



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

Explain what engineering is and the purpose behind the engineering design process. Solve a problem using the process, and build a model to help Scientist Sam.

Supplies Required:

Graphic organizer (page in your STEMkit!)
25 gumdrops
100 toothpicks

Video

What is an engineer? <https://tinyurl.com/g9ry2z>

Overview

Engineers help us solve problems, by building and creating things and new ideas. Engineering means to create and build structures and products, by using math and science. An engineer is a person who does the engineering, and today, that engineer is you!

Scientist Sam needs your help! He was in the jungle observing toucans in the canopy, when he became stuck in the tree. He called PE and hopes the students here can help him get down! The only materials he has are mushrooms and branches. To represent mushrooms, you'll use gumdrops, and the toothpicks will be for the branches.

In order to be a successful engineer, you need to follow a process; just like a baker who is making cookies. That process is called the engineering design process, which is a series of steps used to solve problems.

- Problem
- Solutions
- Model
- Test
- Reflect & Redesign



Instructions

1. Use the graphic organizer to help you go through the steps of the engineering and design process.
2. **STEP 1 - Problem:** What do we want to solve? How will we get Scientist Sam down?
3. **STEP 2 - Solutions:** What are some ways to solve the problem?
4. **STEP 3 - Model:** Build your design!
5. What are some things that would be helpful for Sam to get down from the tree? How can you use the gumdrops and toothpicks to make a model of those structures?
6. Think about how to use the materials to make the structure strong!
7. **STEP 4 - Test:** Does your model work?
8. **STEP 5 - Reflect & Redesign:** Was your model successful? Does it need to be redesigned?

Additional Resources

1. Learn the engineering song! <https://tinyurl.com/y55sysy4>
2. Look at this ladder made with materials from the forest: <https://tinyurl.com/y49gsoov>

Share It Out

Share on social media: Share the results of your design with your friends and family on social media! Explain the steps of the engineering design process in a video! Use the hashtags:

#EngineeringDesign
#ProjectExploration
#StemAtHome

Share via PE's website: Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 105. Learn more at www.projectexploration.org/explore-store



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