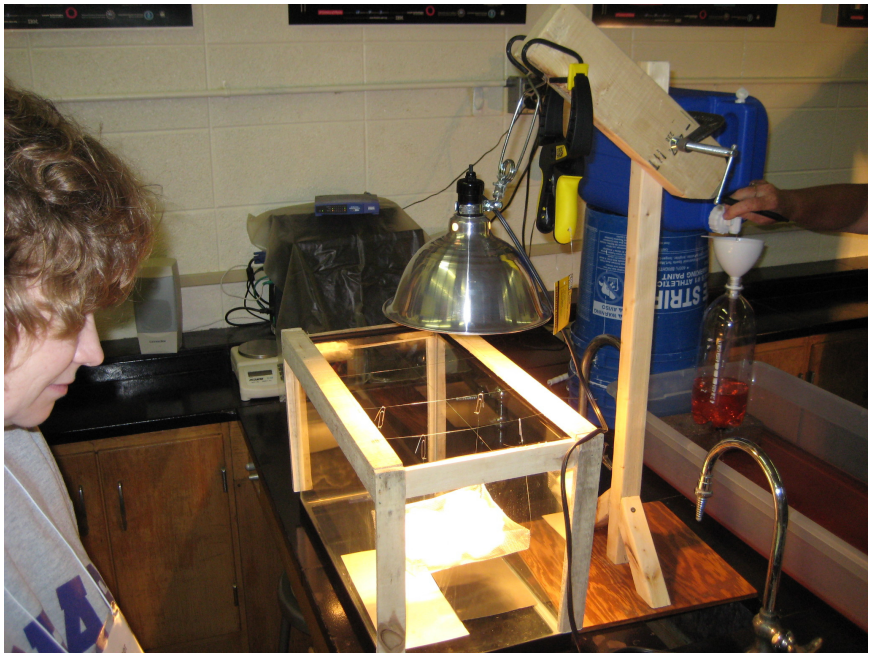
Lamp, cotton balls, and black and white paper

1. The lamp should already be on.
2. Make a prediction: without touching, rank the 4 surfaces (identified by the letters A, B, C, and D in the table below) from coldest (1) to warmest (4).
3. Pick up the remote thermometer and pull the trigger.
4. Eventually, it will show you the temperature of the object you are pointing at.
5. In the display, the units of the temperature are shown by a C or F at the far right. If yours is not in F (Fahrenheit), press the F button on the remote thermometer.
6. Press the red button to turn on the laser pointer. A triangle will appear along the upper edge of the display. The thermometer samples the temperature of an area centered on the laser dot. The size of the area sampled depends on how far away the thermometer is.
7. Measure the temperature of each of the 4 surfaces by holding the remote thermometer about 6 inches away.
8. Explain what you observe. Comment on the quality of your prediction.
9. Leave the lamp on for the next person.

A: black paper	C: black paper with cotton
B: white paper	D: white paper with cotton



Cloud Cover and Surface Temperature (Lamp, cotton balls, and black and white paper)

Summary – This activity investigates the relation between cloud cover and surface temperature for dark and light colored surfaces.

Materials Needed

- Aquarium fitted to suspend a basket of cotton balls
- A portion of wire screen folded to form a basket large enough to hold about 12 cotton balls
- A heat lamp and stand
- Black and white card stock (works better than construction paper)
- An infrared thermometer

Scientific Questions

What effect does cloud cover have on temperature for dark and light surfaces?

Possible Hypothesis

- Temperature will be warmest on the black surface away from the clouds
- Temperature will be warmest on the black surface under the clouds
- Temperature will be warmest on the white surface away from the clouds

Set up

- Place non-overlapping strips of black and white card stock side by side on the bottom of the aquarium
- Wire basket with cotton balls should be suspended so that half of each black and white strip is covered
- Place the heat lamp and stand such that it points equally onto the tops of the cotton balls and the exposed black and white strips of card stock

Notes

- Temperature measurements of the black and white card stock under the cotton balls may vary, especially with the length of time the heat lamp has been on.