# FLINN Name\_ SCIENTIFIC **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)				
<i>c</i> . 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						

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## **Post-Lab Analysis**

	Water	Black Sand	White Sand	Soil
Temperature change (°C) ( $\Delta$ T) (T <sub>600</sub> – T <sub>0</sub> )				
Change in temperature per gram of material ( $\Delta$ T/line <i>c</i> 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 ( $\Delta T$ ) 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  $\Delta T$  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.