

**Appendix B**  
**City X Activity**

Part 1 - Team Members:

Include a Screenshot of the City X Citizen(s) that you selected here.



Describe what you chose to design for your citizen(s) and why.

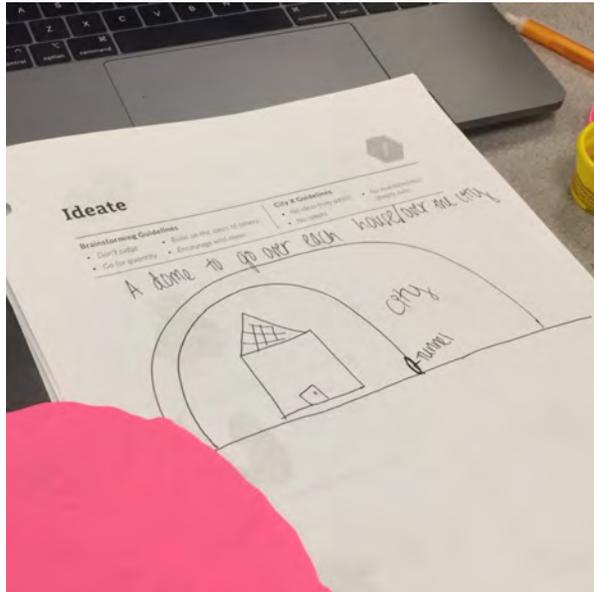
We chose to build a house for Suzana because she requested a real home in City X. We thought building a house would be a really fun project to build and create.

The dome was invented to cover the houses in order to protect them from the meteors. This was a hazard that the people of City X, including Miya, feared since the planet is in an asteroid belt. We also added on a tunnel to give them an easy way to escape the dome.

Include a picture of your sketch of your prototype(s). Include a description of the dimensions that you selected for the different parts of your prototype and why you selected these dimensions.

Include a picture of your prototype(s) made out of playdough (*if you have them*). Include image annotations for what each part is and what is unique about your design.

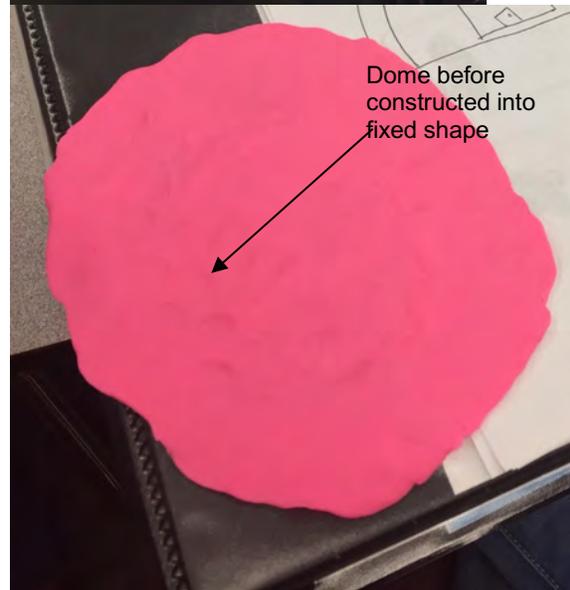
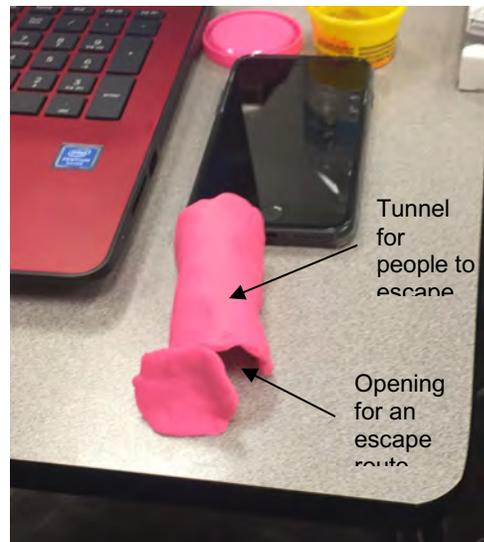
We selected the dimensions of 12cmx12cmx12cm for our dome. We made sure it was going to be large enough to cover the homes on Planet X. The tunnel's dimensions are 5.5cmx2.3cmx5.0cm. We made this tunnel small for the safety of the people on the planet.

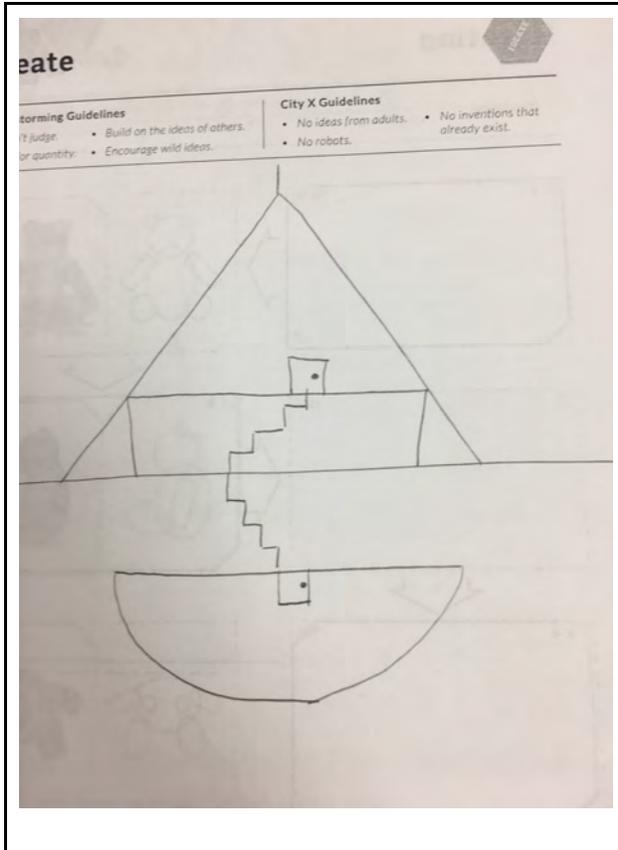


The dimensions of the basement of our house is 8cmx8cmx3cm. We thought this would be a nice size basement for storage, as well as safety precautions, like asteroids.

