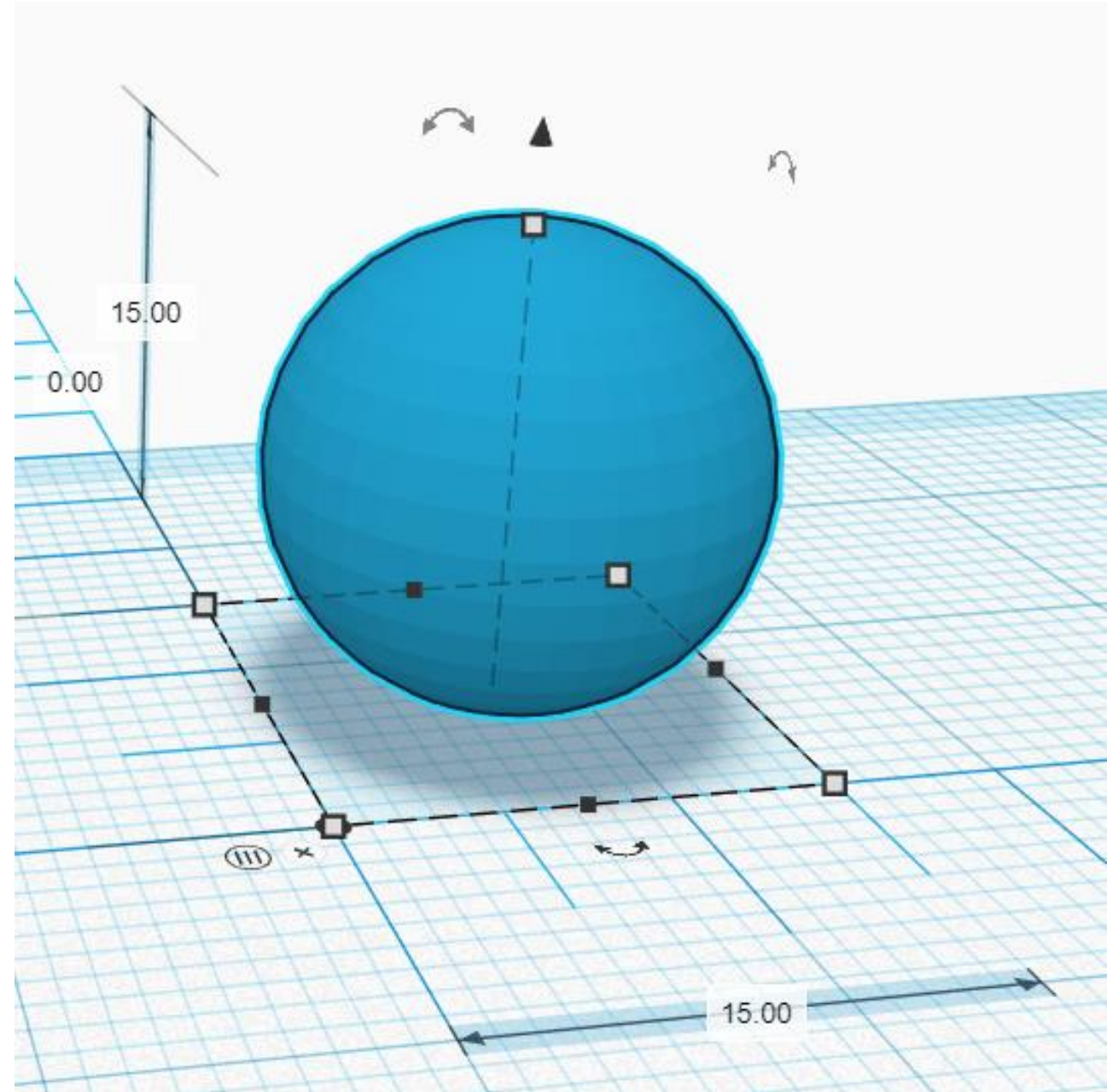


Node for Lanyard Attachment

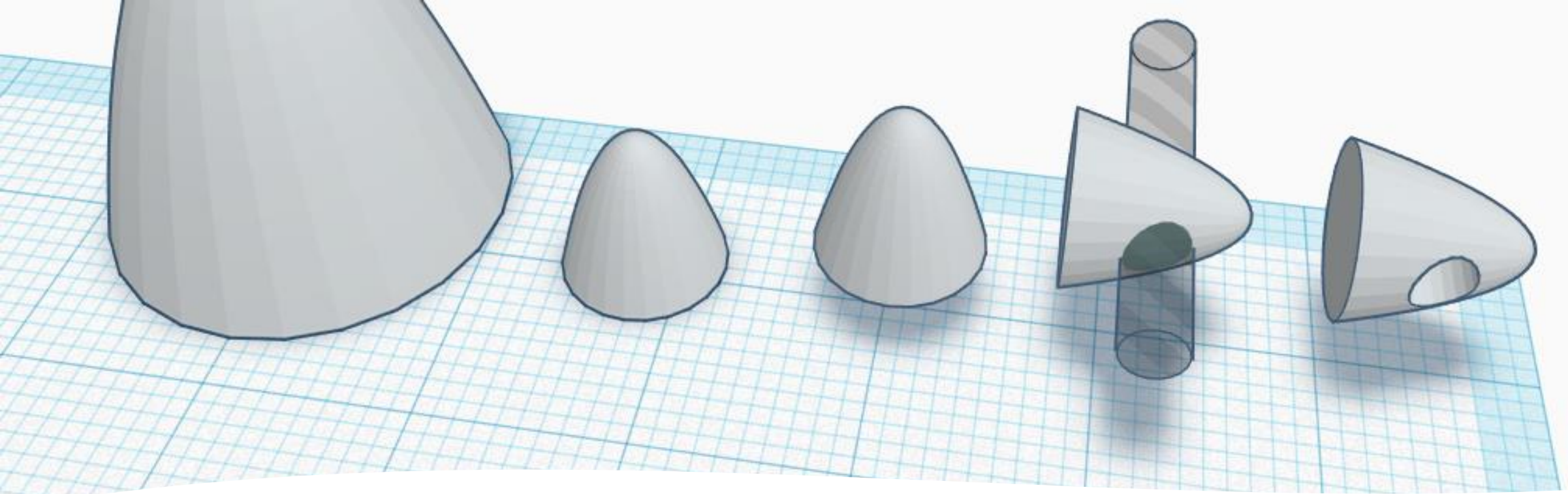
# Ball

Here are the steps to create and layout the ball:

1. Create a sphere (15, 15, 15)
2. Place the ball near the whistle sides ready for print.

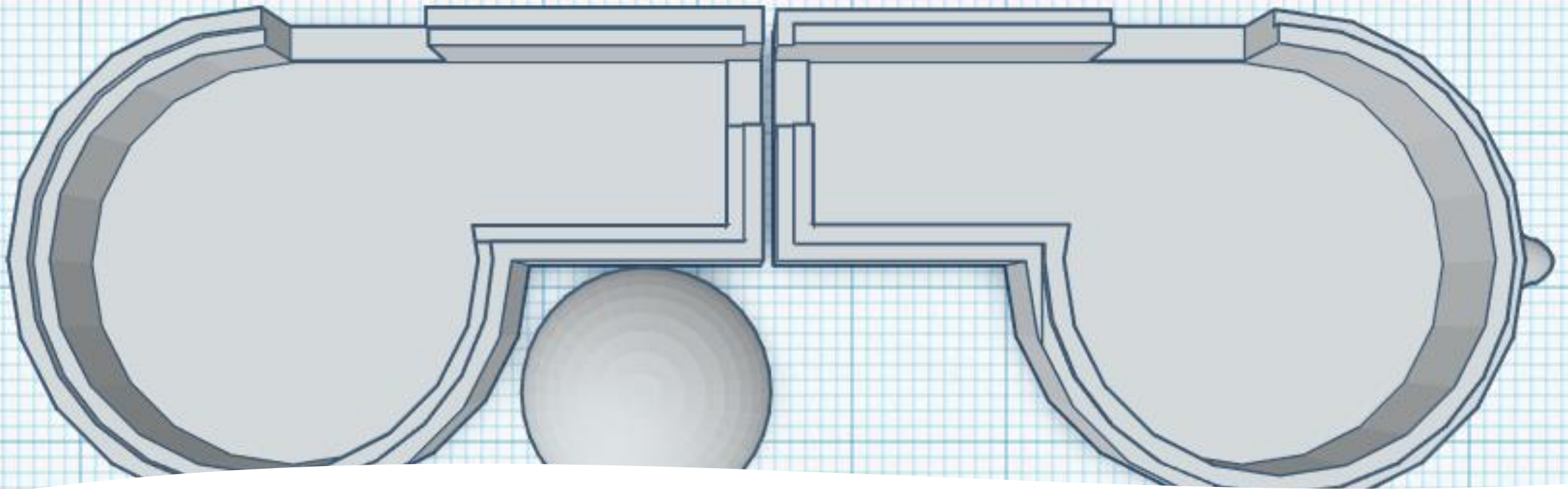






## Node for attachment

- Steps for creating an node to attach your whistle to a chain or lanyard.
- Using the paraboloid shape in TinkerCAD, set the dimensions (8, 8, 8).
- Turn the paraboloid 90 degrees on it's side and raise the shape 1mm above the workplane.
- Create a cylindrical hole (3, 3, 20).
- Center the hole on the z-axis and the x-axis.
- Place and group the node onto your whistle when it is ready.



## Assignment Submission

- Once you have grouped your components (left side, right side, ball, and node) submit your assignment:

- Name your Project
- Click Export
- Click .stl
- Check your Downloads
- Submit the .stl file to Microsoft Teams

