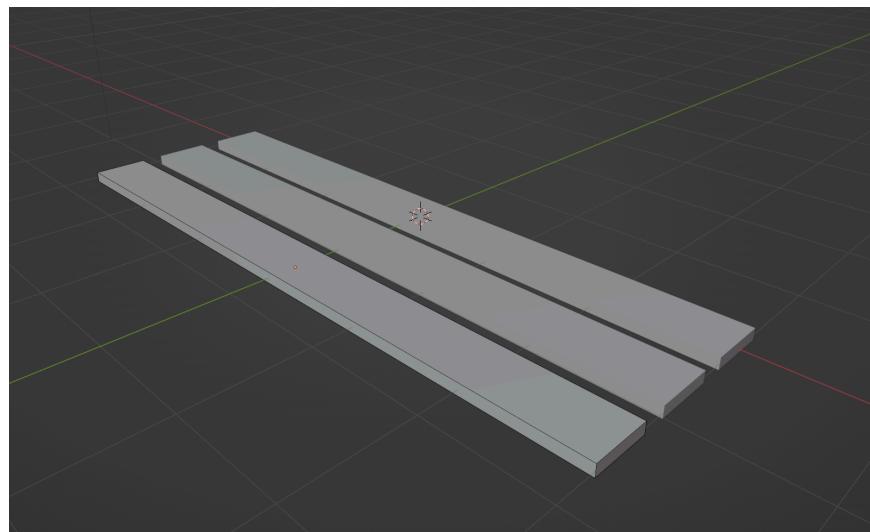


# Low Poly Modeling in Blender

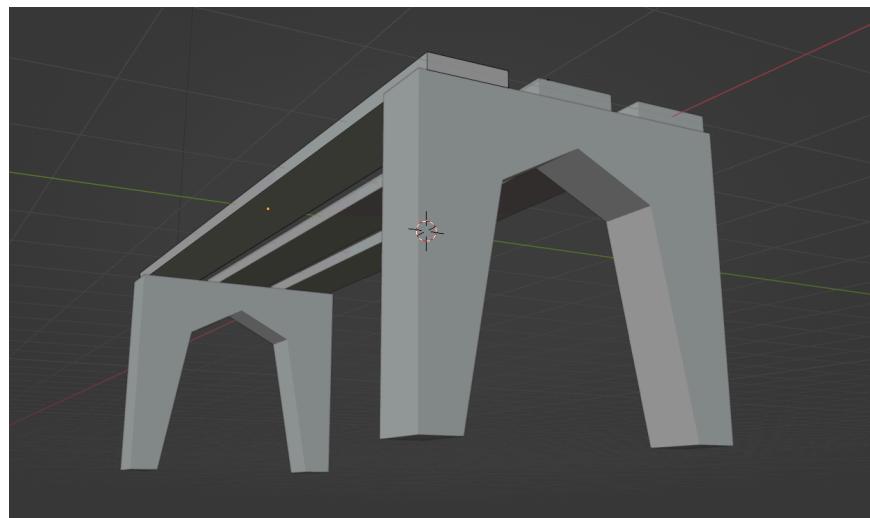
Alyssa Frederick

## Bench

My first thought was to make a park bench so I could put another object on top of it. I began first with a slat of the top of the bench as I was envisioning a bench made out of wood. I added a cube to the scene and played around with the dimensions until it was how I was imagining. I then duplicated the piece and shifted it over to make the next two planks.



