

Heading Underground

What's The Plan?

Use the *Design Thinking Process* to combine the fantastical and practical by engineering an underground city! Start based on the principles of urban planning, then unleash your imagination and fill your city with mythical creatures, magical vegetation, and never before seen structures and landscapes.

What You'll Need:

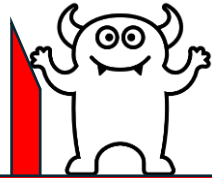
Here's a list of everything you'll need! Don't have something exactly?

Get creative! Some of our suggested swaps are listed in Grey.

- White Paper | Coloured paper, cardstock
- Markers | Pencil crayons, crayons
- Any other craft supplies you may have such as cotton balls, glue, pipe cleaners, glitter, etc.

What To Do:

1. Choose a client! These magical creatures are all looking to start a town underground, but for different reasons! How does *Why* we're designing something affect how we design it?



Rooaarr!! I may be a big monster, but me and my family are looking for somewhere to get away from all these humans! We like big spaces, eating dinner all together and unique art! Can you please make sure that no one else will be able to find the entrance?



Oh Boy is it getting hot out here! My whole town of 25 merfolk are hoping to get away from the heat by moving underground! We need lots of water, but also places to breathe fresh air and hang out! We usually love living really close to each other, but sometimes its nice to have a place to get away to!



Hi! Me and 60 other pixies are trying to start a new town far away from the noise of that new human city! We are pretty small but need room to stretch our wings and fly around! I am also pretty scared of the dark, please make sure there is lots of light? Also, places we can fly in and out of!

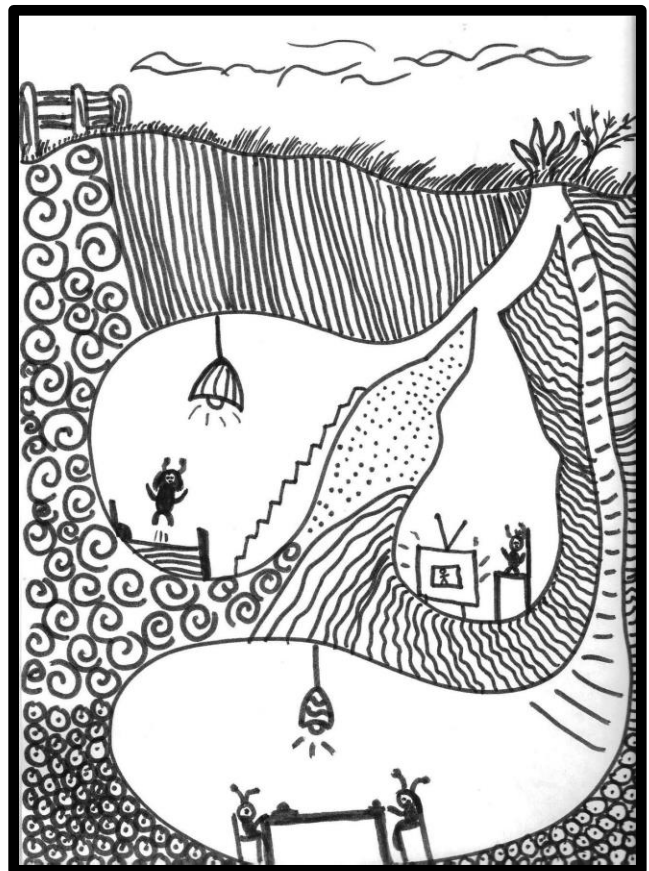
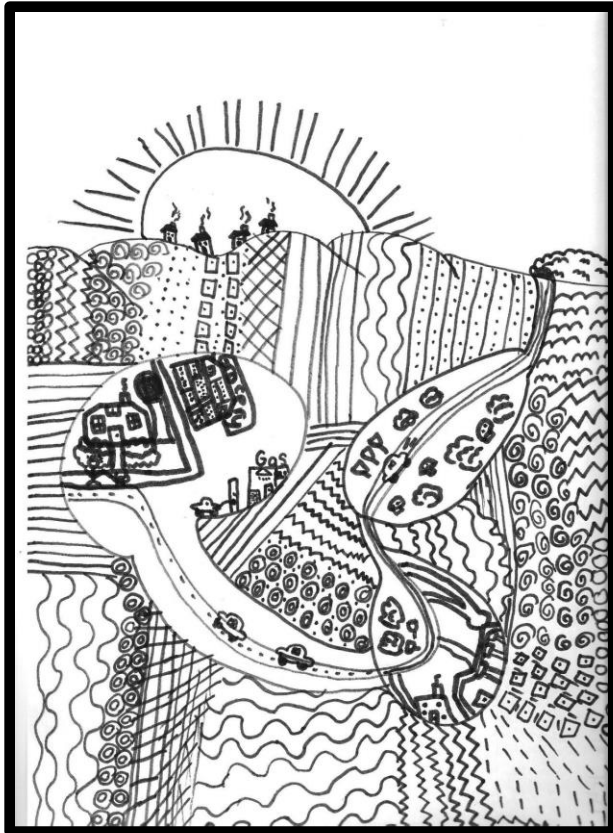