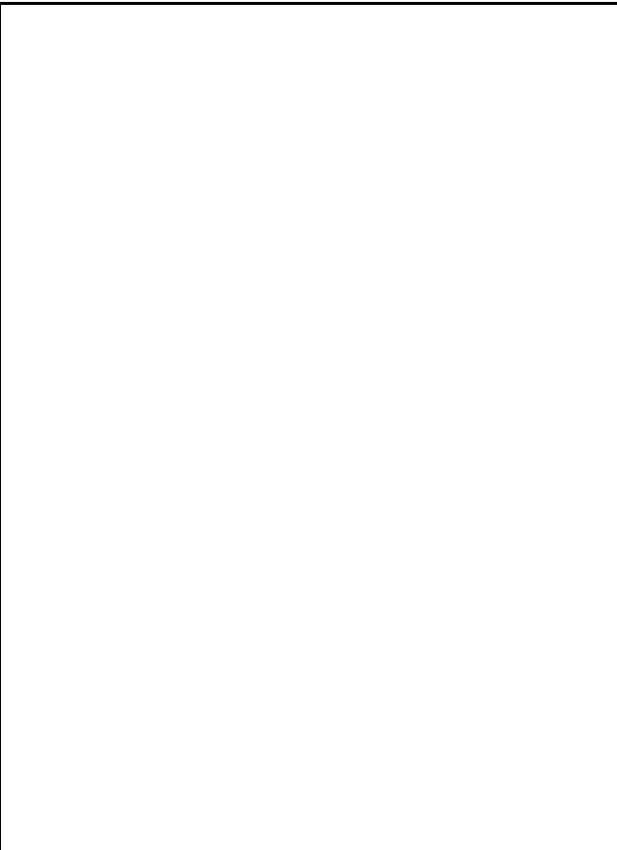
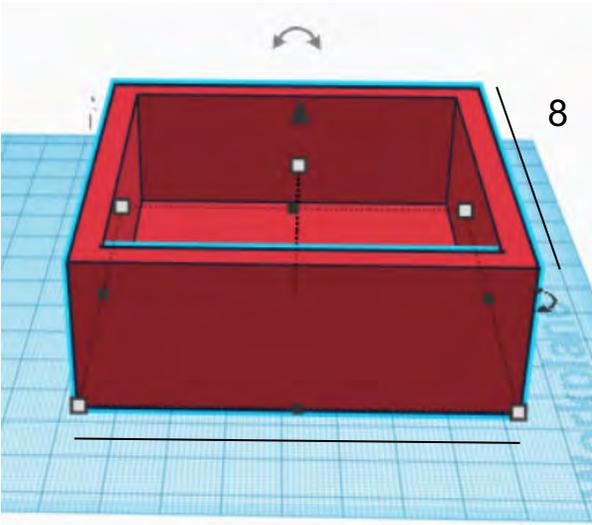
The dimensions of our supports, the chicken feet, are 2.9cmx2.9cmx2cm

The dimensions of the cone, the top of our house, is W 8.0 cm x L 8.0 cm x H 8.1 cm