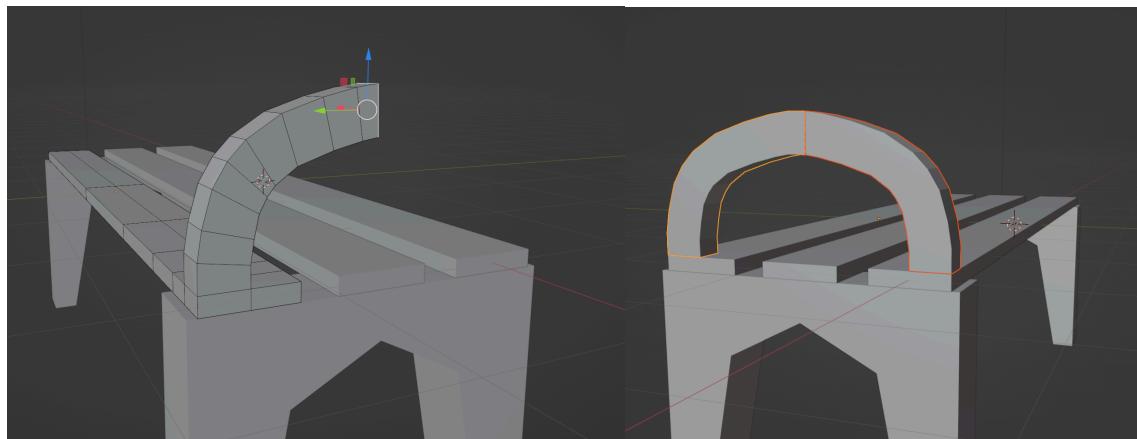
I decided to then work downwards for the legs so I moved around the object to look at it underneath and placed another cube. I then positioned the cube right up to the rectangles and adjusted the dimensions so that my new rectangle laid perpendicular to the slats above. I then used loop cut to split the piece into halves and then fourths. Selecting the two outer pieces, I moved them a little first. Then I moved them a second time further out to create one leg of the bench. I duplicated this piece and then adjusted it to fit on the other side of the bench.



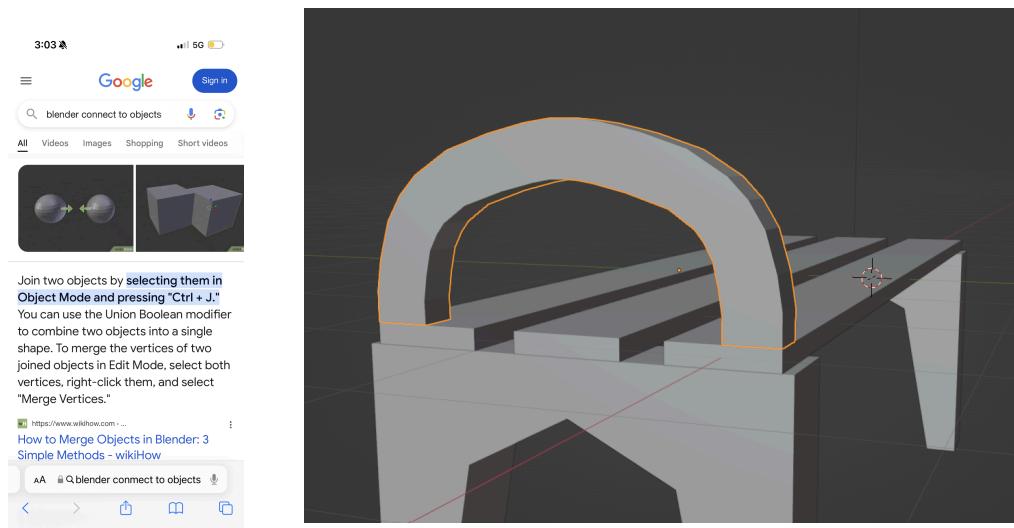
Next, I worked on making the arm of the bench that I envisioned making a half arch on the side. I first used the loop cut tool to divide one of the planks into sections as seen below. Then I selected the corner section and extruded a little. I then rotated the surface so that it faced towards the inside of the bench a little. I kept extruding and then rotating until I realized I should probably use some sort of symmetry or mirror tool to do the same thing on the other side. I then deleted a little bit of my arc and looked up how to mirror something in Blender.

I realized that how I was working, I would need to separate the arc of the bench from the plank so I looked up how to do that and then proceeded. This is a good thing to note for next time as if I had known I would need to separate them, I would have just created a new cube in the first place to begin building the arc. I wonder if there is an even better way to do this. (If I was in SolidWorks I would mirror over the edges to a different part and then continue from there so now I am thinking Blender may have a way to do that.)

