

What problems would we face if we wanted to inhabit Mars?

There's limited resources and it would be hard to have constant air and enough water/food. -Benjamin B.

The only water they have is in polar ice caps.

**The temperatures can drop below negative 200 degrees. The atmosphere is not good enough to have humans inhabit it without space suits.
-Ashton B.**

We could freeze to death. -Gannon H.

It's freezing, there is no oxygen, no air pressure and the soil is toxic. -Molly H.

We would have little water for a whole colony. -Tyler H.

Mars is dry and can reach as low as -225 degrees Fahrenheit. Also, all the water on Mars has seemingly dried out and the only water there is in the form of icecaps. -Desir J.

Well one problem would be that we couldn't get back to Earth once we get there. But also we would not have the right atmosphere there and not the right amount of food and water we would need.- Kensly J.

**Having enough food, water, shelter. And what if some structure/ Shelter were to collapse then people would die.
Enough natural resources.-Imani L.**

What problems would we face if we wanted to inhabit Mars?

The low temperature, Small amounts of water, Weird living things, Will be too small to hold all of humans -Meredeth M.

Not enough available oxygen, Lack of water, lack of farmland (for agriculture/food), and lack of resources to survive in general. -Lexi P.

Oxygen, Necessary human resources, Water -Kyla R.

In order to inhabit any area of land, you would have to make sure that it is able to sustain life. FOr example, the reason we are able to sustain life on Earth is because we have water, an ozone layer to protect us from the sun's rays, and moderate temperatures that are not too harsh for us to be able to live. Whereas, on Mars, there is hardly any heat hat can melt the ice caps and give us water, let alone keep us warm. -Maya T.

We would face the cold atmosphere, how to live there since it's not habitable, and how to create food. -Emily W.

First of all, it would be hard to even get there. Then it will be a difficulty to access water to provide for the people are who were going to live there. Living conditions on Mars aren't the most amazing as well. -Justin A.

Lack of oxygen, Lack of shelter and other valuable necessities, Unexplored territory = unsafe environment, Transporting of resources from Earth to Mars. -Sophia B.

Mars' temperatures fluctuate at temperatures we cannot handle. We wouldn't have enough water to sustain people. There would also be difficulty growing crops. -Frances B.

What constraints do you need to consider when designing your habitat?

Okay so a kilogram is equal to about 2.2 pounds. So it has to be very unheavy and helps others.
There is no air in mars, so there needs to be something that CREATES air. Like plants do on Earth.
The same thing with water and food.
It is very cold there as well so it needs something to warm them up. -Benjamin B.

You are going to need to try to keep a restraint on the amount of money you use. You also have to have a habitat that could last you 25-50 years. -Ashton B.

Temperature, water, wildlife, if the normal human can live on it. -Gannon H.

I need to consider what essential resources humans need to survive, like water, food, oxygen, shelter ect. -Molly H.

A freshwater source. -Tyler H.

We need to think of the area we would live and if there's enough water there. Also you have a budget. Kensley J.

You need to consider that you have the knowledge in your head about life in a sealed habitat. You will also have to think about money and how much it would cost for one of these sealed habitats. -Imani L.

Pricing, Make sure everyone is warm, Food -Meredeth M.

What constraints do you need to consider when designing your habitat?

Cost of materials and such. Living in a sealed habitat within 20-50 years seems like a long time to be living in a contained space so you would have to research what you can to make the space livable. -Lexi P.

I need to make sure we don't run out of oxygen, so we could get dirt and special light that makes plants grow and try to grow them. -Abi R.

We don't have unlimited resources. -Kyla R.

Considering the "budget" put in place, (I know there is none, but we'd have to pay close attention to costs) we would have to pay very close attention to costs and not going over our "budget." -Maya T.

You have to consider the access to water, the access to technology, the way the habitat is being constructively built, the environment/climate, and factors that are similar to those. -Justin A.

The temperature on Mars, The necessities needed, The human body anatomy and what it needs to survive, The environment on Mars and what needs to be changed to establish human society. -Sophia B.

GREENHOUSE

The plan is to trap air in the container/orb and use artificial sunlight as well as the little sunlight that reaches Mars and use water (sent from the water supply room) to water the plants



COMMAND/POWER CENTER

Three floors of technology and power control. This is also how we communicate to earth :) and as for power I'm thinking solar panels... Maybe we put them on top of the power center?



WATER SUPPLY ROOM

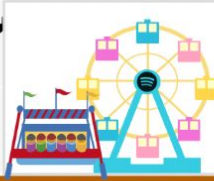


So most of Mars' water is frozen so I'm thinking to "unfreeze" the water and send it to different areas/rooms through the pipes.



DANCE/ENTERTAINMENT AREA

(cuz why not? I mean we can't be bored right?)



LIVING AREA(S) & FOOD COURT/KITCHENS



AIR CONTROL ROOM

well, if we're planting trees for oxygen, we need a place to manage that everything is going right, right?



EMERGENCY SUPPLY ROOM!

Emergency! Emergency!
we got it handled...



WASTE MANAGEMENT

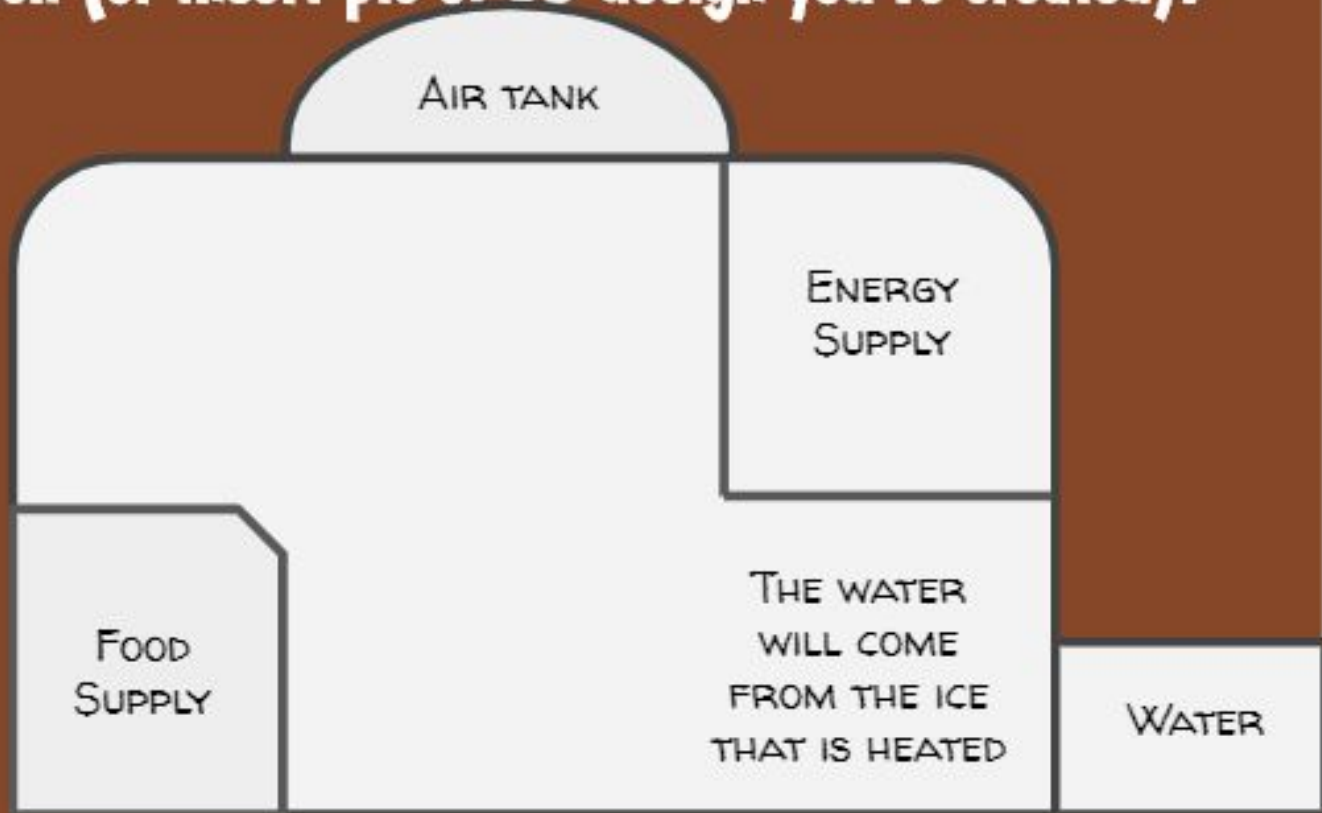


I'm thinking we use a heat melt compactor and compact the trash and send back to earth short term. If we are talking long term then maybe we make a sort of liquid of some sort to disintegrate the trash?