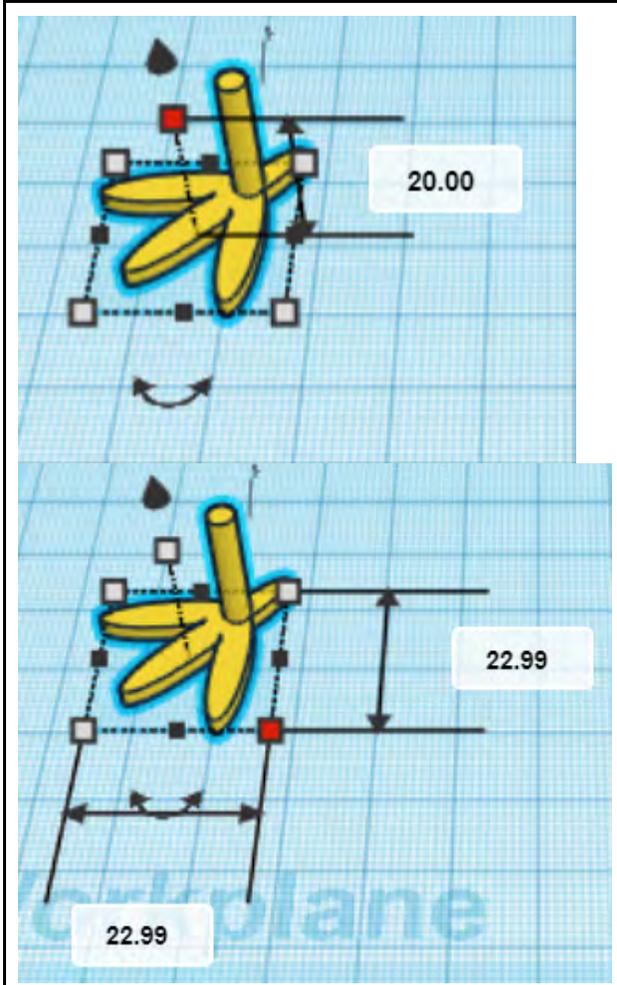




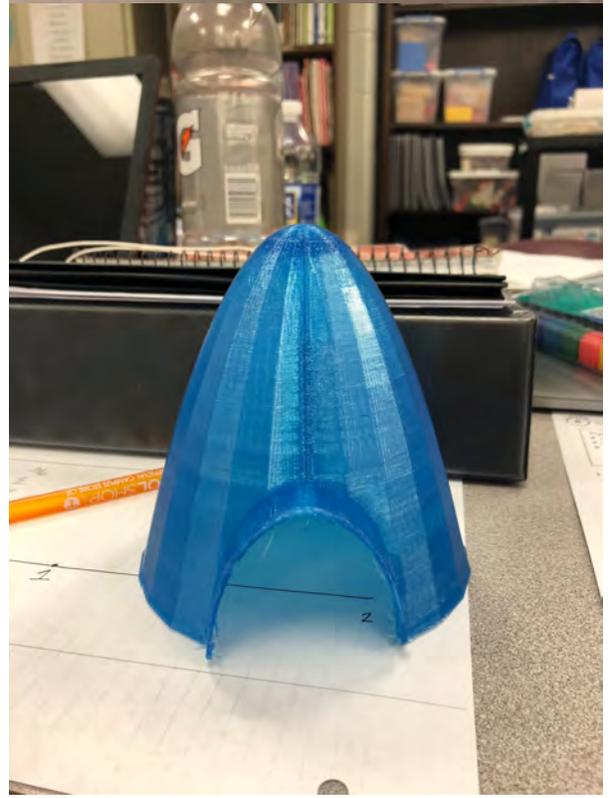
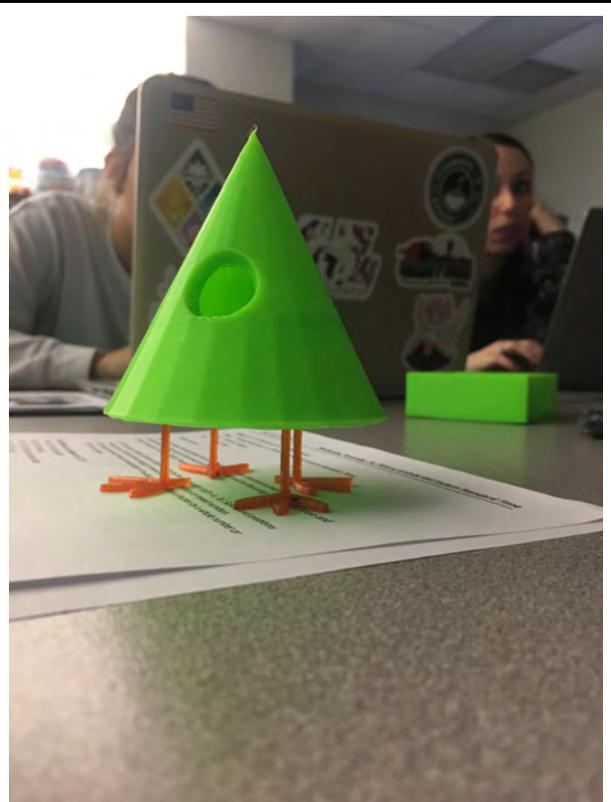
Include a screenshot of your designs made with Tinkercad as well as a link to your design for each member of the group. The link can be generated using this symbol. Include the dimensions that you used to create your prototype. Use image annotations as needed.