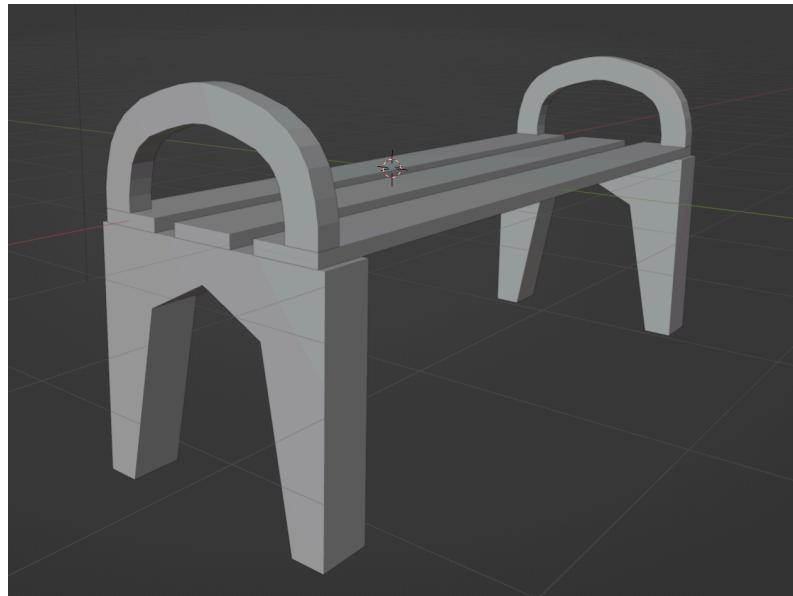
I thought that the best way to do it, although I bet there is probably a better way, is to make slightly less than a half arc, mirror that half arc, and then extend one of the sides until they connect. Thus, I made sure that the last section of the quarter arc was as vertical as I could get it and did just that.



I was thinking that it would probably be better to combine the arc into one piece so that it would look smooth when I go to add a material so I quickly Googled how to do that and did.



I then used my handy mirror tool again and duplicated, then mirrored the whole arc so I could place it on the opposite side of the bench.



Lastly I added materials to the bench. For the planks, I went with a dark wood color. It would be really cool to add some texture to them, but for now I thought it was interesting how the shadows of the arm of the bench cast light on it so I left it as is. Then I added a black metal to the rest of the bench. I put up the metallic and lowered the roughness on this to see how it would catch the light differently.



While the above documentation feels thorough, it's a lot of text to read through and hard to learn from so I am going to try to change how I write the next ones. My plan is to include more bullet points so it is easier to skim to find what I need, but still retain the level of detail I did above. My goal is to make this documentation easy to read the next time, so that when I forget how to do something I can quickly scan over this to relearn it!

## Jack o' Lantern

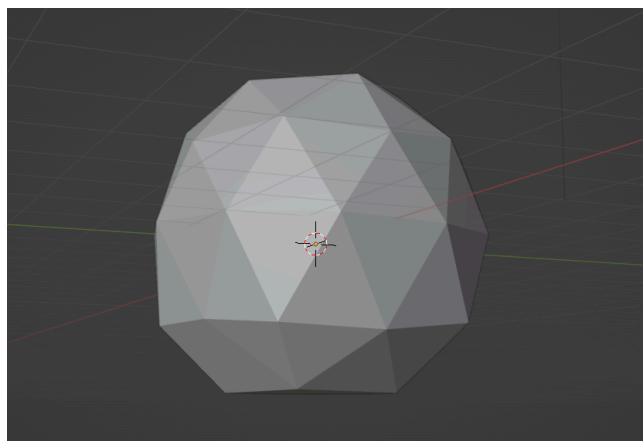
With October here (!!!) I wanted to be a little festive so I made a jack o' lantern to place on top of my bench. I also am really interested to play with the light and see how I can make the jack o' lantern come alive. Here are the steps I took:

- **Add an Ico Sphere.**

To get a low poly but sphere look I went with the Ico Sphere. Working with it to make the tree earlier, I figured this was a good object to also play around with in order to achieve an oblong look for a pumpkin.

