Insulation

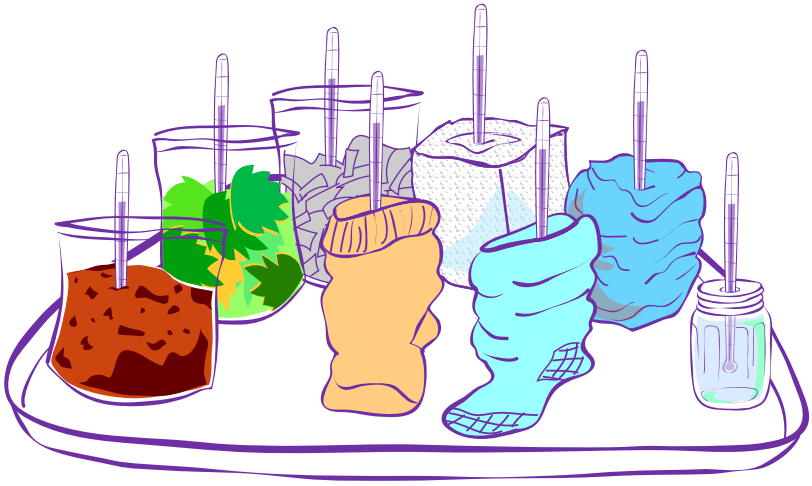
WHAT MATERIALS MAKE THE BEST INSULATION?

We all like to keep our homes and bodies warm in the cold weather. When your home is well insulated, you'll feel more comfortable and your family's energy bills will be lower.

Find out which materials are the best insulators. Ask your teacher to pour the hot water for you.

TRY THIS

1. On the data chart (see next page), write down all the materials you'll be testing.
2. Arrange all the materials separately on the tray so you'll be able to quickly place the jars inside each one. Put each of the loose materials (dirt, leaves, etc) inside a bag. Control each material so it is approximately the same thickness.
3. Measure the temperature of the hot water. Write the temperature on your data chart, in the "START" column.
4. Quickly pour hot water into each jar until each jar is filled. Screw on the lids.
5. Put a lab thermometer through the hole in each jar's lid. Place each jar on the tray so it is wrapped or surrounded by a different material. Make sure the thermometers can be easily read. Leave one jar uncovered as a "control."
6. Carry the board or tray outside where it's colder, and put it in a shaded place.
7. Check the temperature of each jar every 20 minutes for one hour. Write the temperature down on the data chart.
8. Compare your results. Which material did the best job keeping the water warm? Which did the worst? Use your data to create a bar chart or line chart. You could use graph paper, or a computer program to create the chart.



THINGS YOU NEED

- Cotton sock
- Wool sock
- Leaves
- Shredded newspaper
- Plastic foam
- Dirt
- Fiberglass insulation batting (Always wear gloves when handling this.)
- Small plastic bags that can hold the jars and loose material (dirt, leaves, etc.)
- Clean baby food jars with lids – one for each material you're testing, plus a control jar. Make a small hole in each lid, large enough for a lab thermometer to fit in.

- A lab thermometer for each jar
- Large board or tray that will hold all the jars
- Very hot water
- Notebook and pencil
- A cool day and a shaded place

POWER WORDS

Insulation is material used in ceilings and walls to prevent the loss of heat. It works like a blanket – by trapping air.

WHAT DO YOU THINK?

What if you tried this same experiment again, only left the materials out for a longer time. How will your results differ? Is there a point at which none of the materials can keep the water warm?

What did you learn that can help you keep warm in the winter?

Insulation Data Chart

NAME _____

WHAT MATERIALS MAKE THE BEST INSULATION?

Use this chart to record information for your experiment.

MATERIAL	TEMPERATURE START			TEMPERATURE END
1. None (control jar)				
2.				
3.				
4.				
5.				
6.				
7.				
8.				

NOTES