FLINN SCIENTIFIC

Name_____

Specific Heat Worksheet

Data Table 1

	Water	Black Sand	White Sand	Soil
a. Mass of Petri dish (grams)				
b. Mass of Petri dish and material (grams)				
c. Mass of material (grams) (line b – line a)				

Data Table 2

	Temperature (°C)			
Time (seconds)	**Water**	**Black Sand**	**White Sand**	**Soil**
0 (initial)				
30				
60				
90				
120				
150				
180				
210				
240				
270				
300				
330				
360				
390				
420				
450				
480				
510				
540				
570				
600				

Post-Lab Analysis

	Water	Black Sand	White Sand	Soil
Temperature change (°C) (ΔT) ($T_{600} - T_0$)				
Change in temperature per gram of material (ΔT/line *c* above)				

1. On a separate piece of paper, graph the results obtained when the materials were heated by plotting the time in seconds on the *x*-axis versus the temperature in Celsius on the *y*-axis for each material. Plot all four samples on the same graph. Use a different-shaped or a different-color data point for each material.
2. Which material used in this activity heated up the fastest? Explain.
3. Determine the maximum temperature change (ΔT) for each material by subtracting the initial temperature (T_0) from the final temperature measured after 600 seconds (T_{600}). Record the results in the table.
4. Calculate the change in temperature per gram of material by dividing ΔT by the mass of material used and enter the results in the table.
5. Using the graph, determine which material used in this activity has the highest specific heat. Explain.
6. Using the results of this lab, explain why there is a greater range of temperatures in the United States throughout the year in the Midwest compared to the coastal areas.