

OUT-OF-SCHOOL SETTINGS | GRADES 6-8

## Here Comes the Sun: Engineering Insulated Homes

### Unit Overview

Keeping homes at a comfortable temperature takes a lot of energy— and creates a lot of pollution. Youth participating in this unit are challenged to use green engineering skills to insulate a model home. They will experiment with different types of insulation, take inspiration from insulation used in homes around the world, and go through each step of the Engineering Design Process to create a model home that remains at a constant temperature regardless of the temperature outside.

### Engineering Application/Unit Goals

Green engineering is a field of engineering that focuses on designing technologies that have a minimal impact on the environment. Using less energy is beneficial to the environment, and well-insulated homes ultimately require less energy to be heated and cooled. In this unit, youth will explore how insulation can be used to moderate the interior temperatures of a model home. Youth will test and evaluate different materials to see how well they insulate to inform their insulated home designs.

**Engineering Everywhere** inspires learners in grades 6-8 to shape the world around them. Our twelve hands-on units were tested in afterschool, summer camp, and out-of-school time settings, and they are proven to engage learners in innovative problem solving. Each unit begins with a Special Report video, which sets the context for the engineering design challenge and explores problems like food scarcity, prosthetics, and disease control. As learners work through our design challenges, they'll sharpen 21st century skills like critical thinking, teamwork, and communication, preparing them for success in school and in life.



## Unit Map

### **Prep Activity 1: What is Engineering?**

Youth are introduced to engineering as they work in teams to engineer a transportation tank for a model frozen woolly mammoth.

### **Prep Activity 2: What is Technology?**

Youth learn about technology through a match game and imagine ways to improve a technology.

### **Activity 1: Insulated Homes**

Youth create model shipping container homes that they will insulate later in the unit.

### **Activity 2: Investigate Insulation**

Youth test a variety of insulation materials.

### **Activity 3: Could You Live There?**

Youth imagine floor plan designs for shipping container homes.

### **Activity 4: Engineering Your Insulated Home**

Youth begin to insulate their model shipping container homes.

### **Activity 5: Improve Your Insulated Home**

Youth improve their insulation designs.

### **Activity 6: Engineering Showcase**

Youth communicate their work with visitors.

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