Lexi P., 7th Grade

Sketch (or insert pic of 3D design you've created):

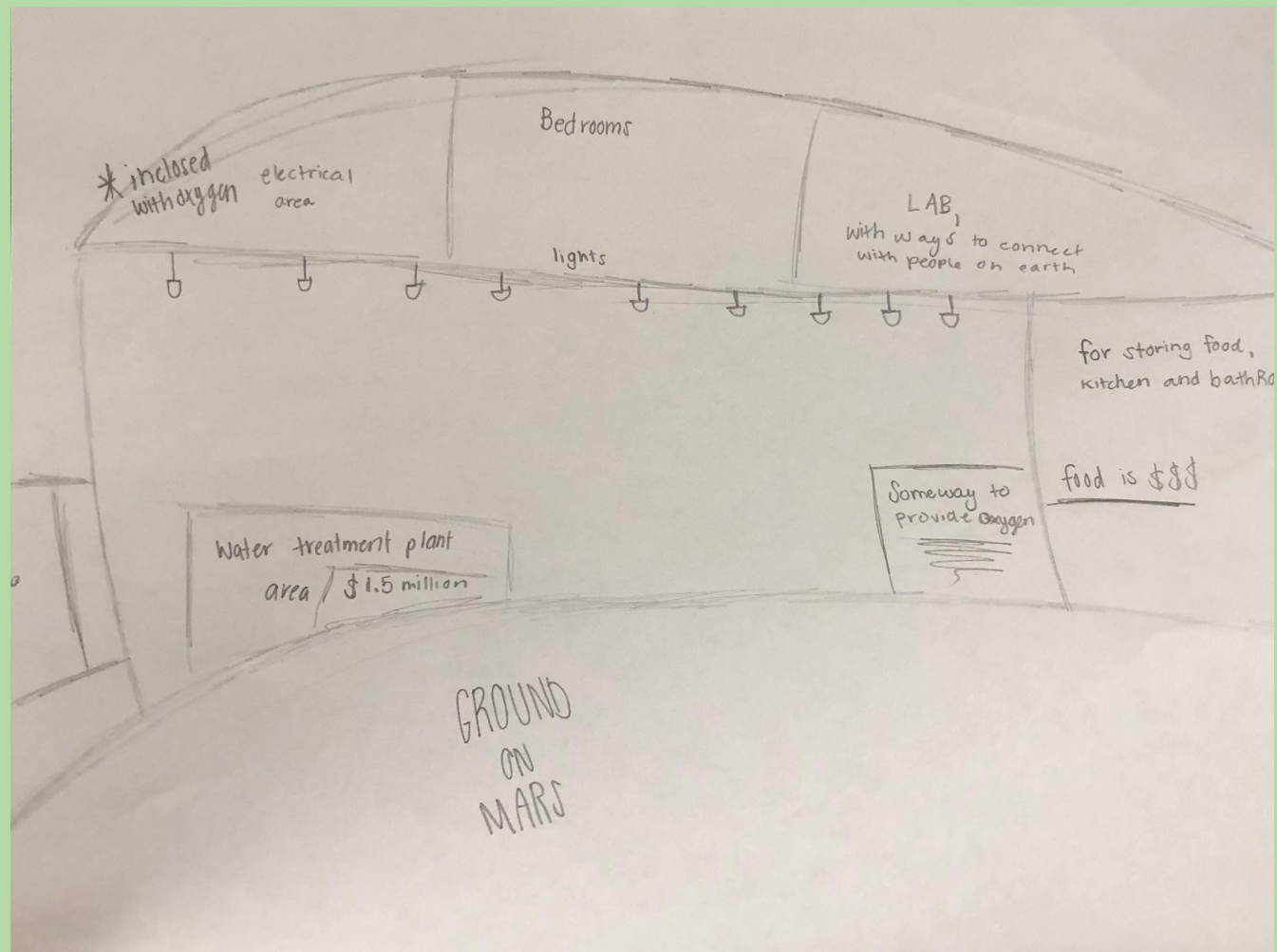


Josephine L., 6th Grade

Sketch (or insert pic of 3D design you've created):



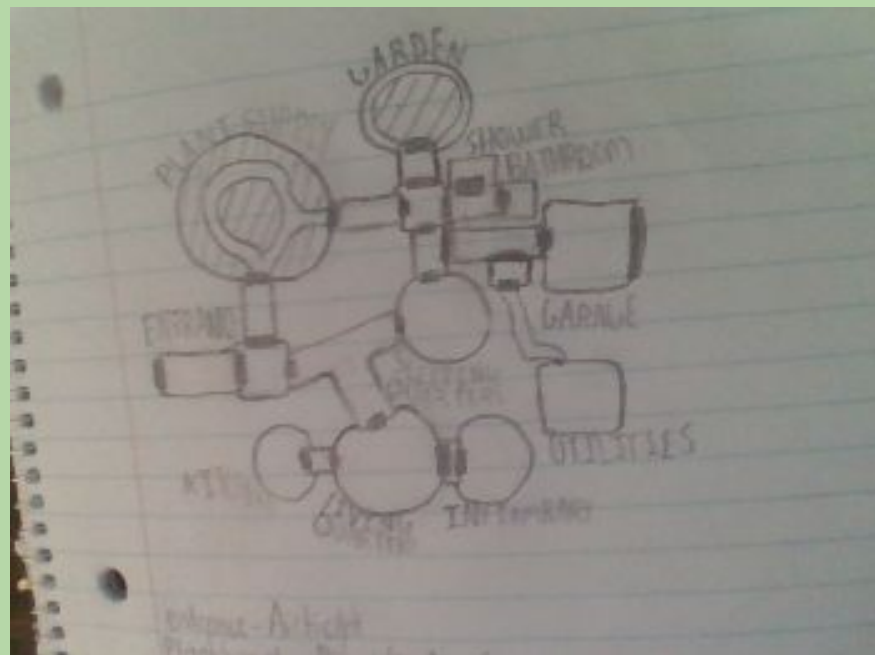
Alexis E., 7th Grade



Jackson C., 7th Grade



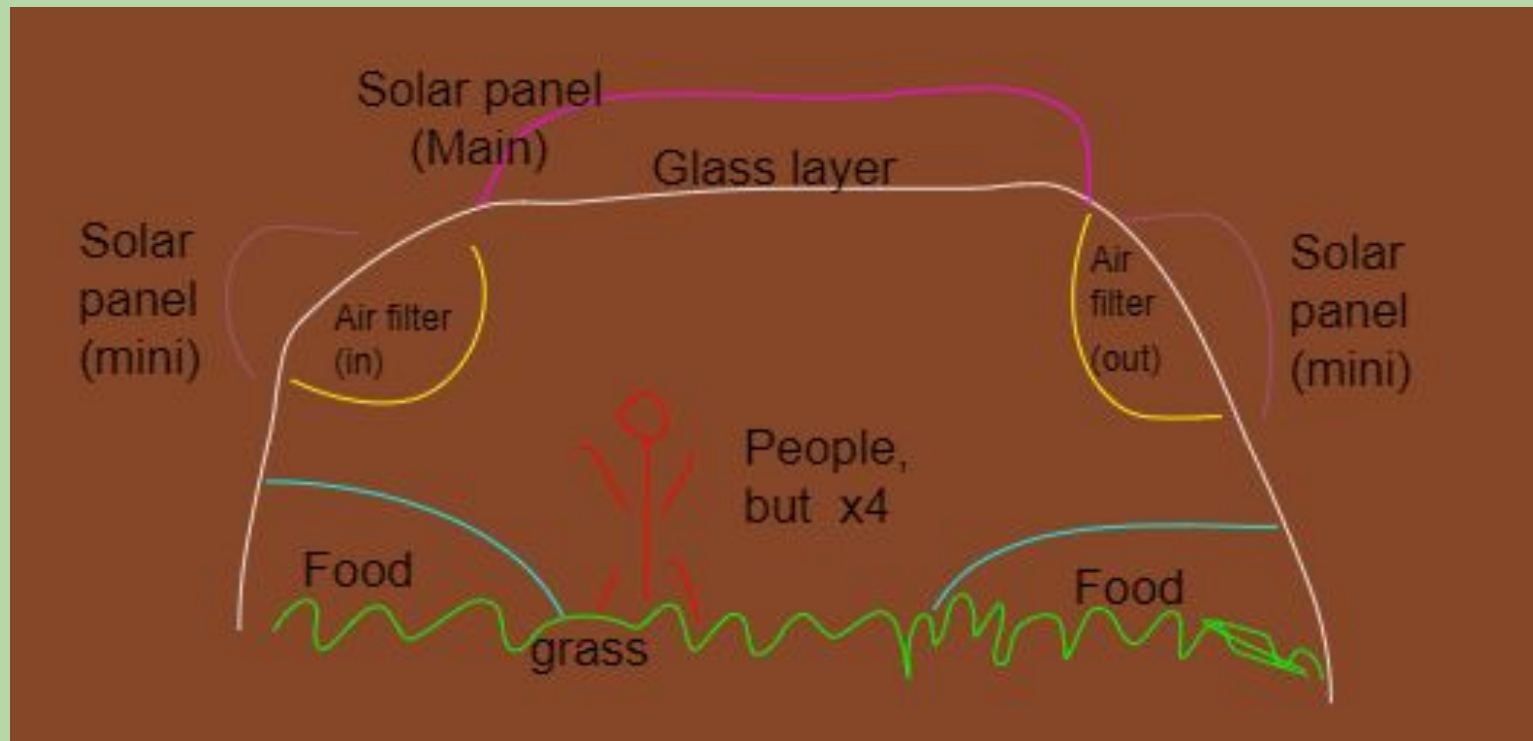
Jackson D., 7th Grade



entrance - A light
 Plant Supply - Provides Air for us
 Garden - Provides Food
 Shower - Cleans and washes is bathed and more
 Bathroom - Urine is bathed and recycles, waste is used in soil
 Kitchen - Carries Vehicle
 Living Room - Provides Power Generator
 Sleeping Quarters - Sleeping Area
 Living Quarters - Entertainment
 Interiors - Medical Needs
 Kitchen - Means Food