- **Move vertices around** to make it more unique and pumpkin-y.

I also decided to make the bottom flat so it could sit on the bench easily. (Thinking in SolidWorks a little here, but thinking it would be easy to mate two flat surfaces together so they touch?)



- **Hollow out the sphere and create appropriate holes to see in**

I learned to do this with [this YouTube video](#) and the steps to do this are as follows.



- Switch to **Wireframe** mode in top right
- Open **Modify** section in bottom right panel
- Click **Add Modifier**
- Choose **Solidify**
- **Adjust Thickness** as desired
- Go into **Edit Mode**
- Select **Surfaces**
- Click the surfaces you want to get rid of and delete the **Face** so you can see the inside of the object
- Switch back to **Solid** mode in top right

I used this method to delete two triangles as the eyes for my jack o' lantern and realized just how perfect the ico sphere shape was for this!

- **Adjust Surfaces and Faces of eyes**

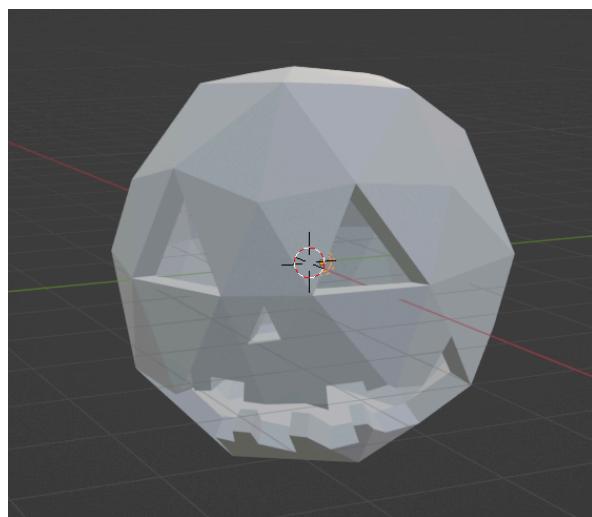
I adjusted these to make the triangles a little smaller to fit what I had envisioned for the eyes of my jack o' lantern to look like.

- **Use Knife tool to cut more holes** for the nose and smile

I was playing around with the different tools to see how I could cut into the sphere to create the nose and smile and found the knife tool. I started playing around with it but could not figure out how to end the knife shape so I looked up [this tutorial](#). I learned that you end the knife shape by pressing Enter.

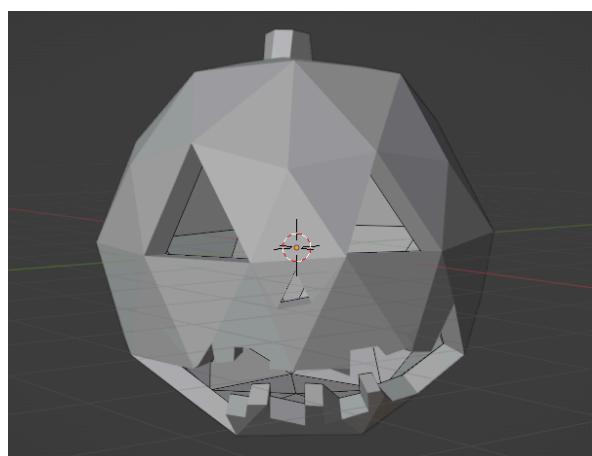
I then cut the nose triangle out and deleted the face.

Next, I cut a wonky smile for it and deleted the faces. This is where I learned that you need to delete one face at a time so my smile ended up even more wonky than I was expecting but I liked it!



- **Use Knife to cut stem shape & Extrude**

To add a little more, I made a small stem to the top of my pumpkin.



- **Move Light inside & adjust**

I then moved the light inside my jack o' lantern and played with the adjustments to make it feel well lit. I made sure the light was at the origin and a Point Light so the light is shining in all directions. I made it a light yellow and adjusted the power until it felt dim but still bright enough to look cool and make shadows.

