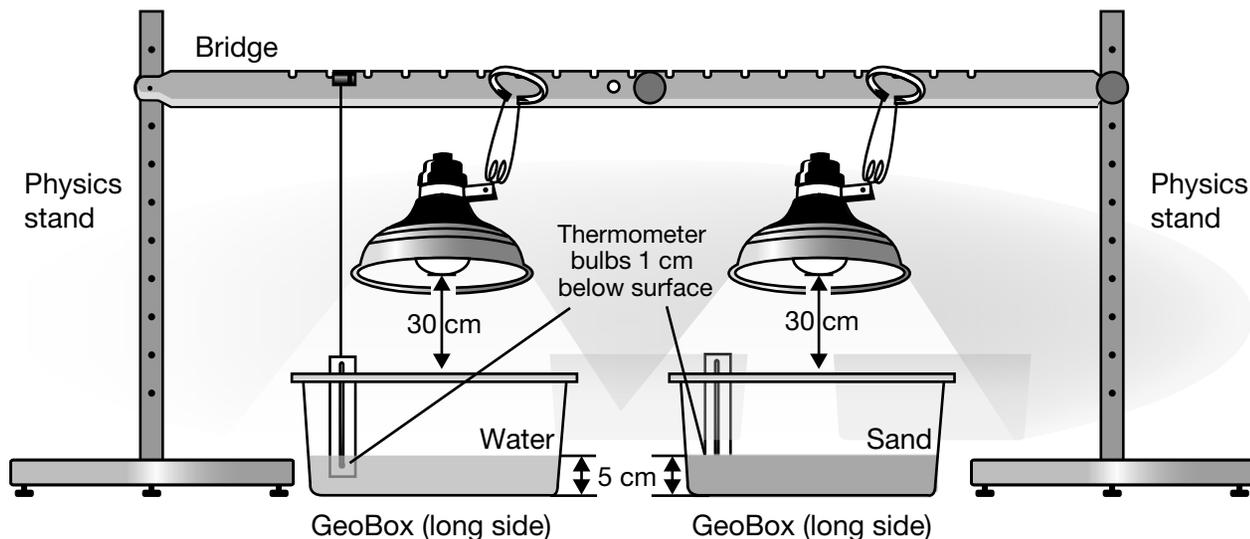


2 Setting up and doing the experiment

1. Set up your materials as shown above. Begin with the lights turned off.
2. Check the two GeoBoxes to see that one has water to a depth of 5 centimeters and one has sand to a depth of 5 centimeters. Each box should have its own light with the bottom of the bulb set at 30 centimeters directly above the top and center of the box.
3. Place one thermometer in the sand so that the thermometer bulb is about 1 centimeter below the surface. Using a piece of string, suspend the other thermometer so that the bulb is about 1 centimeter below the water surface.
4. Wait 3 minutes (the lights are off). Then record the starting temperature of the sand and water in the spaces provided in Table 1.
5. Turn the lights on at exactly the same time, and record the temperature from each thermometer after each minute up to 10 minutes. Record your data in Table 1.
6. Turn the lights off and continue to record temperatures each minute for an additional 10 minutes. Record your data in Table 1.

3 Collecting data

Table 1: Time and temperature

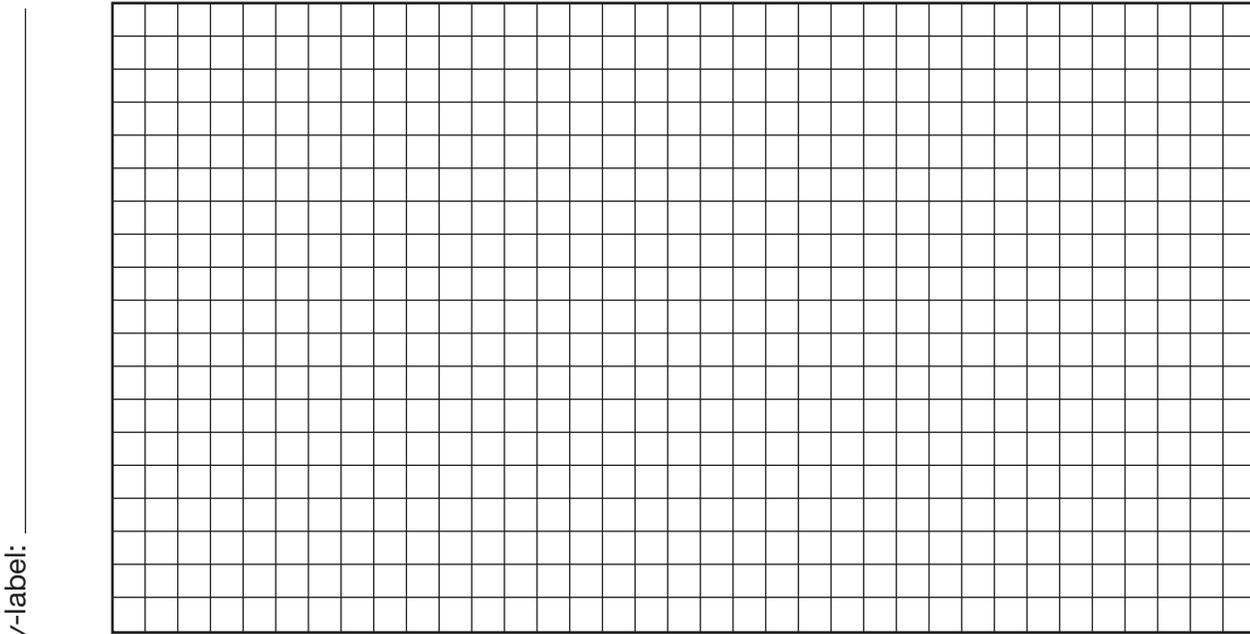
	Start	Heating (light turned on)									
Time (minutes)	0	1	2	3	4	5	6	7	8	9	10
Sand temp. (°C)											
Water temp. (°C)											

	Cooling (light turned off)									
Time (minutes)	11	12	13	14	15	16	17	18	19	20
Sand temp. (°C)										
Water temp. (°C)										

4 Graphing and analyzing your data

Graph the data from Table 1 using the x -axis for time and the y -axis for temperature. You will have two curves on the same graph, one for sand and the other for water. Don't forget to label your axes and curves, identify units, and title your graph.

Title: _____



x-label: _____

a. Which received more heat (radiation) from the lamp, the sand or the water, or did they receive the same?

b. Which material heated up quicker and experienced the greater increase in temperature over time?

c. Which material cooled down quicker and experienced the greater decrease in temperature over time?

✓ d. Use the term specific heat to explain your results.

✓ e. Based on your results, would a coastal or inland region have a smaller temperature range over a year? Why?

f. Examine a globe or map of the world and find out which of Earth's hemispheres has a higher proportion of water to land. Describe how that might influence temperature variations in the hemispheres.