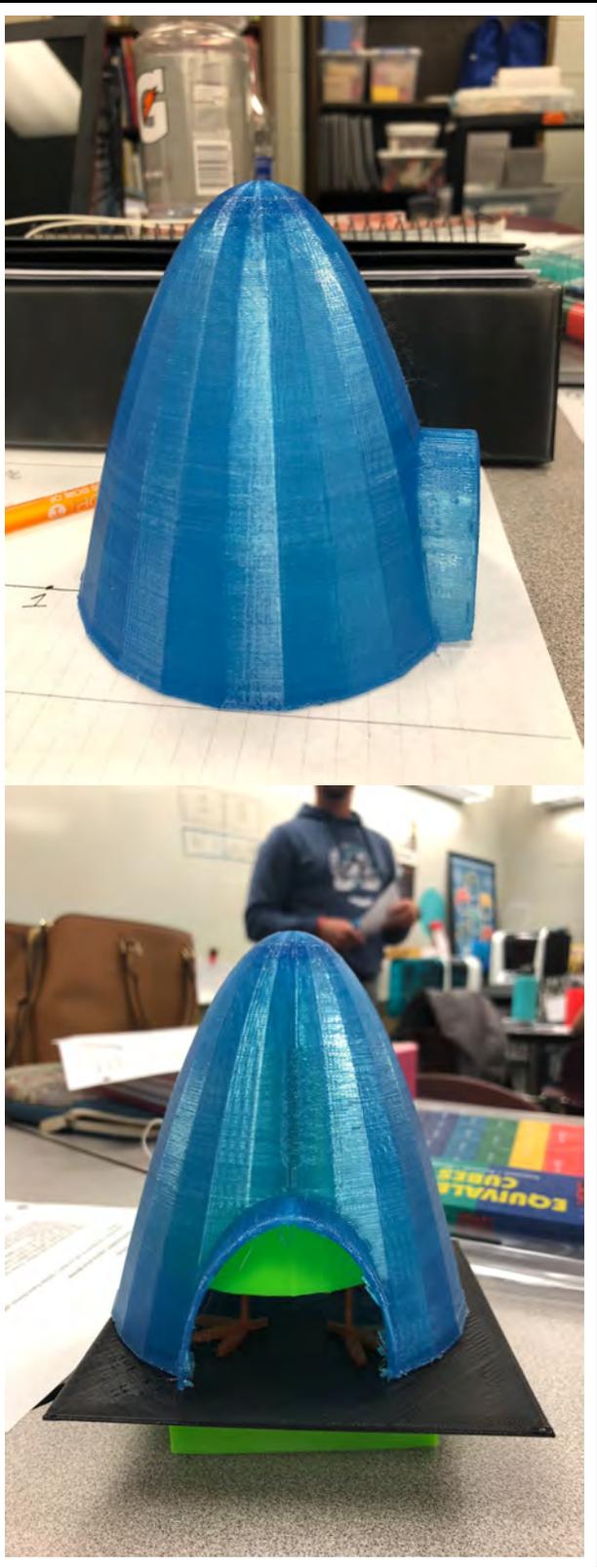
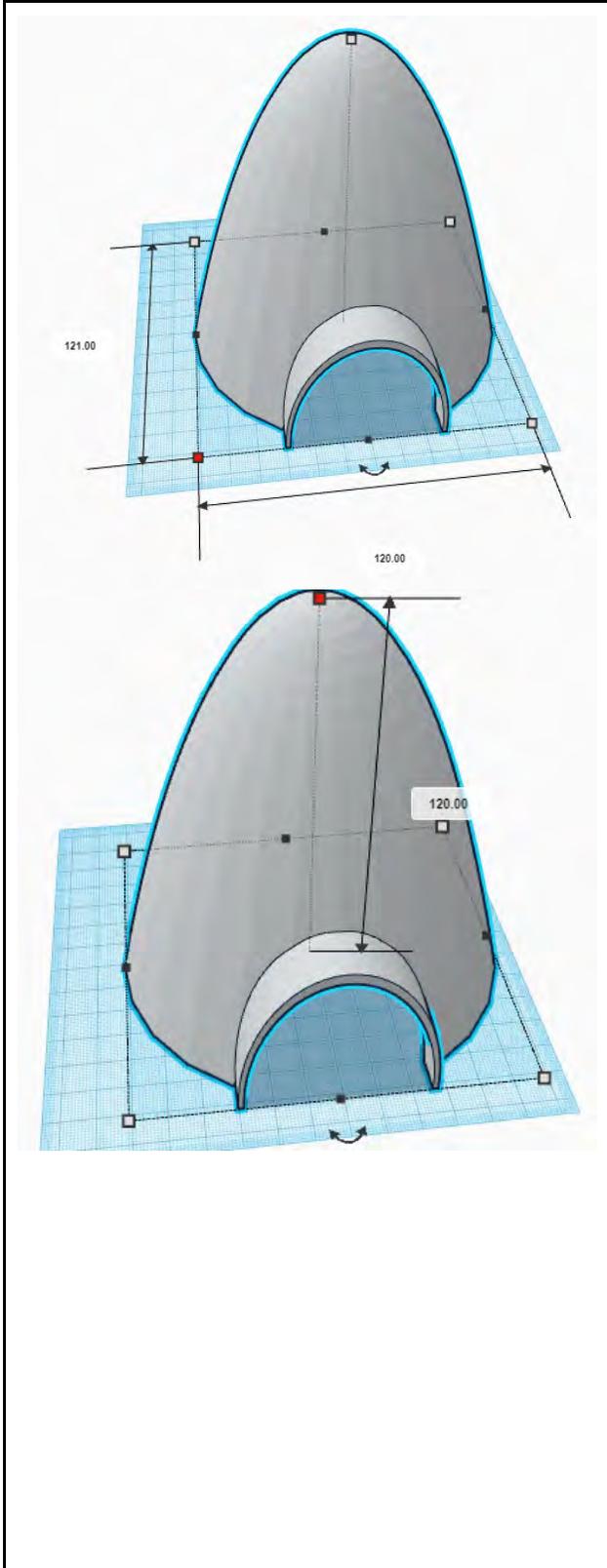