- **Add Material to the pumpkin**

For the pumpkin I chose an orange color and just messed with a lot of sliders...

This is the final product lit only by the inner light source. I will have other lights in the final composition!

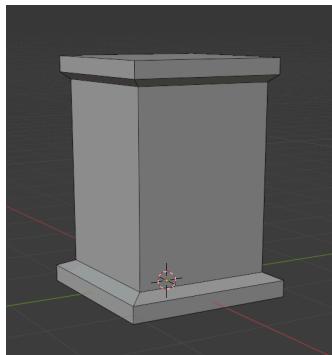


Again, I am going to try a different format for documenting to see if it is easier for me to read through later.

## Lantern

I wanted to keep playing with different lights so I decided to make a lantern to sit next to my jack o' lantern. I also wanted to play more with materials and wanted to see how glass works in Blender.

Diving right in:



Building from the bottom up,

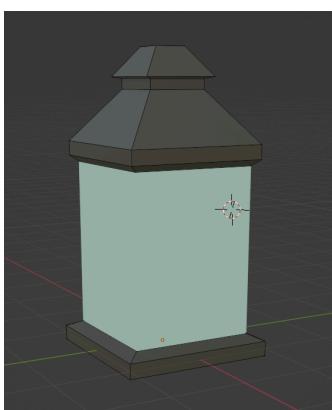
**Add Cube**

Then to make the different sections, repeat

**Extrude (e)**

**Scale (s)**

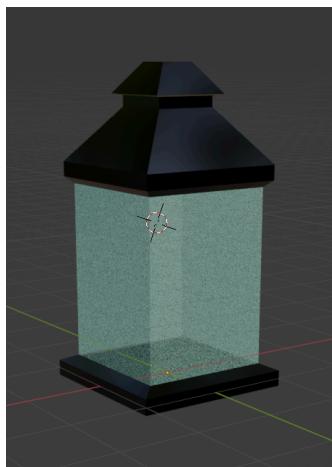
I then looked up how to separate parts because I wanted the middle cube to be a different material (glass) and thought this was the easiest way to do it. (I now know that you can add multiple different materials to the same object no problem.) I learned to click P then “selection” after having selected the area I wanted to separate (aka the cube.)



I then continued with making the triangle top part with **Extrude** and **Scale**.

Next, I **Added Materials**.

I made the outer portion a gray metal and tried to make the inner part look like glass with a blue tint. To make it look more like glass I lowered the alpha and played with other sliders too.



For the finishing lamp like touch, I **Added a Point Light** inside the glass area.

