

Problem 1.5 Save the Ice Pop! Design Challenge

Introduction

What are your three favorite desserts? Chances are one of your favorites is a frozen dessert such as ice cream or an ice pop. We usually keep ice cream cold in the freezer to keep it **solid**. If the ice cream stays out of the freezer for too long, it will melt and turn into a **liquid**.

Remember the problem Angelina, Suzi, and Mylo are trying to solve? Angelina is in charge of bringing treats to the soccer game. She chose to bring frozen ice pops but forgot a cooler to keep them cold during the game. The friends are going to use the Engineering Design Process to solve the problem of the melting ice pops. What would you use to keep the ice pops cold if you had the same problem?

In this problem you will design a product to keep your ice pop cold.

Equipment

- Launch Log
- Variety of common materials to create container that may include:
 - Cloth such as old jeans, shirts, jackets, and socks
 - Plastic such as bubble wrap, plastic wrap, and sandwich bags
 - Foam such as packing peanuts or disposable coffee cups
 - Metal such as aluminum foil
 - Other items such as pipe cleaners, paper, or cardboard
- Variety of materials to assemble container that may include
 - Tape, glue, string, hot glue and glue gun if operated by an adult
- Resealable bag with frozen water or juice, 1 per team to test final design
- Graduated cylinder
- Heat lamp

Procedure

1. You and a partner will design and create a cover for an ice pop to keep the treat cold for an hour just like Angelina, Mylo, and Suzi.
2. Complete the following sections in your Launch Log: Ask, Explore, Model, Evaluate, and Explain.
3. **Ask**
 - a. What is the problem?
 - b. What information do I need to solve the problem?
 - c. Follow your teacher's directions to think about how you did on **Step 1: Ask**.
4. **Explore**
 - a. How can you try to solve the problem? Write or sketch your thoughts in the space in the Launch Log.

- b. Talk to your partner and share ideas. **Circle one idea** you think will work best to solve the problem.
- c. Follow your teacher's directions to think about how you did on **Step 2: Explore**.

5. Model

- a. Draw and label your plan to solve the problem in the space provided in your Launch Log.
- b. Follow your teacher's instructions on how to build your model.
- c. Draw or insert a picture of your final design in your Launch Log.
- d. Follow your teacher's directions to think about how you did on **Step 3: Model**.

6. Evaluate

- a. Draw or insert a picture of you and your partner testing the design.
- b. Follow your teacher's instructions to measure the amount of liquid in the resealable bag. Measure the amount of melted liquid in millimeters. Record the data from your test in your engineering notebook.
- c. Do you think your design worked to keep the ice pop frozen solid?
- d. Compare your results with another group. Which worked best and how do you know?
- e. Follow your teacher's directions to think about how you did on **Step 4: Evaluate**.

7. Explain

- a. Did your model solve the problem? Why or why not?
- b. How would you change your design? How would these changes improve your design?
- c. Follow your teacher's directions to think about how you did on **Step 5: Explain**.

Conclusion Question

1. Follow your teacher's directions on how to present your work to the class.