Colton R., 7th Grade



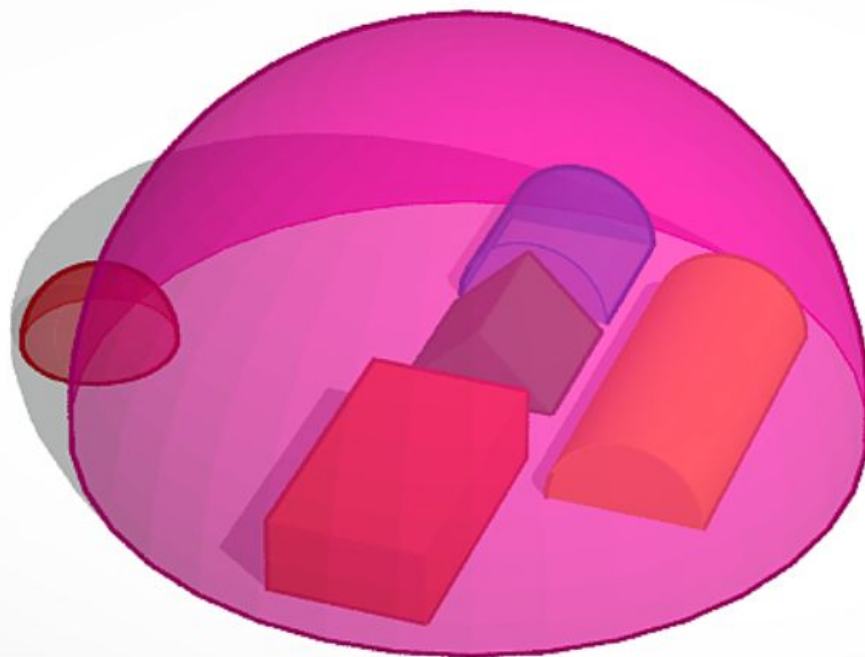




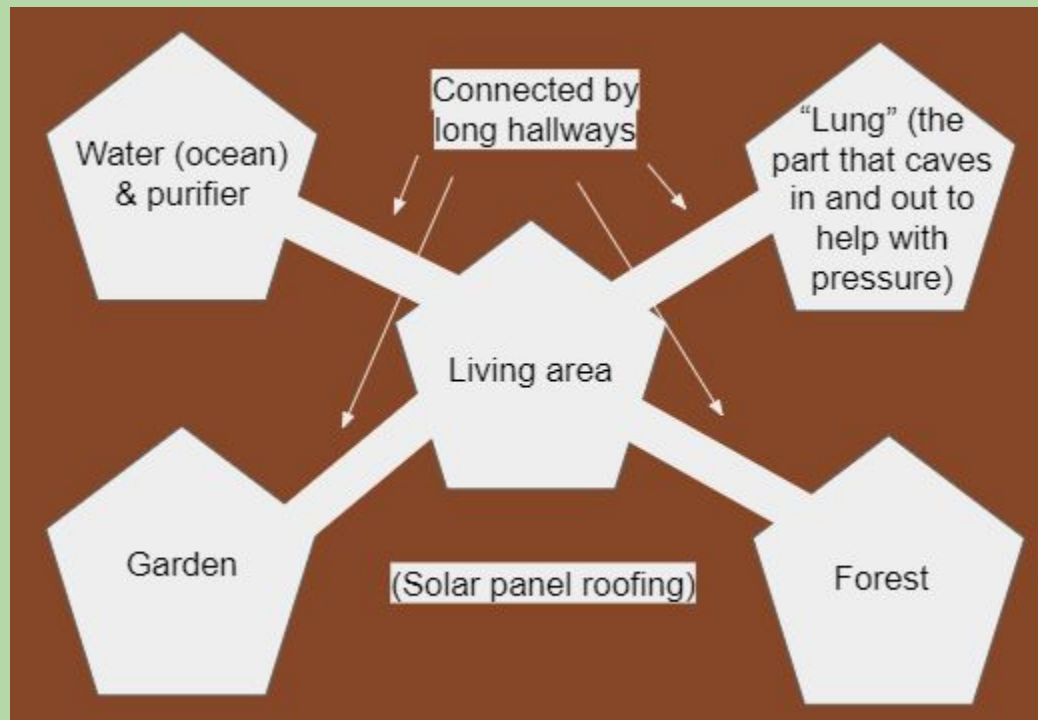
Enough food will be kept in storage until they can grow something in the lab to eat. There will be cables running with power connected to solar panels outside. They will occasionally clean them. They will recycle the water they drink with a machine in the lab. Everything will be insulated.