Watch out! I may be tiny but me and 400 of my friends need help moving underground! We hear there is gold down there, and we never want to come back up! We need sunlight to grow plants, water to drink and lots of places to store our gold!

2. Then, use your imagination and think of what your underground city could look like. Will it be similar to an ant farm, with lots of small tunnels leading to little burrows? Or will it be an expansive and open cavern full of stalactites, gems, and more? Remember what your client has asked for and needs!

3. Next you can make a rough sketch of your city onto your paper.

You can get some inspiration for your underground city by checking out the ones shown below! Notice how the artists used repeating lines to show the ground around the city? That style is classic of Saul Steinberg, who uses lines to show textures and tell stories!



4. Once you have a rough sketch, with an idea of the *floor plan* and a few details, ask yourself these questions and add the answers to your drawing:
 - a. What kind of creatures (other than your client) live in your underground world?
 - b. Are there any special plants or unique *geological formations* around or in your world?
 - c. How will your clients get their light, water, fresh air and food?
 - d. How do the creatures that live there get around the space?
Are there roads? Or Rocket Ships?

What are we Talking About?

Here is a list of important words we use during the project!

- *Design Thinking Process:* A series of steps to help create helpful and long-lasting designs!
 - You start by **Empathizing** with your client or the people who will use your design. Put yourself in their shoes, what is important or not important to them?
 - Then **Define the problem**, now that you've thought about the problem like someone else, what is the real challenge or challenges you have to overcome?
 - Now you **Ideate** - brainstorm a bunch of possible solutions, then weigh the good and bad things for each idea until you figure out which one you like best!
 - **Prototype** time! Build, draw, create your own smaller version of your solution. These don't need fancy materials and are usually easy to create versions of your main solution!
 - Now it's time to **Test** your prototype! Whether you're physically testing it, or imagining what it would be like in real life, see what might go wrong with your prototype!
 - Lastly, repeat the **Ideate**, **Prototype**, and **Test** steps, changing your solution a little bit each time until you find one that works as well as you want!
- *Floor Plan:* A special drawing of a building that shows where all the doors, windows and rooms are. It is usually from a top-down perspective, like you took the roof off a building and looked inside.

- *Geological Formations*: Sometimes called landforms, these are unique features on earth created by wind, water and more. Some examples are the badlands near Calgary, mountains, rivers, caves, big cool looking boulders, and others!

How Did It Go?

We'd love to hear about all the amazing STEM projects you're doing! Show us your finished projects on any of the following social media platforms by tagging us!

Twitter: @MyMindsInMotion
Facebook: @mindsinmotion2014 || @ucactiveliving
Instagram: @ucalgaryactive



Let us know how you felt about the project! Please [click here](#) or scan the QR code above to fill out a short survey!