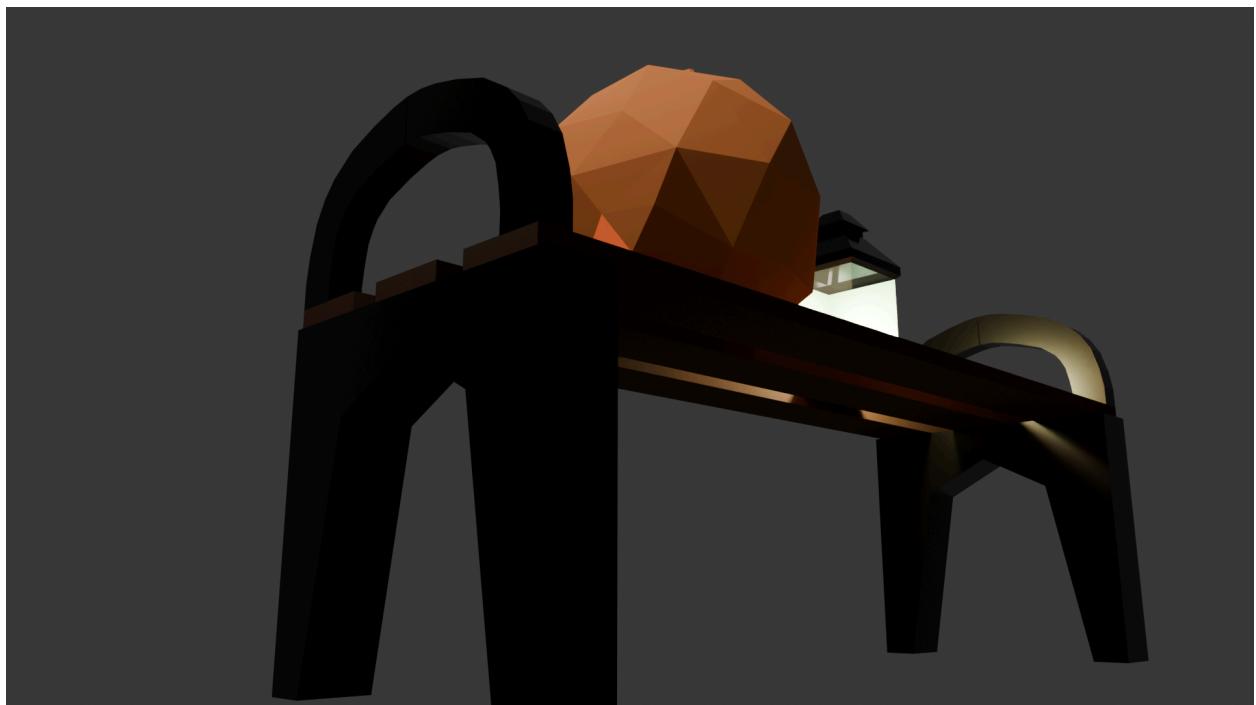
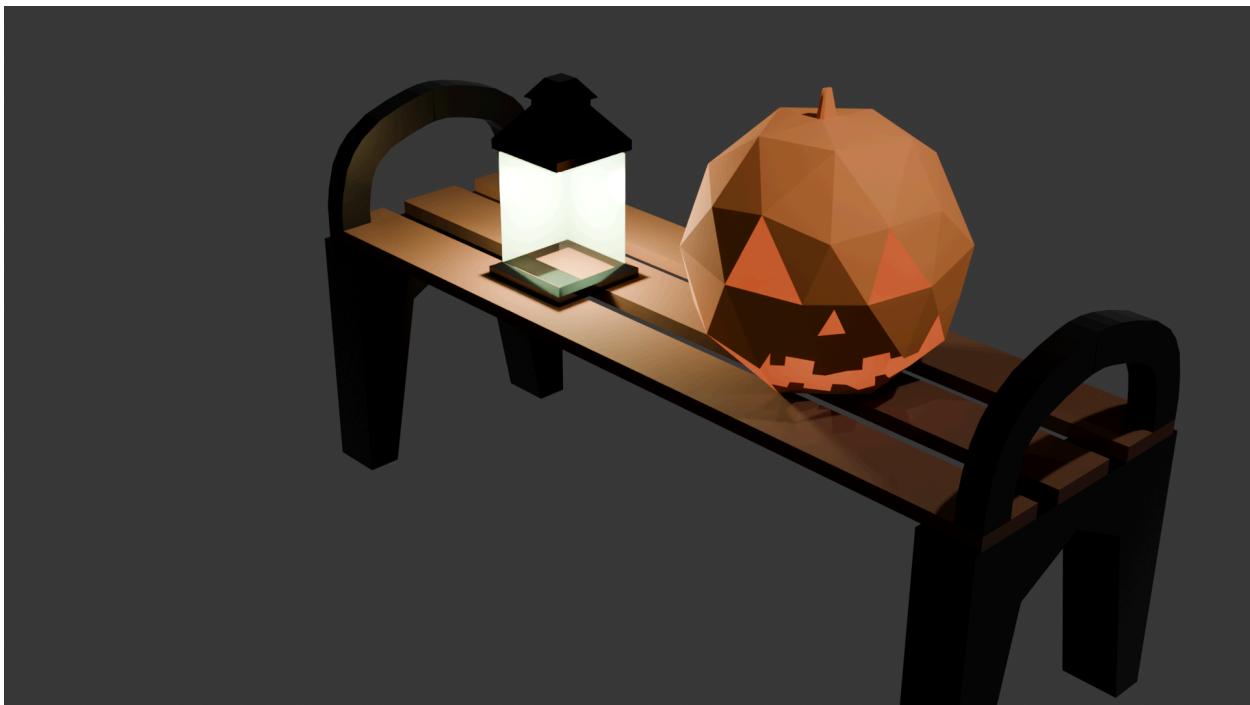
Lastly, I **adjusted the camera view** and **Rendered** the lamp.