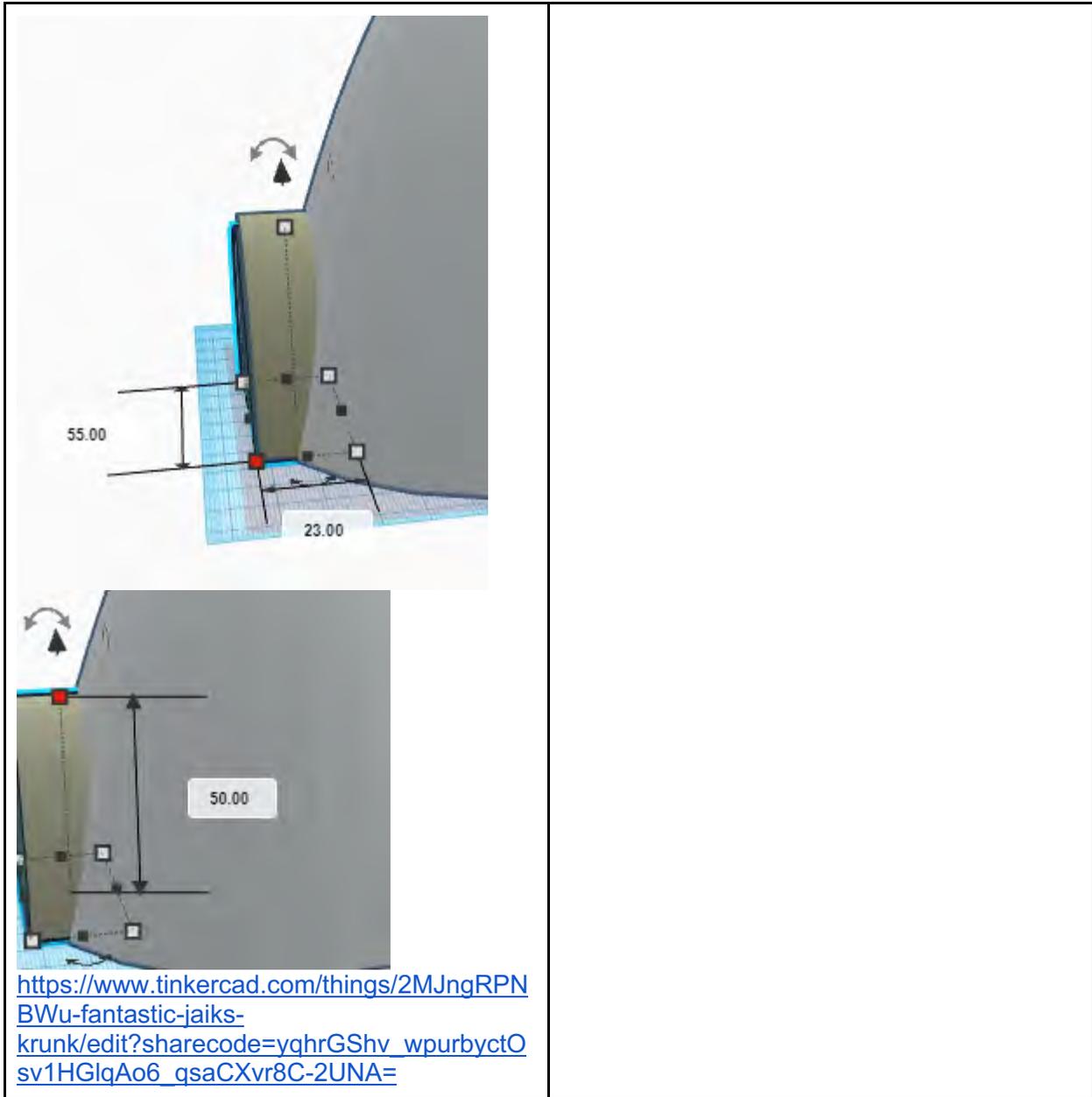
Include photos of your final 3-D printed product.



<https://www.tinkercad.com/things/fEau14yLxu>  
[J-chicken-feet-supports/edit](#)







### Reflection

As a team reflect on the process of designing a 3D product to meet the need of a customer. What constraints do you feel that you were working with? Describe your successes and challenges with the 3D design process.

We combined the demands of Suzana and Miya by creating a new home with protection. It was hard to make a house without knowing the size of Suzana's family as well as any other demands. With the dome, it was hard to figure out if the material it's made out of could withstand the damage by a meteor.

The major issue we ran into was hollowing out the house. Being precise enough to have a hollow house while still keeping a floor to the house was a complicated process. We also had challenges with making a window for our house for people to look through. We started by trying to make the window in a star shape. After many unsuccessful attempts, we gave up and made the window circular.

With the demands of Miya, we created a dome that can be used as a security unit to protect the citizens from possible meteors. The major issues when constructing this dome was making it hollow, forming the tunnel into the dome so the citizen could have an escape route, and our first 3D print messed up. However, we had a great success! We were able to overcome our complications and our second 3D print turned out great!

### **How to Annotate images in Google Docs**

- Insert "Drawing"
- Upload screenshot or photo to drawing tool and then add arrows and text boxes as desired.

### **Free Online image editor:**

<https://screenshot.net/online-image-editor.html>

**11 Best online Photo Editors:** <https://www.format.com/magazine/resources/photography/best-online-photo-editors-free>

Part 2 - Team Members:

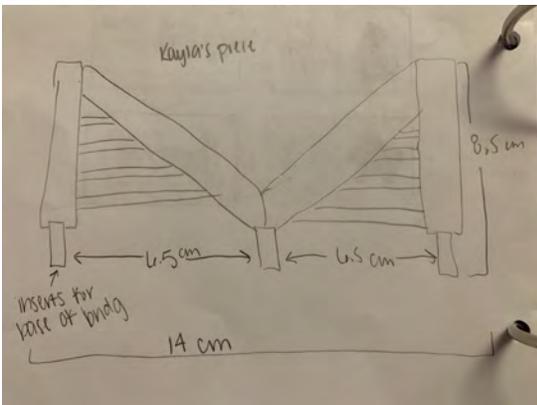
Include a Screenshot of the City X Citizen(s) that you selected here.



Describe what you chose to design for your citizen(s) and why.

