

Project 1.4 The Heat Is On

Introduction

Think about the kind of clothes you wear when it is very hot outside. How would you feel if you wore the same clothes in a snow storm? Why do you wear different clothes on a very cold day?

Have you ever wondered about the person who designs the clothes you wear? How does he or she pick the material, colors, and texture? Does the designer think about how hot or cold the weather will be when the clothes are worn?

In this project you will investigate which materials are good at keeping heat in and which ones are good at letting heat out.

Equipment

- Hand warmer
- Thermometer
- Samples of a variety of materials:
 - Aluminum foil
 - Paper
 - Foam
- Optional: Container with room temperature water and paper towel

Procedure

Part 1

1. Gather these materials for your activity: thermometer, hand warmer, aluminum foil, paper, and foam. The material samples should be the same size. If necessary, cut appropriately and set aside.
2. If your hand warmer is not warm, shake it for 10 seconds. Wait at least 5 minutes to let it warm up.
3. Hold the thermometer on the hand warmer for 2 minutes. Write the temperature in the table in your Launch Log.
4. Let the thermometer cool away from the hand warmer for at least 30 seconds. To speed this up, your teacher may have you dip the thermometer into a cup of room temperature water.
5. Put the aluminum foil sample between the thermometer and the hand warmer and hold them together for 2 minutes. Then write the temperature in your Launch Log.
6. Let the thermometer cool for 2 minutes and repeat for the paper sample.
7. Let the thermometer cool for at least 30 seconds and repeat for the foam sample.

8. You will repeat steps 5-7 two more times and fill in the data table in your Launch Log.
9. Follow your teacher's instructions to report your group data to the class.
10. Answer the following questions in your Launch Log.
 - a. From your data, which material let the **most heat** through?
 - b. From your data, which material let the **least heat** through?

Part 2

11. Follow your teacher's directions for Part 2.
12. Write the class data in your Launch Log and make a bar graph.

Conclusion Questions

Answer the following questions in your Launch Log.

1. From the class data, which material let the **most heat** through?
2. From the class data, which material let the **least heat** through?
3. Which material is the best conductor? Why?