Ryan Y., 6th Grade

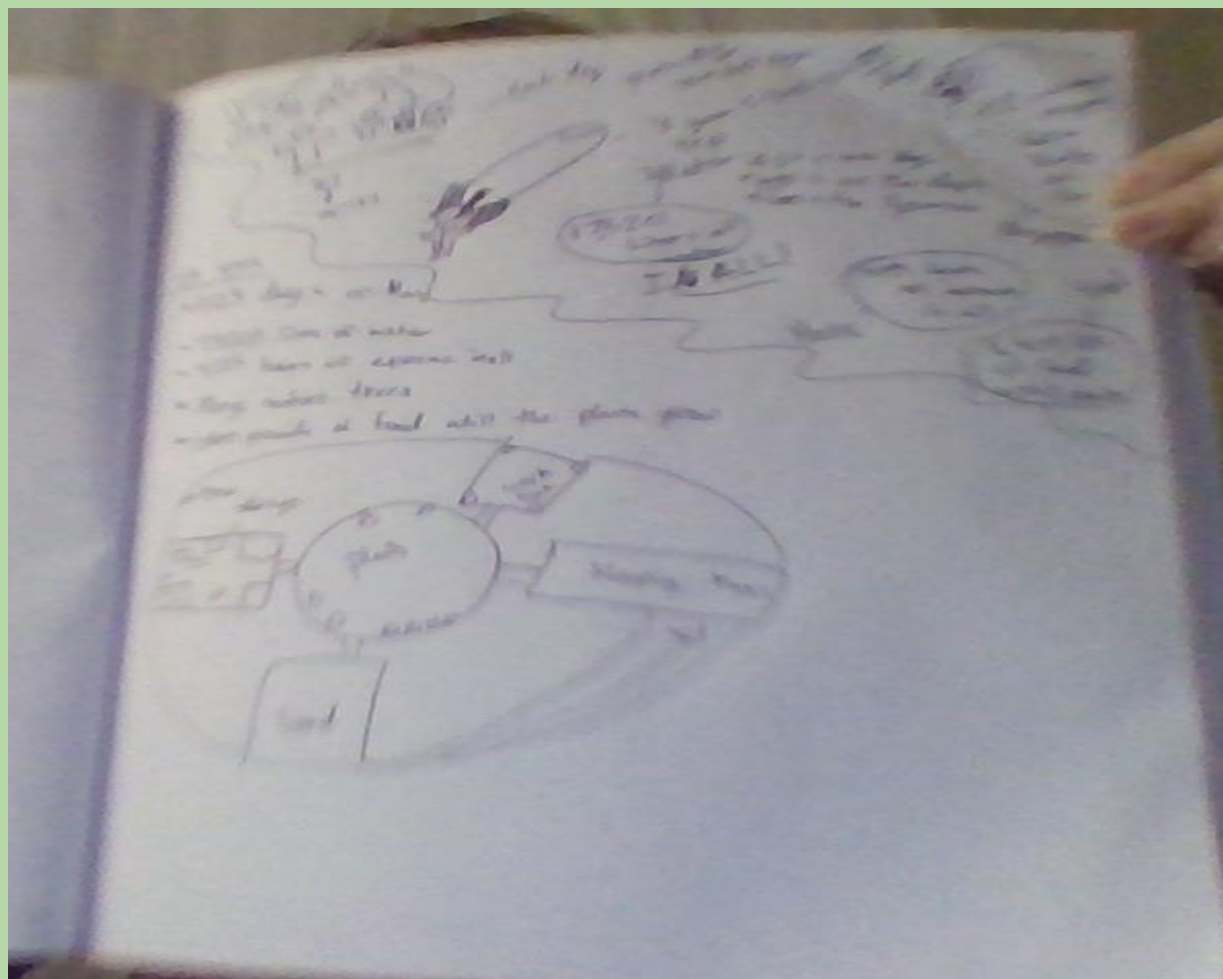
Powerful Bigery-Hango



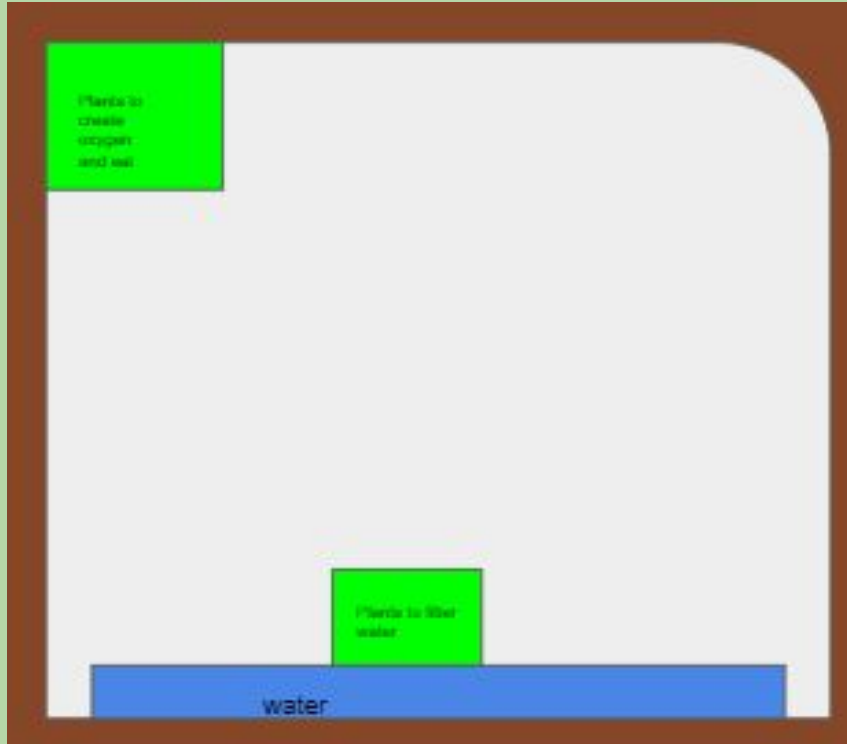
Shelley K., 6th Grade



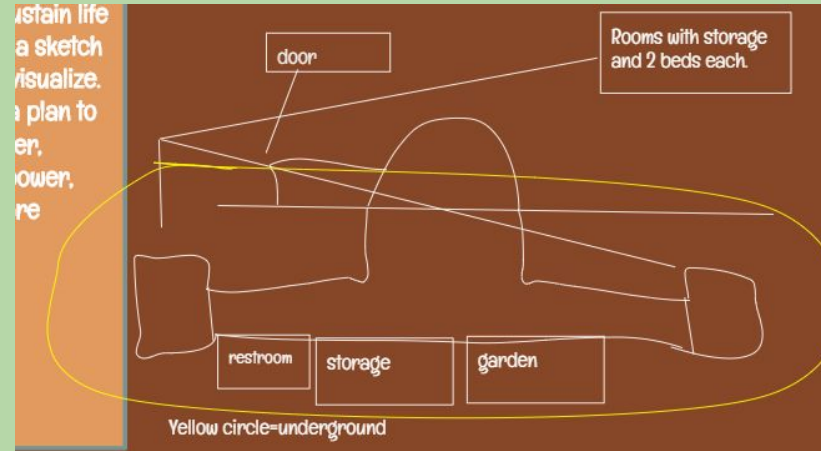
Xaris C., 6th Grade



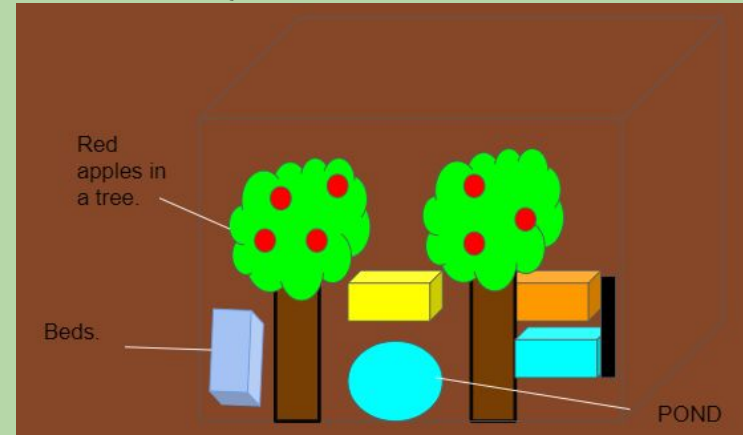
Jessi H., 6th Grade



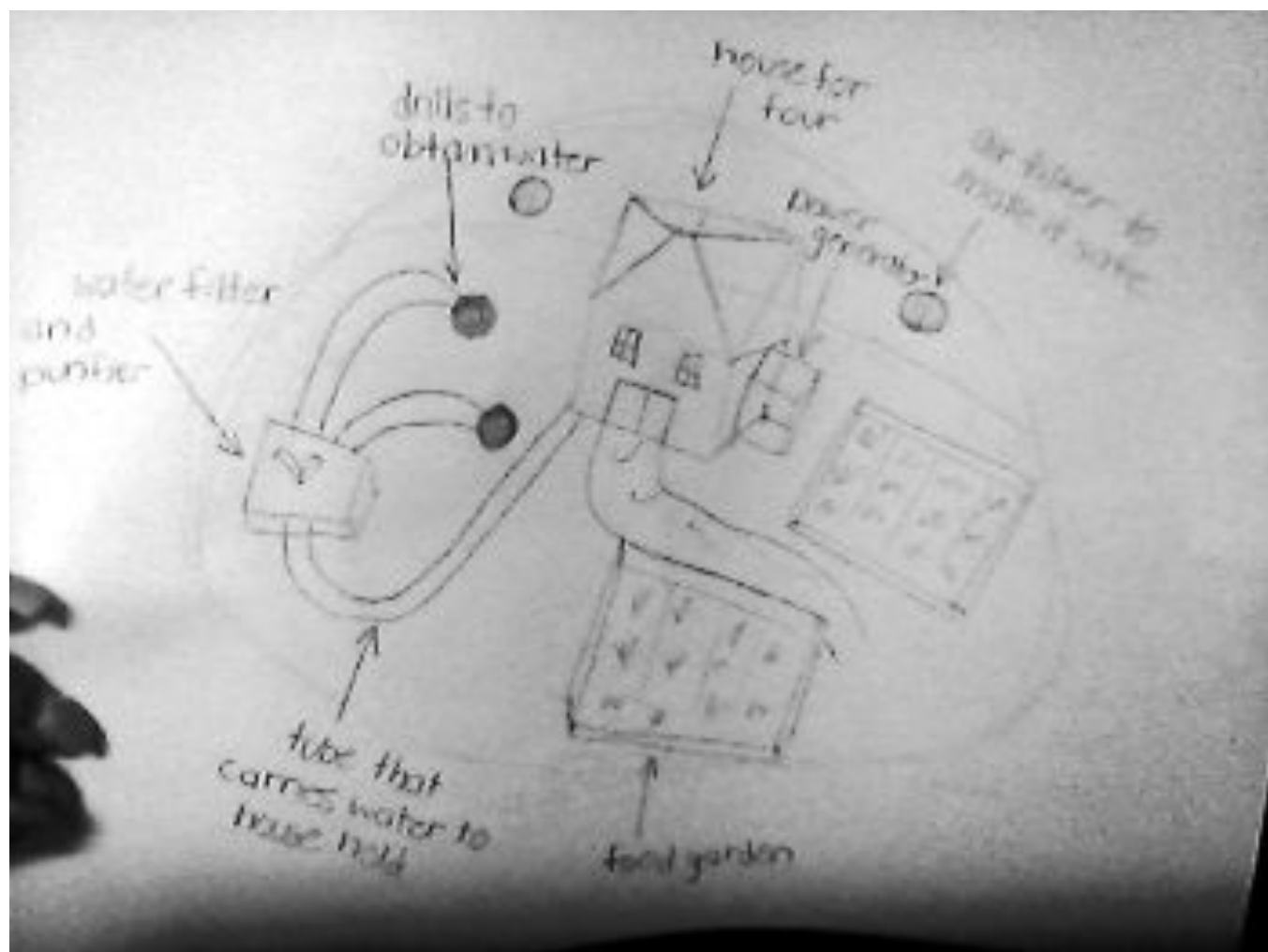
Leila E., 6th Grade

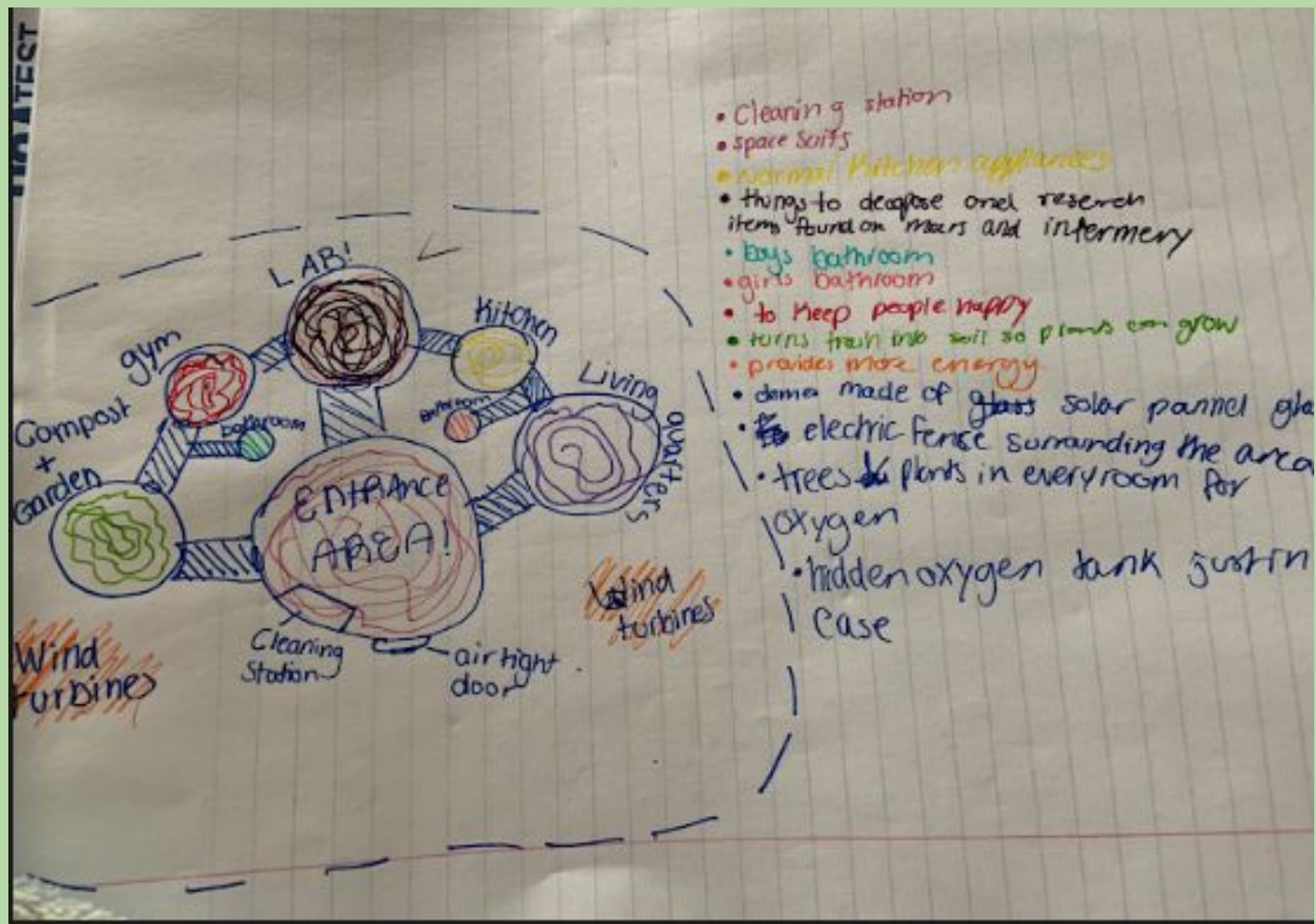


Jason A., 6th Grade

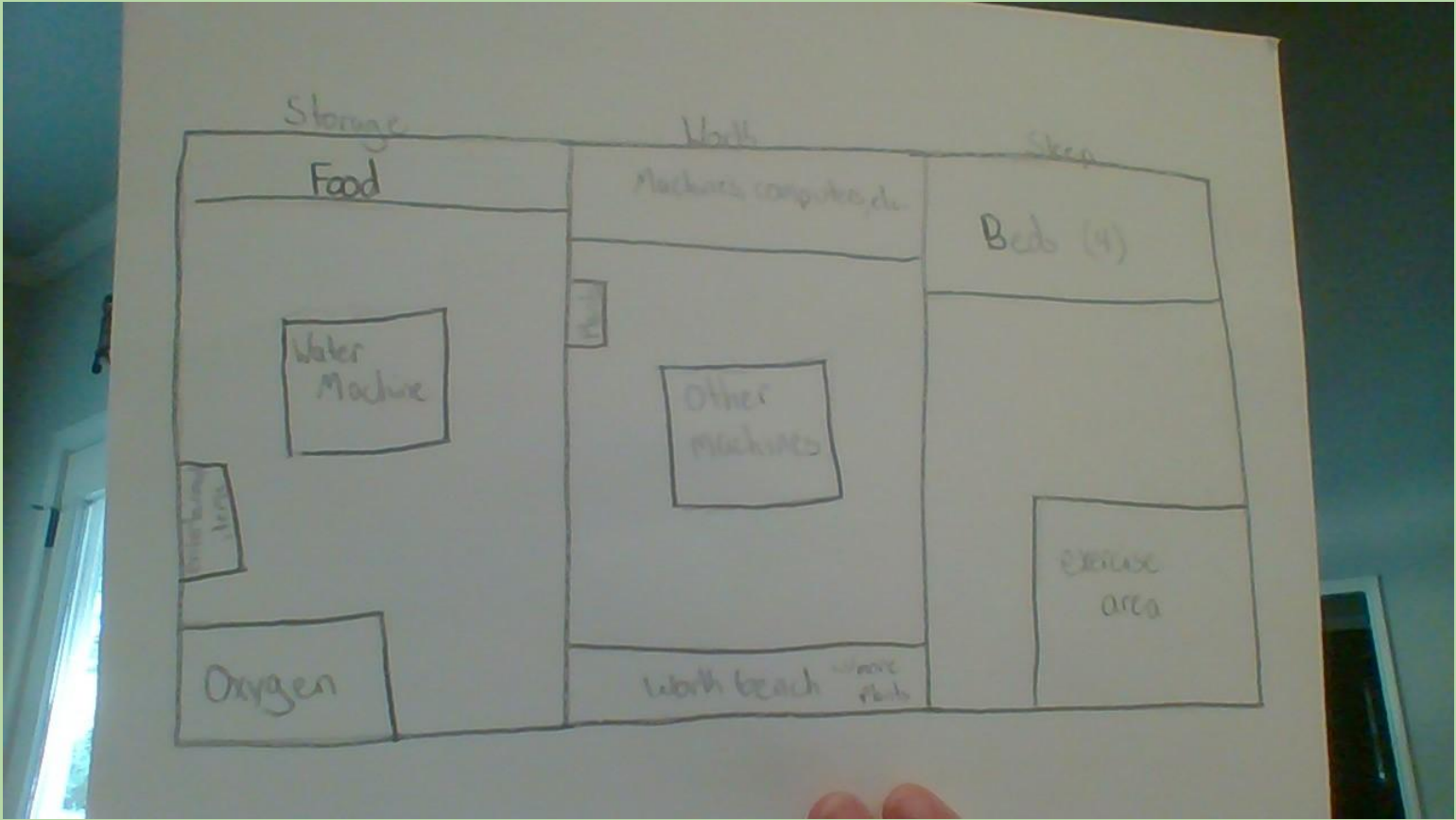