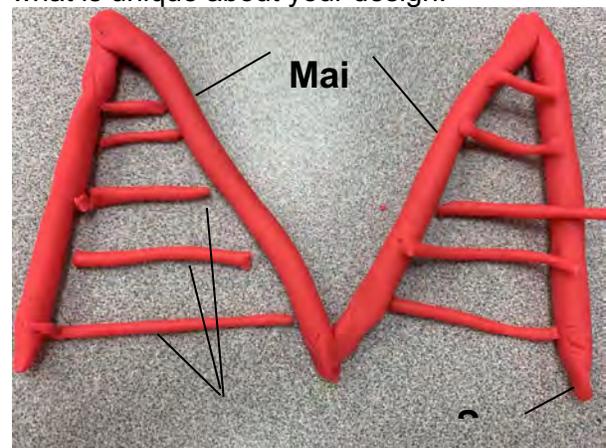
- We all chose to design a bridge for Alessia. She needs to cross the river, but isn't allowed to cross, so we immediately decided to keep her out of the water completely and design a bridge for her. This way she will be able to cross the river and see her family while still listening to her mom and not swimming across.

Include a picture of your sketch of your prototype(s). Include a description of the dimensions that you selected for the different parts of your prototype and why you selected these dimensions.



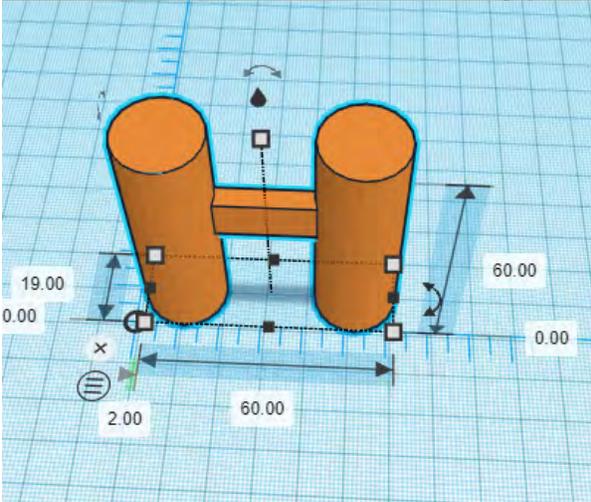
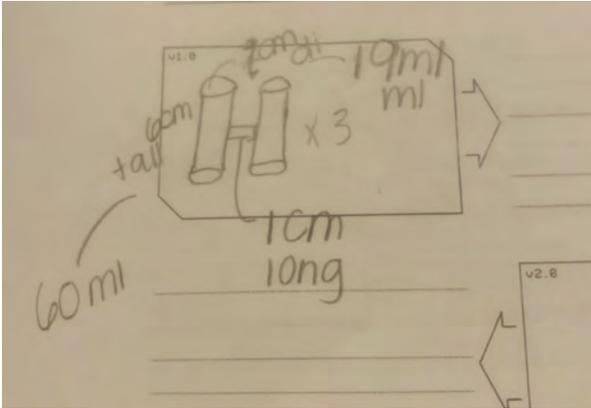
Kayla's Prototype: Bridge Archway

Include a picture of your prototype(s) made out of playdough (if you have them). Include image annotations for what each part is and what is unique about your design.



The bridge supports (horizontal slats across

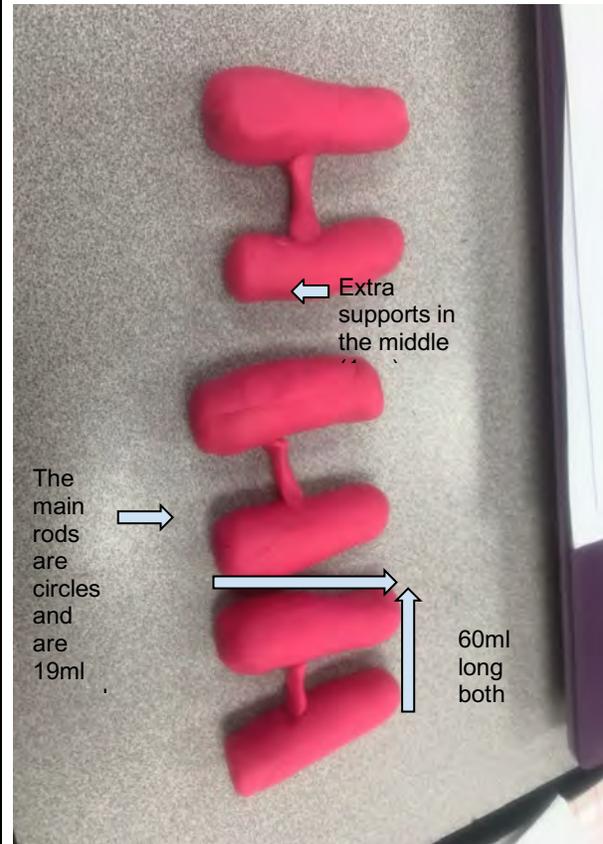
I chose these dimensions because it was proportional to the size we chose of the bridge as a whole. We took the total height and width of the bridge and basically split it for the top and bottom half (height). There will be two separate archways to go on each side of the bridge.



