



Gimme Shelter!



Lower Elementary STEM Mini-Project

Dear Junior Scientist,

It's starting to get sunny and warm here in Washington, even if it's still a little rainy. But we're used to that! We can always wear a jacket, carry an umbrella or stay inside on a cool, rainy day. We are doing a lot of staying-at-home right now, aren't we? Do you ever think about other creatures' homes and how they stay dry and warm?

Sometimes other creatures aren't healthy or safe if it's too warm or too wet outside and they need to find shelter from the weather. Inside your kit you probably found a small white bead (or maybe a few). These beads will act as your very own tiny pet! In this kit, you will get the chance to investigate some cool (and warm) science ideas and use your creativity to think like an engineer and design a shelter for your tiny pet.

Sounds tricky, but we know you can do it! You'll want a grown-up to help you as you try three different STEM tasks:

Task 1 - Make a model of materials in your outdoor space

Task 2 - Investigate warmer and cooler spots outdoors

Task 3 - Design and test your shelter

Good luck!

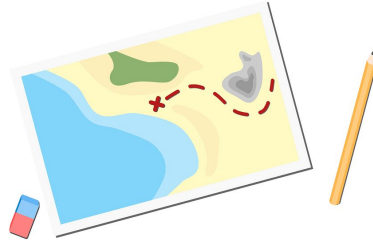
The ESD STEM@Home Team!

Task 1: Ready, Set, Map!

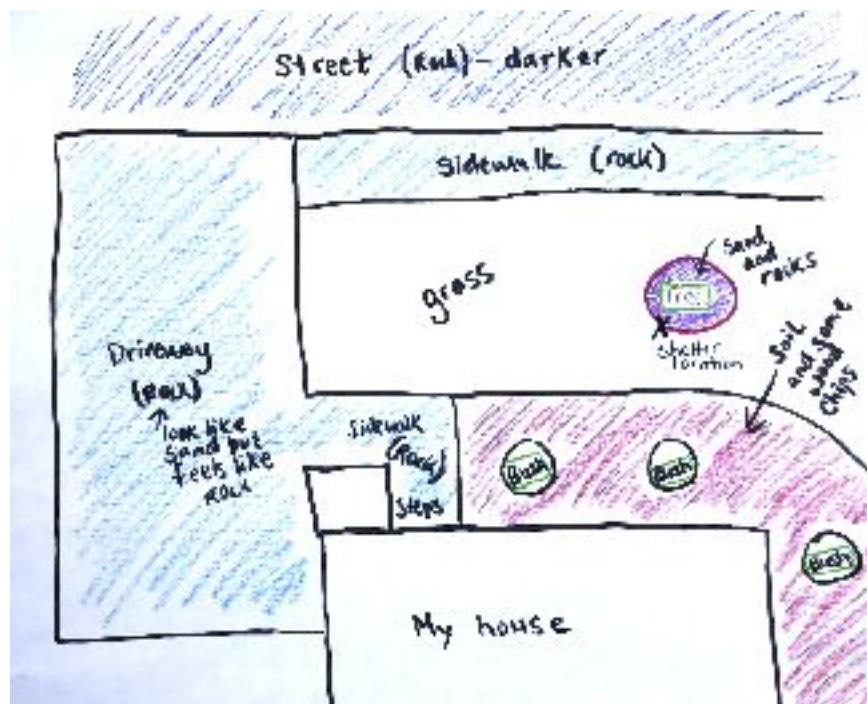
Grab your grown-up STEM partner, it's time to make a map! We are on the hunt for earth materials...things like soil (dirt), sand, clay, water and rocks. We're going to start by drawing a map of your outdoor space. You can use your backyard, a park, an empty space next to your house - anywhere really!

Here's what you need:

- Blank paper
- Pencil and some crayons
- Something flat to draw on



Choose a spot, head outside and start by drawing a map of your space. When you're done, get a closer look at some Earth Materials. Use your senses (touch, smell and see) to describe what you find. Then, choose a color for that material and color the areas on your map where you found them. Here's an example from my front yard:



What material is it?	How can you describe it?	What color is it on your map?
Soil		
Rock		
Sand		
Clay		
(Other earth materials you find)		
(Other earth materials you find)		

Task 2: Some like it hot! (Some don't)

Okay STEM students - you've got your trusty map and now you need to figure out - what is the best place to build your shelter? Do you think that all of your outdoor space is the same temperature all the time? You might already know that it feels cooler in the shade, but what if there is no shade? And what happens when a spot is sunny but then becomes shady?

Here's what you need:

- A sunny day
- Your map with colored key
- Someone to take you on a walk

As you walk around your neighborhood, look for the same types of materials in the chart below. Use your hands to sense the temperature of the materials, and circle whether you think it is warming or cooling:

Light rock (like a sidewalk) in the shade	Warming	Cooling
Light rock (like s sidewalk) in the sun	Warming	Cooling
Dark rock (like a street) in the sun	Warming	Cooling
Dark rock (like a street) in the shade	Warming	Cooling
Soil (in the sun)	Warming	Cooling
Soil (in the shade)	Warming	Cooling
Other materials you found	Warming	Cooling

Which of the materials would be best to keep your tiny pet cool?

Where on your map can you find that material? Mark it with an X

Task 3: Gimme Shelter!

Now it's time to design the best shelter for your tiny pet and choose the best location in your outdoor space for it to live. Your critter is affected by the temperature of its surroundings. It likes to warm itself in the sun, but also hide in the shade to stay cool. You can tell when it's getting too warm because it will turn from white to pink, and then purple!

Here's what you'll need:

- Map of your outdoor space
- Any of the supplies in your kit - you don't have to use all of them!
- You can add other supplies from home if a grown-up approves your design

When engineers design a solution, they have to think about criteria that will make their designs successful. Here are the criteria your design must meet:

- Have a door for the creature to come in and out of
- Have a roof and at least 1 wall
- Protect the creature from as much sunlight as possible while it's inside
- Your tiny pet must stay it's original color when inside it's shelter

Start by drawing a picture of the design you have in mind in the box below! Talk about your design with your helper and tell them which materials you want to use, and why you are choosing them.

Draw your design in the space on the next page, or use a separate sheet of paper if you'd like more room!

You are ready to build your structure! Make changes along the way! Talk about the changes you decide to make with someone who is helping you.

Once you've built your shelter, place it in the spot you selected on your map. Put your tiny friend inside and wait a few minutes before you peek inside. Were you successful? Try again or try to improve your design!



Thank you, STEM Superhero for helping to solve a problem in your home! Want to explore more? Check out

www.stemmaterials.org/stemathome



Share Your Idea! Ask a grown-up to share a picture or video of your shelter to our Facebook page STEM@ESD112 or Tweet us at @STEMesd112