Sophia B., 7th Grade

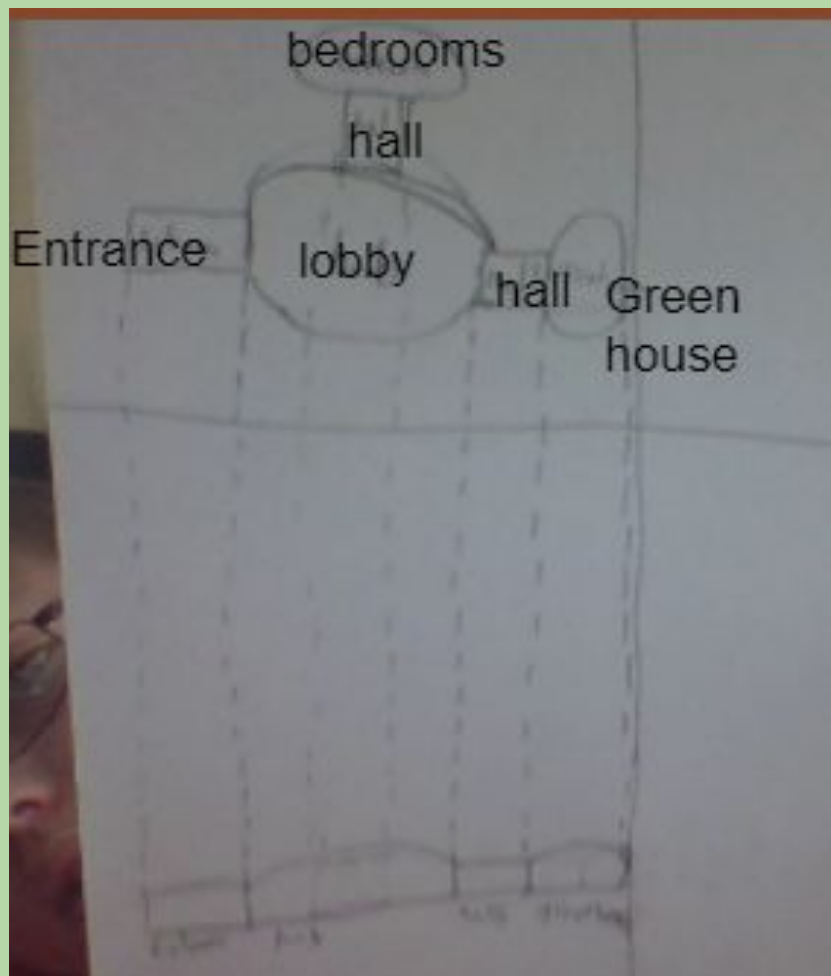




Lacey E., 7th Grade



Corey P., 7th Grade

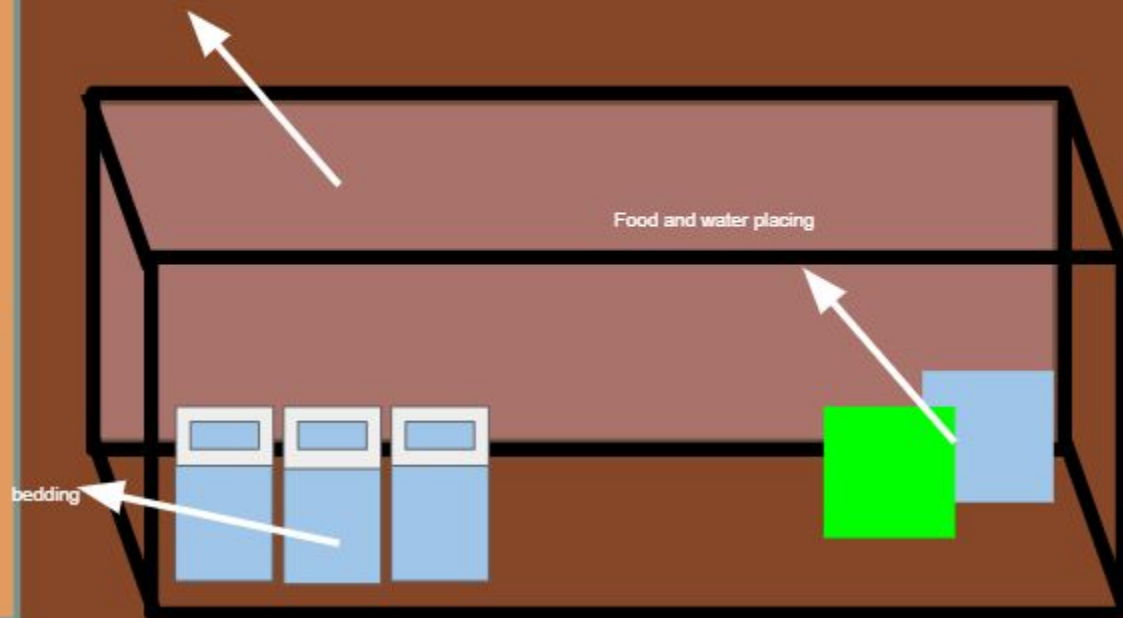


Describe how you would design a habitat on Mars to sustain life for 4 humans. Provide a sketch with labels to help us visualize. Remember, you need a plan to provide drinkable water, breathable air, food, power, etc. All the while, you are keeping cost in mind.