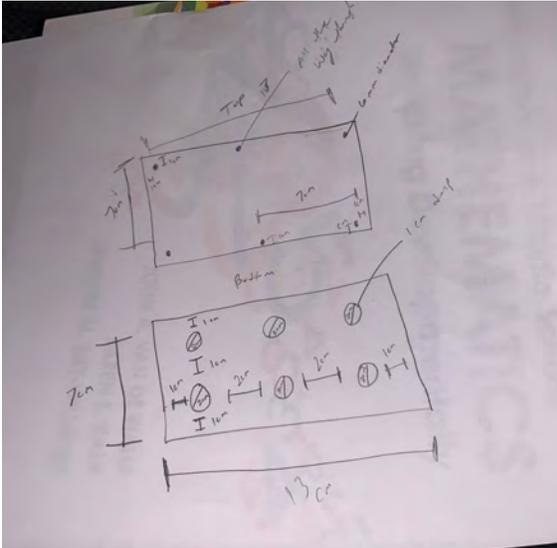
Molly's Prototype: Bottom of bridge supports I used my measurement based off of Brandon's bridge piece. The circles at the top of the bridge and the bottom had to be 19 mm. The support in the middle (shown in the picture above) had to be 1 cm long. The supports were 6cm tall. The most important measurement was that the total length of the bridge had to be 60 mm. This was so important because I wanted mine to snap into Brandon's just enough that it would stand up. I have four total support pieces for the bottom of the bridge.

the archway) for the archways are what is unique with my design. Traditionally, the additional supports run vertically, but we saw it best fit for the design to run horizontally.

**BE CAREFUL TO ANNOTATE IN MM INSTEAD OF ML.**



The bottom of the bridge supports were designed originally with just the two thick sections for each support. I then added a smaller support horizontally between the thick pieces.



Our middle level of the bridge consisted of a being a thick block which is 7cm by 13cm. On the bottom of the bridge it has 6 half cut holes that are made for the cylinder supports that were made by Molly. The half vertical cut holes have a 2cm diameter. On the top of the bridge there are 6 holes that are cut all the way through, these holes allow Kayla's arches to snap in place and stay. These holes are .6 mm in diameter to be a little bigger than kayla's diameter of her arches.



The middle part of the bridge is made to be thick so that it can support the weight of whatever travels over it and also the arches. It has 6 holes on the bottom for the cylinder shaped supports to go into and 6 holes on top for the bottom of the arches to snap into to hold the arches secure.

Include a screenshot of your designs made with Tinkercad as well as a link to your design for each member of the group. The link can be generated using this symbol. Include the dimensions that you used to create your prototype. Use image annotations as needed.



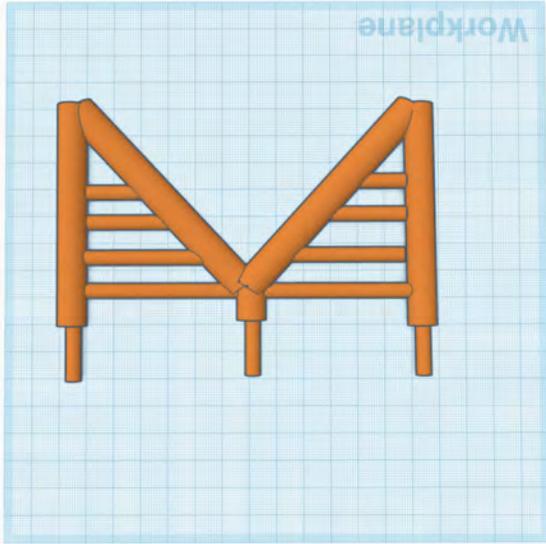
Kayla:

[https://www.tinkercad.com/things/cDzBX3sym-sy-bridge-arch/edit?sharecode=QTyjTwfDla-ldU6ObXYahNjulct2Z-fCiK7v\\_yQ3MDc=](https://www.tinkercad.com/things/cDzBX3sym-sy-bridge-arch/edit?sharecode=QTyjTwfDla-ldU6ObXYahNjulct2Z-fCiK7v_yQ3MDc=)

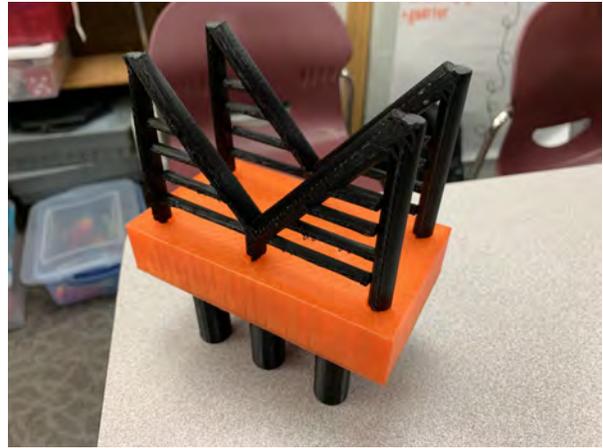
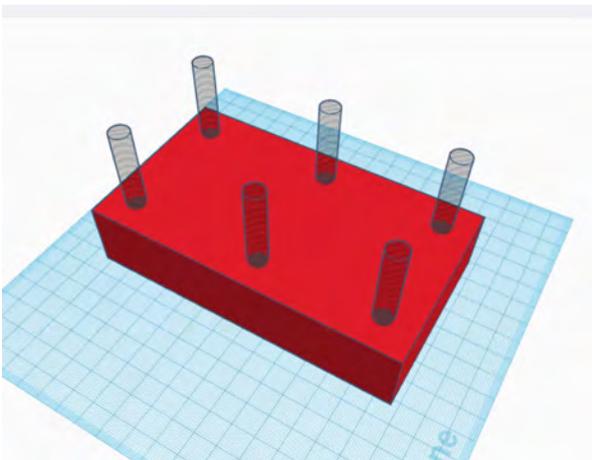
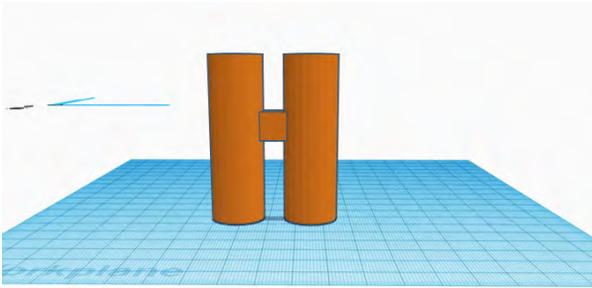
Include photos of your final 3-D printed product.

