

Activity

Solar Heating

Lab Preview

Directions: Answer these questions before you begin the Activity.

1. In this activity, you will wrap three boxes with paper. What colors of paper should you use?

2. For how long should you record the temperature of the boxes?

Energy from the Sun is a renewable resource and is, therefore, a good type of energy to use. You know that the Sun heats Earth, but can its energy also be harnessed to heat homes or businesses? What makes solar energy difficult to use?

What You'll Investigate

How does color affect the amount of heat absorbed from the Sun?

Materials

small cardboard boxes tape or glue watch with a second hand
black, white, and colored paper thermometer

Goals

- **Demonstrate** solar heating.
- **Compare** the effectiveness of heating items of different colors.
- **Graph** your results.

Procedure

1. Cover at least three small boxes with colored paper. The colors should include black and white as well as at least one other color.
2. Place the three boxes on a windowsill or other sunny spot and note the starting time.
3. In the table below, **measure and record** the temperature inside each box at 2-min intervals for at least 10 min.

Data and Observations

Temperature Due to Different Colors					
Color	Minute 2	Minute 4	Minute 6	Minute 8	Minute 10
Black					
White					

Activity (continued)**Conclude and Apply**

1. **Graph** your data in the space below using a line graph.

2. **Describe** what you can learn from your graph. What color heated up the most? The least?

3. **Explain** why the colored boxes heated at different rates.

4. Suppose you wanted to heat a tub of water using solar energy. Based on what you discovered in this activity, what color would you want the tub to be? Explain.

5. **Explain** why you might want to wear a white or light-colored shirt on a hot, sunny, summer day.

Communicating Your Data

Compare your results with those of other students in your class. Discuss any differences found in your graphs, particularly if different colors were used by different groups.
