EFFICIENCY CONSERVATION

Measuring Energy Flows Through Glass

QUESTION

How do different types of glass affect the transmission of heat and light?

HYPOTHESIS

In your science notebook, make a prediction about which type of container will best keep water at its original temperature. (If possible, use an "If…then…because… format.)

MATERIALS

- Small pane of clear glass (single pane)
- Small pane of UV coated glass
- Small pane of glass (double pane)---either clear or UV coated
- Thermometers or temperature probes attached to cardboard
- Light meter
- Clip light with 75 watt incandescent bulb
- Meter stick or ruler
- Clay

PROCEDURE

1. Using the clay, construct a stand to support a pane of glass so that it will stand on edge.
2. Using the meter stick or ruler, place the clip light 25 cm in front of the pane of glass and your thermometer or temperature probe 25 cm behind the pane of glass.
3. Record the (room) temperature. Turn on the light and allow it to shine for 5 minutes. Again, record the temperature.
4. Replace the thermometer or temperature probe with a light meter at the 25 cm mark.. Measure the light intensity. Turn the light off and take another light intensity reading (background level).
5. Repeat steps 1-4 for additional types of glass to be tested and with no glass in place between the light source and the measuring device.
6. Record your data in a table in your science notebook. Graph the results for temperature and light transmission on two different graphs. Make a decision on what type of graph will best display each type of result.

CONCLUSION

1. Do you accept or reject your hypothesis? What were the results of your investigation? Use data to explain what happened. Why do you think this happened?
2. How does this demonstration relate to climate change?