



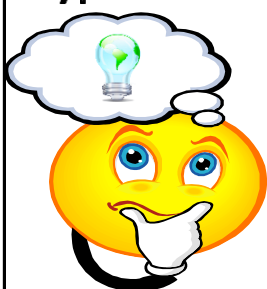
Purpose



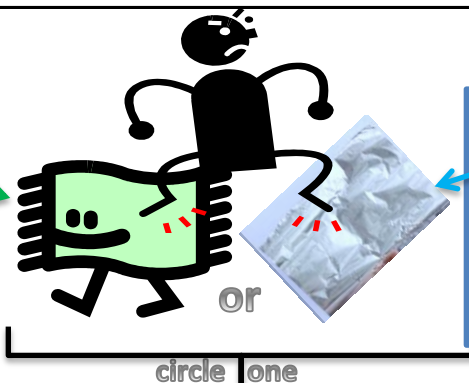
To identify a good conductor of **heat energy**.

I wonder what makes my foot feel warm on some floors, but cold on other floors???

Hypothesis



I think the **carpet** is a **better conductor** of **heat**.



I think the **aluminum foil** is a **better conductor** of **heat**.

Materials



- aluminum foil
- small throw rug or rug sample
- one foot

Procedure



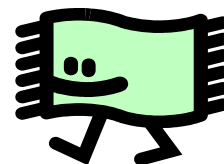
1. Cut a piece of foil that is a little bigger than your foot.
2. Place the foil & the rug on a tile floor.
Allow them to remain undisturbed for 10 minutes.
3. Put one bare foot on the aluminum foil & the other foot on the rug.
4. **Observe** any difference between the **feel of the temperature** on the aluminum foil versus that of the rug.

Results

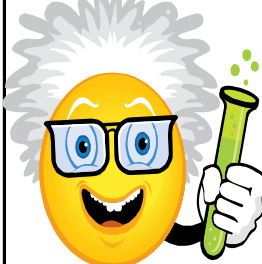


Circle the Winner!
Which surface **felt the coldest** & won the contest for

"Best Conductor of Heat"?



Conclusion



Things **feel cold** to the touch when heat energy is **drawn away** from your skin; things **feel warm** when heat energy is **transferred to** your skin.

A **heat conductor** is a material that allows heat to move through it.

The **aluminum** feels **colder** than the carpet because it is a **good conductor** & the heat leaves your foot to move through the metal.

The **carpet** is a **poor heat conductor** & actually blocks heat loss from your foot.



Purpose 	<h2 style="text-align: center;">Why does pepper float in a bowl of water, & what will happen if I put soap in it?</h2> <p style="text-align: center;">To make black pepper run across a bowl of water when soap is added.</p> <div style="text-align: right;"> </div>
Hypothesis 	<p>Pepper flakes float on top of the water due to the surface tension of water.</p> <div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 5px; margin-right: 10px;"> True or False </div> </div> <p>When is added to the </p> <ul style="list-style-type: none"> <input type="radio"/> Nothing will happen. <input type="radio"/> The pepper in the bowl will bubble up. <input type="radio"/> The soap will cause the pepper to "run" across the bowl.
Materials 	<ul style="list-style-type: none"> • black pepper • 2 quart bowl full of tap water • dishwashing liquid • saucer • toothpicks
Procedure 	<ol style="list-style-type: none"> 1. <i>Sprinkle the pepper</i> over the surface of the water in the bowl. 2. Pour a few drops of liquid detergent into the saucer. & dip the end of the toothpick into it. 3. Insert the wet end of the toothpick in the center of the pepper. <p>Note: ALL the soap must be washed out of the bowl & FRESH water used before the experiment can be repeated.</p>
Results 	<p><i>Each pepper flake is part of a tug-of-war battle going on between water molecules! The pepper flakes are just going with the flow of the water.</i></p> <p style="color: red;">What did you see when you added soap to the water?</p> <div style="display: flex; align-items: center; justify-content: space-around;"> <div style="text-align: center;"> <p>The pepper flakes did not move</p> </div> <div style="text-align: center;"> <p>or</p> <p>The pepper flakes moved to the edge of the bowl</p> </div> </div> <p style="text-align: center;">Circle the picture that best demonstrates what you observed.</p>
Conclusion 	<p>The first question to ask is why the pepper flakes float. Why don't they sink or dissolve in the water? Well, pepper is hydrophobic, meaning that water is not attracted to it. Because of that, the pepper can't dissolve in the water. But why do the flakes float on top of the water? Water molecules like to stick together. They line up in a certain way that gives the top of the water surface tension. Because pepper flakes are so light, and hydrophobic, the surface tension keeps them floating on top.</p> <p>The next question to think about is why the pepper shoots to the sides when soap touches the water. Soap is able to break down the surface tension of water—that's part of what makes soap a good cleaner. As the soap moves into the water, and the surface tension changes, the pepper no longer floats on top. But the water molecules still want to keep the surface tension going, so they pull back away from the soap, and carry the pepper along with them.</p>