



Campbell Creek Science Center

The Great Sock Experiment

Does the material of your socks make a difference for how warm they keep your feet? Is there any difference if your socks are wet? In this experiment, you can compare the temperature difference of wearing socks of different fabric to wearing no socks at all.

Directions

1. Grab three pairs of socks made from different materials, such as cotton, fleece, and wool. Drench only one sock of each pair in cold water. Leave one sock dry.
2. Fill each water bottle with hot water and cap tightly.
3. Stuff each bottle of water inside one of the socks. Leave the 7th bottle bare. This represents being barefoot and is the control of the experiment.
4. Place all the wrapped bottles outside in a cool shady place. *(This experiment works best with outside temperatures below freezing.)*
5. Take the temperature of each bottle and record on the datasheet. *Remember to hold the thermometer in the water for at least 30 seconds to allow the thermometer to adjust.*
6. Wait 30 minutes. Then retake and record the temperature of each bottle again, remembering to give the thermometer a chance to adjust to each bottle.
7. Continue to take measurements and record the data every 30 minutes.
8. Analyze your data. Use the questions as your guide.



Materials

- 1 pair of wool socks
- 1 pair of fleece socks
- 1 pair of cotton socks
- 7 identical glass or plastic bottles with caps that are small enough to fit inside the socks
- Hot water (about 100 degrees Fahrenheit)
- Thermometer
- Pen or pencil
- Data sheet (attached)

Questions

- Which bottle of water was the warmest at the end?
- How do the temperatures of the bottles covered by wet and dry socks compare?
- Did the bottle with no sock stay very warm?





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Data Sheet

	Time:	Time:	Time:	Time:
Dry Wool (°F)				
Wet Wool (°F)				
Dry Cotton (°F)				
Wet Cotton (°F)				
Dry Fleece (°F)				
Wet Fleece (°F)				
Bare Bottle (°F)				

Write any additional observations here:

Reflection

Using the results from the data, what socks would you choose to wear next time you head out into cold temperatures? Why?

Share your results with one person you like to play outside with!