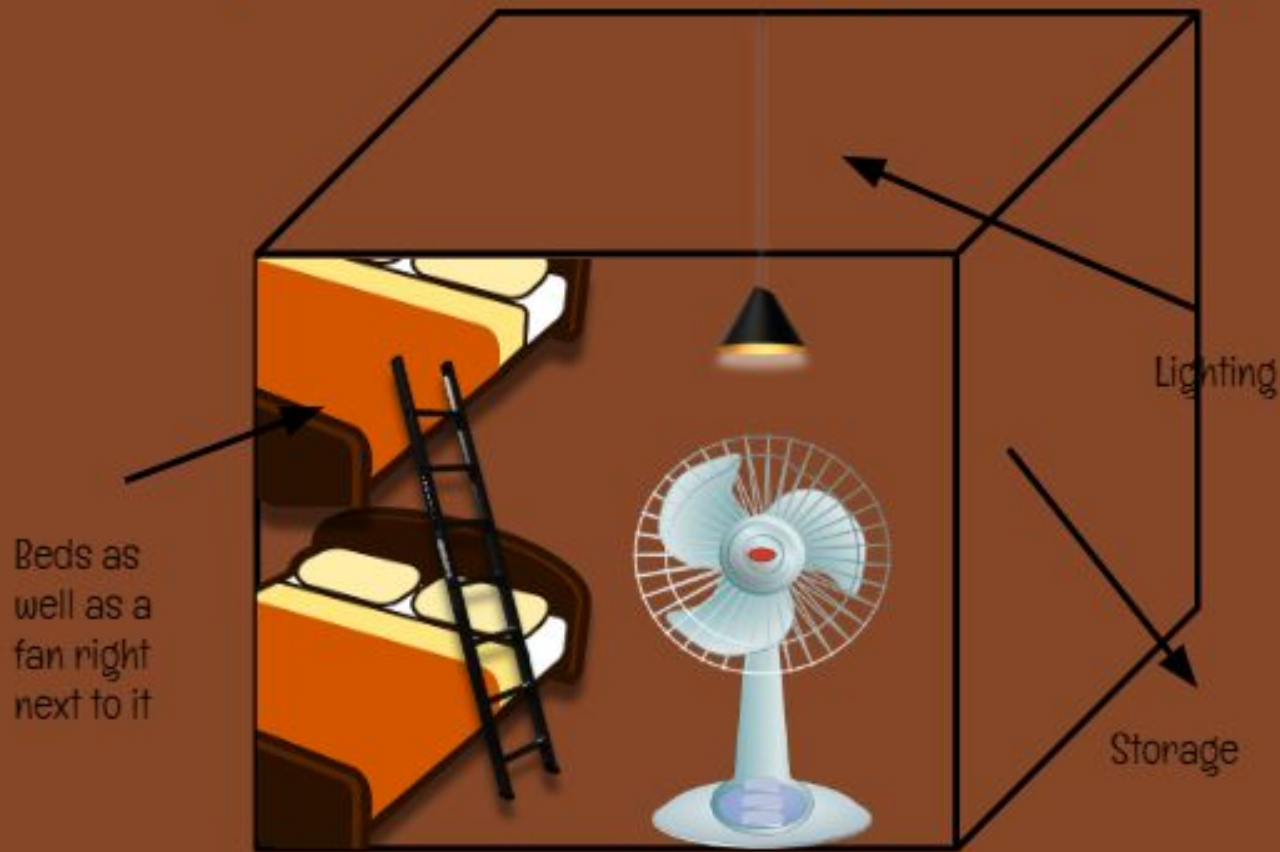
A rectangle shaped habitat, but not too long because we need to keep in mind that we need to be able to keep as much air in as possible. You would need almost like a kitchen area where food and water would happen. So basically I feel like you would need someplace to chemically treat your sweat, ect. To make it drinkable. And like you could grow plants with artificial lighting. (using solar power from nearby satellites) Also you would need thick walls to protect you from the cold of mars. Then you would have close quarter bedding.

Sketch (or insert pic of 3D design you've created):

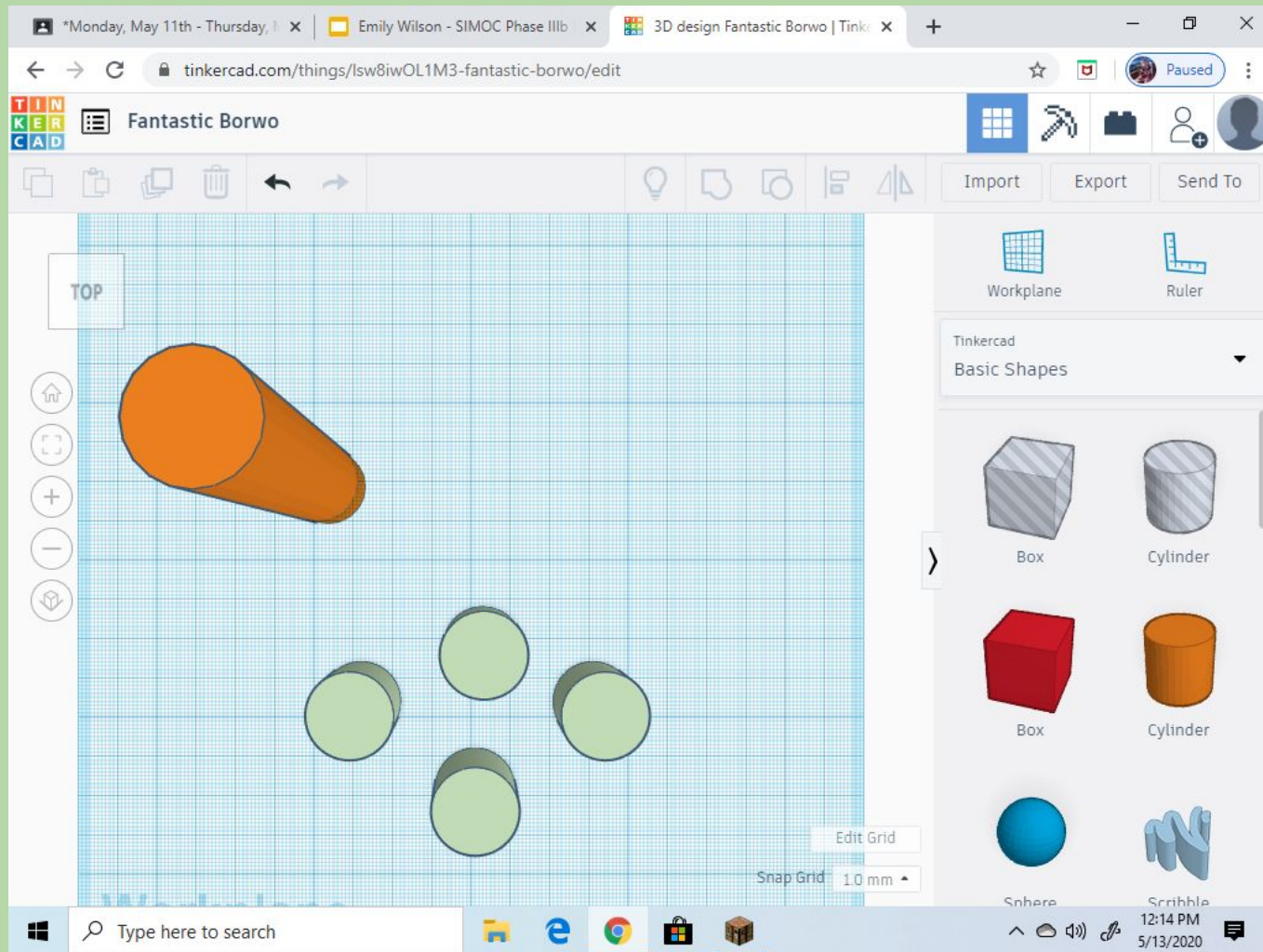
Some type of insulation to protect you from the cold. (would cover all)

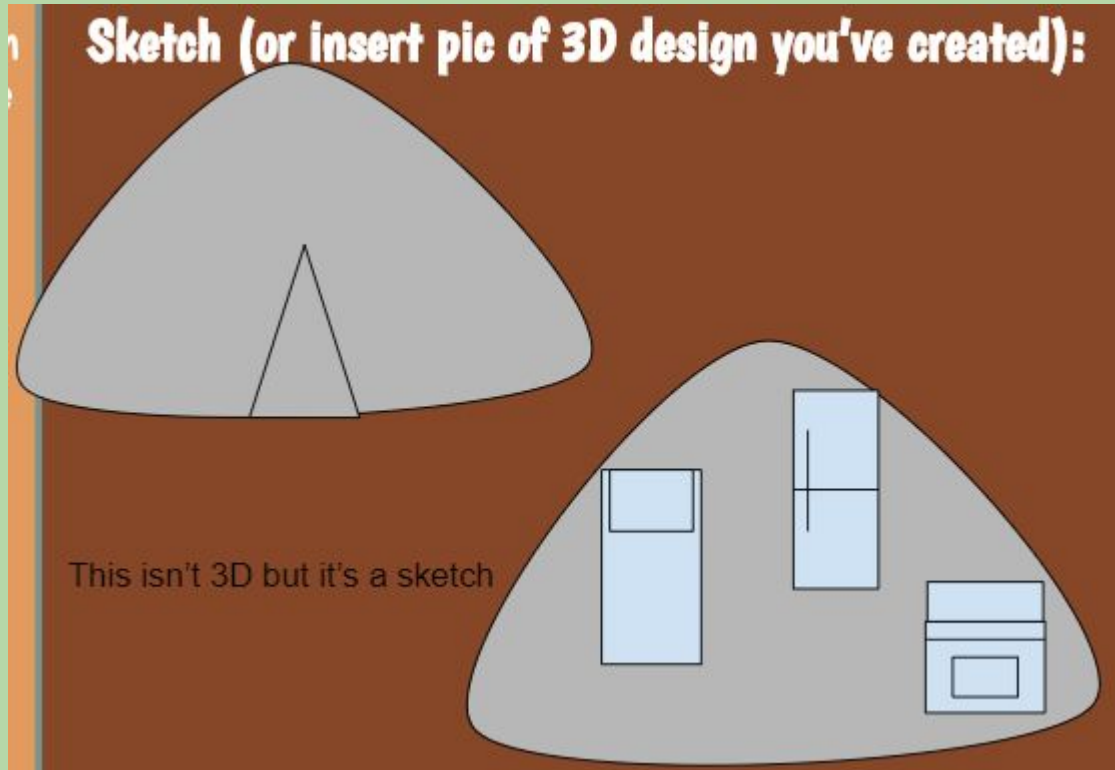


Sketch (or insert pic of 3D design you've created):