First print (Kayla): 5 inches wide by 4 inches tall (127 mm x 101.6)





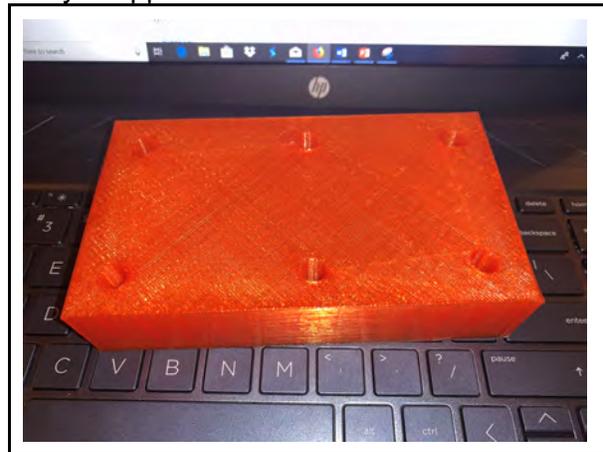
Molly:  
<https://www.tinkercad.com/things/dh7tupuFol1-bridge/edit>



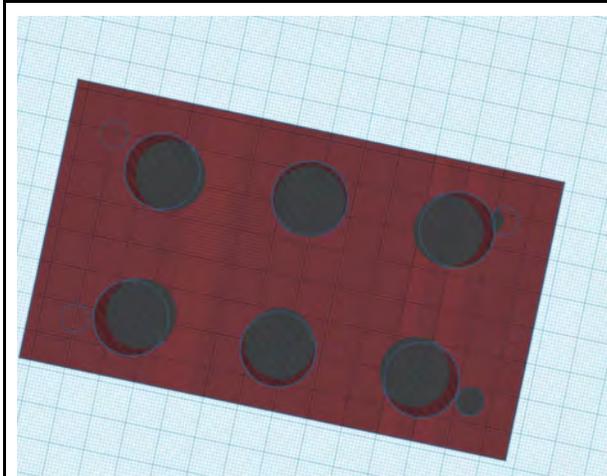
Brandon (I struggled to get the tape off)



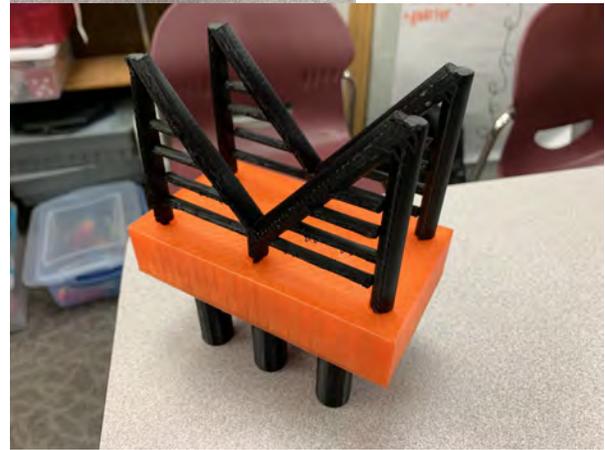
Molly- Supports



Final



<https://www.tinkercad.com/things/3usvC9aA6Eh-city-x-project/edit>



### Reflection

As a team reflect on the process of designing a 3D product to meet the need of a customer. What constraints do you feel that you were working with? Describe your successes and challenges with the 3D design process.

As a team, we successfully met the Alessia's need. She has a bridge that will allow her to cross over the river and stay out of the water. We all had to work very closely together in order to correctly scale our designs to fit each other's (they all required some way of being linked together). There were definitely some time constraints as we could only work together and collaborate during class for the most part. We were successful as we met the need. There were challenges getting all of our designs to properly line up with identical measurements since they were 3 separate pieces. I, Molly, struggled with the supports at first because the first support I printed did not match up with Brandon's. I fixed this by talking his finished piece and measuring how far away the holes were for my piece to fit into. This was a huge help because i could see

exactly where they went. I did have to end up using sandpaper to get some of the edges off of the bottoms of the support, but once I did that the supports fit perfectly into Brandon's piece.

Originally, the holes from my bridge arch didn't line up with the holes in Brandon's bridge base. To correct, I remeasured and had to shrink it by a cm.

### **How to Annotate images in Google Docs**

- Insert "Drawing"
- Upload screenshot or photo to drawing tool and then add arrows and text boxes as desired.

### **Free Online image editor:**

<https://screenshot.net/online-image-editor.html>

**11 Best online Photo Editors:** <https://www.format.com/magazine/resources/photography/best-online-photo-editors-free>