Name _____ # ___ Period ___

http://www.glencoe.com/sites/common_assets/science/virtual_labs/PS06/PS06.html

Thermal Energy

How do the insulation properties of various materials compare?

Thermal energy travels as heat from a material at higher temperature to a material at lower temperature. Thermal energy can be transferred by conduction, convection, and radiation. Good conductors are materials that allow heat to move easily through them.

Good insulators, such as wood, glass, and fiberglass, do not allow heat to move easily through them. Buildings are insulated to keep them warm in winter and cool in summer. In cold weather, heat in a building flows to the outside, which is colder. Insulation reduces the amount of heat lost in this way.

In the Virtual Lab, you will make a hypothesis about which insulator best holds heat inside a house. You will then test each insulator and analyze your data to determine whether your hypothesis is correct. Use your Journal to record your procedure.

Objectives:

- Explain how insulation affects the transfer of energy.
- Compare the properties of insulating materials.
- Interpret a graph.

Procedure:

1. Decide which three of the materials you will use to insulate a house.
2. Make a hypothesis about which of the three insulation materials will best insulate a house in winter. State your hypothesis in your Journal Questions.
3. Test your hypothesis. Drag an insulation material to the wall between the inside and the outside of the house. Click the Go button. Record the 12 A.M. temperature in the appropriate column in the Table. Test the material by recording the indoor temperature, in degrees Celsius, every two hours, in the appropriate place in the Table. Click the Graph button to see a different representation of your data.
4. Test the two other insulation materials and record data in the same way.
5. Analyze the results of your experiment in your Journal Questions.
6. Determine whether your hypothesis is correct. Record your conclusions in your Journal Questions.

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* Please read page 665 in your text book

Journal Questions

IV _____

PV _____

1. Make a hypothesis. State which of the 3 insulating materials you think will keep the inside temperature of the house higher than the outside temperature for the longest period of time and explain why. (See back of graph/data table paper)

2. What are the results of your tests?

3. What conclusions can you draw about the 3 insulating materials?

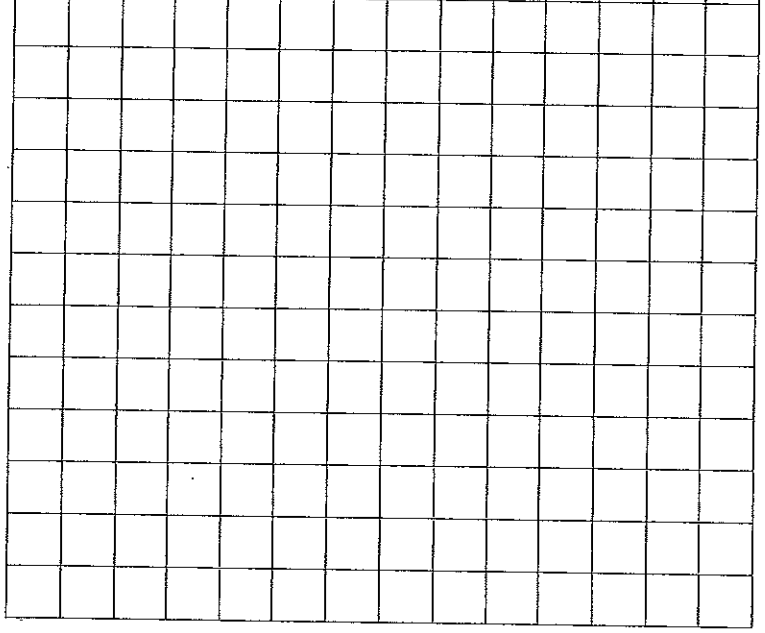
4. Was your hypothesis correct?

5. What is similar about the graphs?

6. How is this related to the outside temperature?

Name _____ #____ Period____ Date _____

	Brick	Fiberglass	Sawdust	Soil	Popcorn	Feathers
12:00 AM						
2:00 AM						
4:00 AM						
6:00 AM						
8:00 AM						
10:00 PM						
12:00 PM						
2:00 PM						
4:00 PM						
6:00 PM						
8:00 PM						
10:00 PM						



IV/DV

The IV changes/affects DV

IV → x-axis

DV → y-axis

Hypothesis

If IV then DV (w/ prediction)

Data Table & Graph Title

The effect of the IV on DV