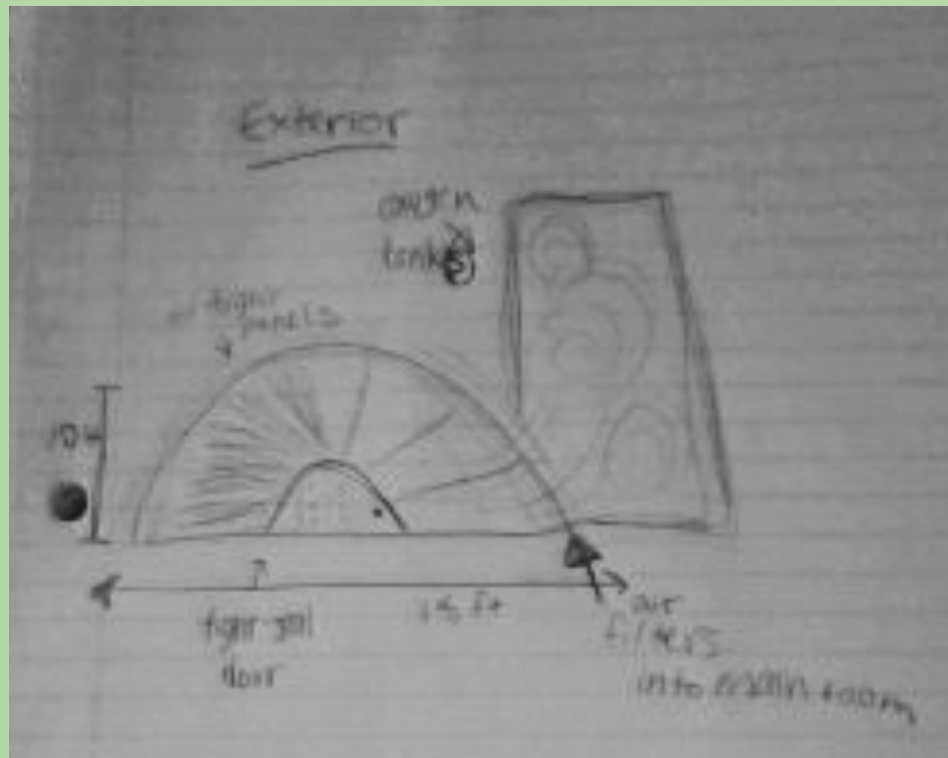


Emily W., 7th Grade





Maya T., 7th Grade



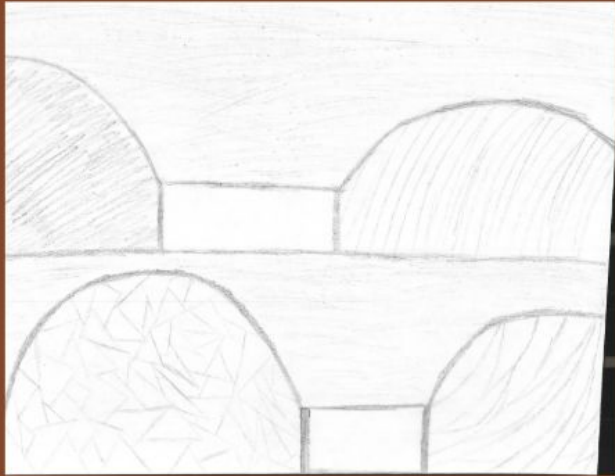
Okay so my idea is that we have a dome. Each tile is made of triangle pices of glass stuff that can filter carbon dioxide into oxygen like a coffee filter but with air. They will reflect cold air outside, and reflect body temperature back inside. The dome pieces will also connecting pieces with solar panels. . Water will be provided by taking cold air from the outside and warm air from the inside making a weird frost on the outside. Then you go outside and scrape it off into bucket for good water. For food you will bring soil and seeds and plant vegetables like tomatoes that can easily reproduce.

Sketch (or insert pic of 3D design you've created):



1 is a glass plating that will condesnse heat inside and will filter air inside. 2 are metal rods providing electricity that are conducted off of solar energy. 3 is a garden inside.

Benjamin B., 7th Grade



Ashton B., 7th Grade

Sketch (or insert pic of 3D design you've created):



Tyler H., 7th Grade

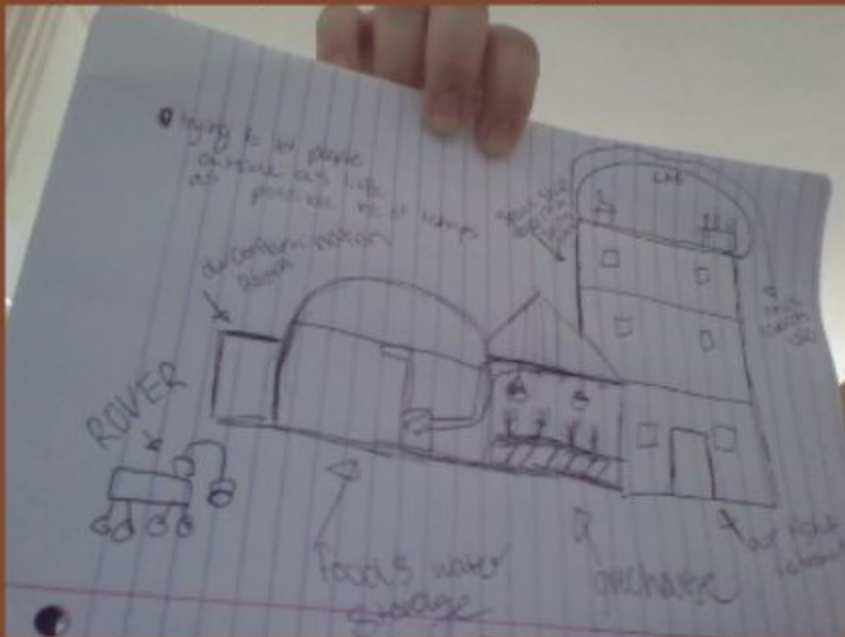
A dome. It's just a dome. It provides food, water, air, power, etc.



Gannon H., 7th Grade

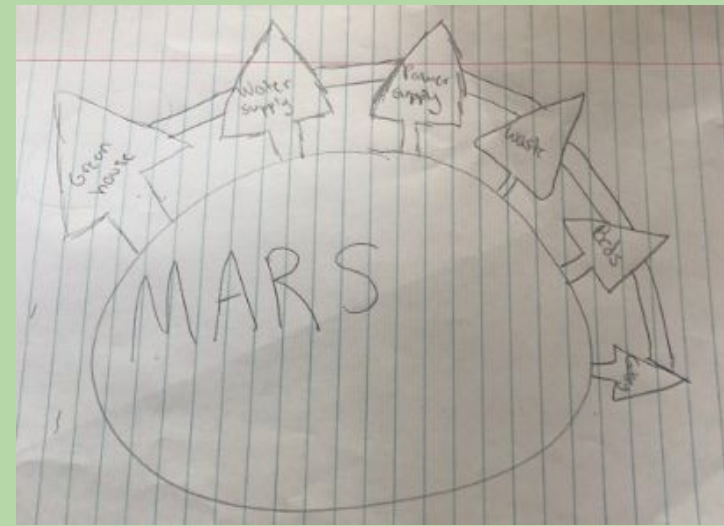
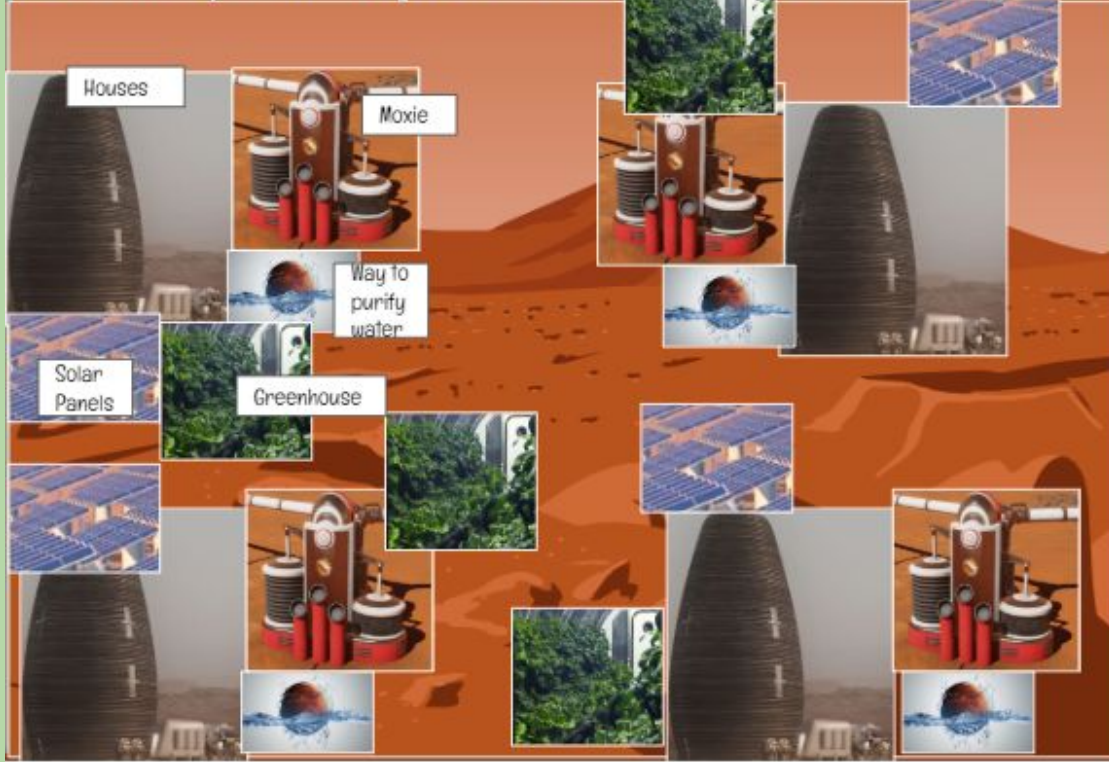
So my sketch shows the spaceship being used as the home for the most part, other than for the greenhouse and storage, which can be extensions on the spaceship made of recycled material or whatever material NASA choses, there will be a power box that regulates oxygen and water to plants and human, the oxygen can be brought from earth or filtered (Hopefully)