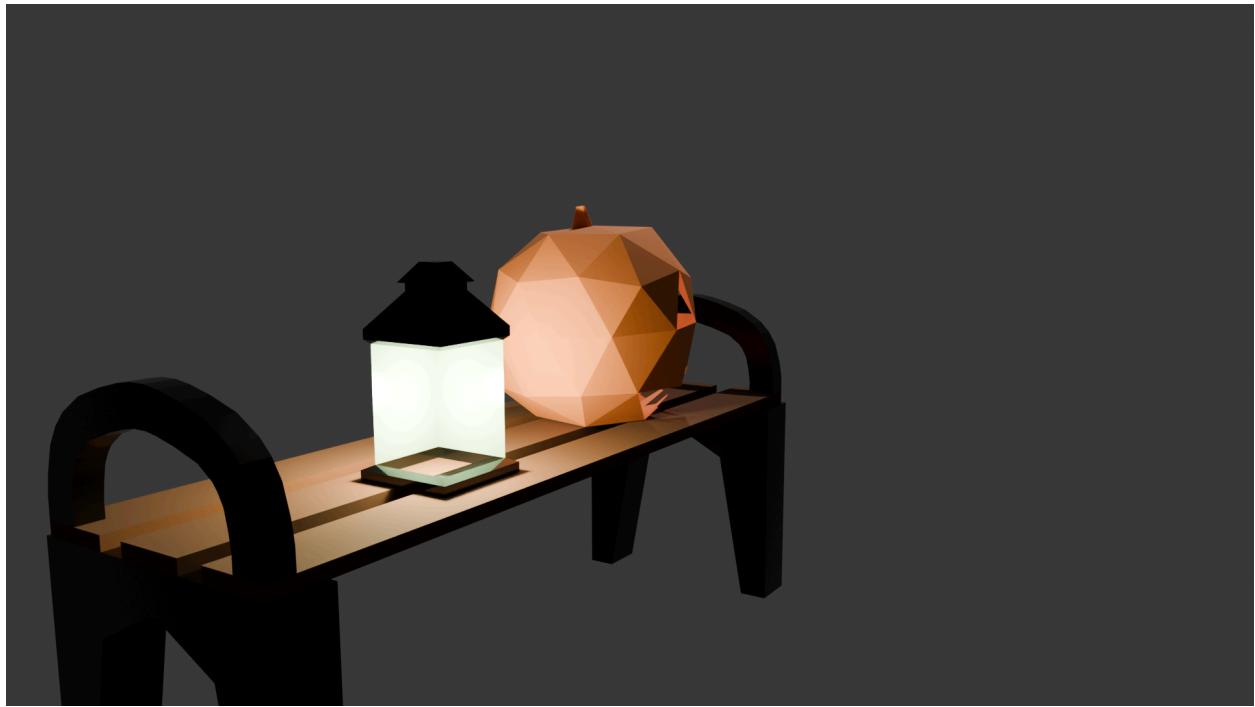


I then opened my bench file again and went to place the lantern and jack o' lantern on it. I looked up how to do this but was not able to get it appended properly. After asking in class, to add another thing I've made, I should do the following:

File > Append > (the correct path) > blend file > Mesh > meshes you want  
With this knowledge, I added both the jack o' lantern and lantern onto the bench and scaled them how I felt was reasonable.

Here are the final three views of the scene!





Overall this was SO fun. I did a tiny bit of Blender in undergrad but I did not do so well and thus did not like it then. (It was also more theoretical and math-y so that did not help.) I liked learning things as I wanted to know them, although it can take a long time.

So interesting to see the light against different materials. I am so excited to look at light and materials more!