Sketch (or insert pic of 3D design you've created):



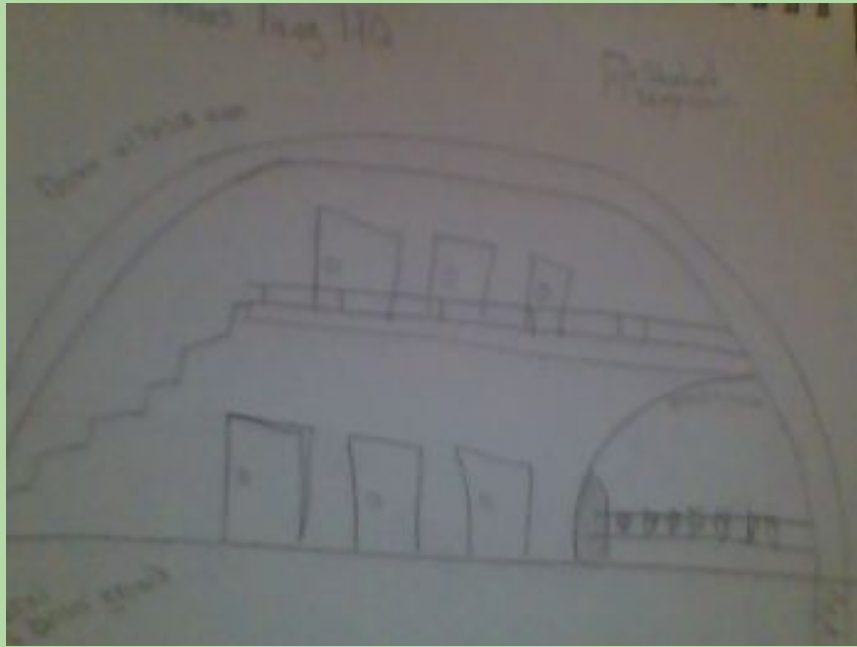
Molly H., 7th Grade

Sketch (or insert pic of 3D design you've created):

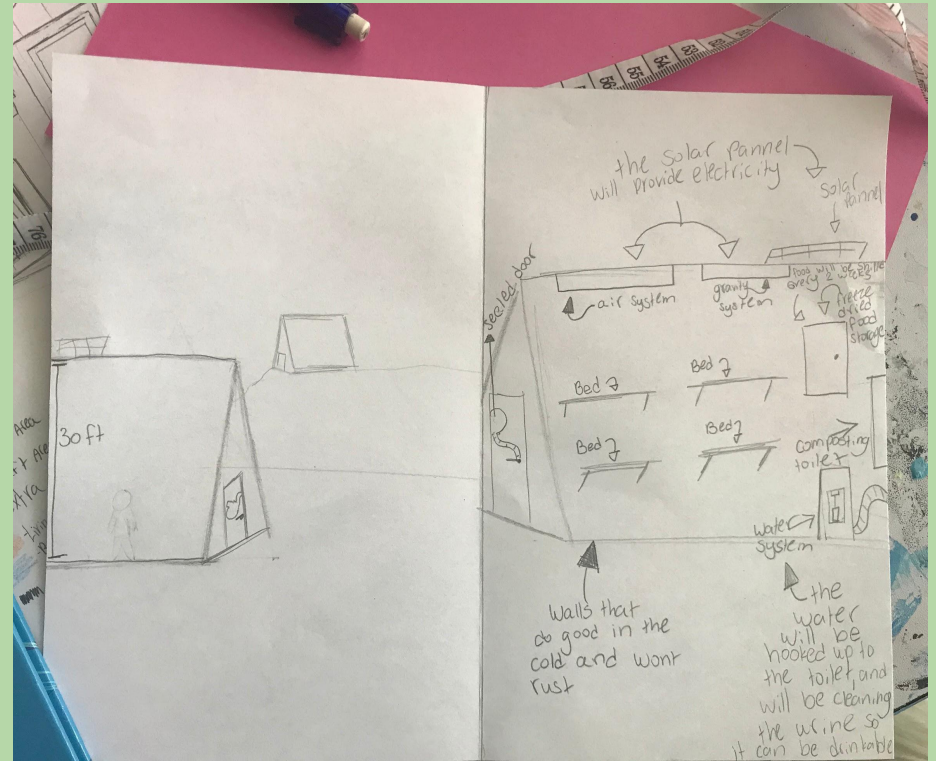


Kensley J., 7th Grade

Desir J., 7th Grade



Imani L., 7th Grade



Meredeth M., 7th Grade

Desir's Simulations:

SIMOC Simulation #	What were the starting conditions?	What worked well?	What did not work?	What would you change?
Non successful	I gave them 1000 kwh battery power and one strawberry plant to grow	Nothing really. I neglected the food supply this simulation.	The one plant to grow and the battery power	How much food I give and how many plants they grow
Non successful	I gave them 5000 kwh and three fruit and vegetable plants to grow, and 60 kg of food.	More plants to grow and more power worked well. The food supply better.	My solar panels.(lowest amount)	How many solar panels I had. I would give them more food supply.
Successful	I gave them 7000 kwh and four fruit and vegetable plants to grow and 120 kg of food.	The food and battery power were good. Growing plants went well. Solar panels were fine.	Nothing really.	Nothing really. Everything was fine.

Justin's Simulations:

SIMOC Simulation #	What were the starting conditions?	What worked well?	What did not work?	What would you change?
1	We just started with 4 humans, no plants, no nothing..	For a part of the journey, we were able to produce more than we consumed.	For a large amount of the journey, the amount of CO ² levels as well as energy levels didn't the amount needed for consumption.	Still working on figuring that out, although more solar panels and energy batteries could be a start.
2	We increased the crew quarters as well as doubled our food supply, and left everything else the same.	For the Co2 levels, we produced far more than we consumed.	We didn't produce nearly enough enough as we consumed.	More energy power will be necessary
3	We built upon the simulations before but this time, doubled battery kWh, as well as ECLSS.	Co2 levels are still far more than consumed.	Energy consumption levels are still very very high.	More battery power, possibly more plants.

Imani's Simulations:

SIMOC Simulation #	What were the starting conditions?	What worked well?	What did not work?	What would you change?
	4 people Large living quarters Medium greenhouse	Amount of food	Too large greenhouse	<u>Small green house</u> <u>so that they don't</u> <u>eat to m</u> Maybe a medium living quarter because it is only 4 people <u>uch a day</u>
	4 people Medium living space Small greenhouse	Honestly everything worked decent		Nothing it went great

Meredeth's Simulations:

SIMOC Simulation #	What were the starting conditions?	What worked well?	What did not work?	What would you change?
1	There was no crew headquarters	Adding more ECLSS modules	Planting more food	I forgot to even add a greenhouse
2	There wasn't enough power	Adding more solar panels	increasing the size of the crew headquarters	I would add more solar panels
3	There wasn't enough space	Decreasing the size of the greenhouse	Increasing the size of the greenhouse	I would add batteries

Abi's Simulations:

SIMOC Simulation *	What were the starting conditions?	What worked well?	What did not work?	What would you change?
	It started out normal	The way things were being produced and consumed	The amount of CO2 in the people	The amount of CO2
	Consumption was high	How well people were	The amount of consumption	Amount of consumption
	Consumption was high again	CO2 amount	Consumption	Consumption

Hadley's Simulations:

SIMOC Simulation #	What were the starting conditions?	What worked well?	What did not work?	What would you change?
318A82120F1E884A	There was a medium/small environment, simple food, and 100 liters of water.	Having a medium/small environment with simple foods	A small habitat with not enough important food	Nothing, this seemed to work well.

Kyla's Simulations:

SIMOC Simulation #	What were the starting conditions?	What worked well?	What did not work?	What would you change?
1	Stable, started consuming less energy	Energy consumption was high	CO2 levels were high	CO2 levels
2	Stable	Energy consumption/production was steady	CO2 levels were high	Greenhouse levels
3	Stable	Everything	Nothing	Nothing

Alexis's Simulations:

SIMOC Simulation #	What were the starting conditions?	What worked well?	What did not work?	What would you change?
1	Small building with very little oxygen.	Energy production was very good.	Urine was way too low compared to how much a person produces each day on earth.	Oxygen definitely needs to rise, so maybe a bigger building, with more oxygen inside.
2	A medium building this time with lots of N ₂ .	Urine production was much higher this time.	On our 164 all energy consumption sunk to 0 and then was not stay at a consistent rate.	The energy was very bad at the end of the journey so we need to change something.
3	The largest building with good H ₂ O	Oxygen was much better and being produced at a better rate.	Energy production and consumption were both very bad and not constant.	The smallest building had much better energy production and consumption so the people were healthier.