**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_**

**Heat Capacity of Water versus Sand**

**Materials:**

* 2 beakers (400 ml)
* Sand
* 2 thermometers
* Heat lamp
* Ring stand

**Procedure:**

1. Obtain two beakers and label them (A) and (B). In beaker (A) place 200 ml of water. In beaker (B) place 200 ml of sand.
2. Take the initial temperature of both beakers (A) and (B) and then remove the thermometer.
3. Place a heat lamp 30 cm above beakers (A) and (B). Heat for 5 minutes. Stir the water and sand then retake the temperature. **Do not rest the thermometers on the bottom of the beakers.** Record data.
4. Immediately place both beakers (A) and (B) into a freezer. Wait for 5 minutes, stir both beakers (A) and (B) and then retake their temperatures. **Do not rest the thermometers on the bottom of the beakers.** Record data.

**Data: Heat Capacity of Water and Sand**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Beaker** | **Initial Temp.** | **Temp. after 5 min. of heat** | **Temp. gain** | **Temperature after 5 min. of refrigeration** | **Temp. loss** |
| **Beaker (A)**  **Water** |  |  |  |  |  |
| **Beaker (B)**  **Sand** |  |  |  |  |  |

**Analysis:**

1. How do the temperatures of the water and sand compare? Which substance holds the heat the best? Which substance has the greatest heat variation?
2. How does this data correlate to our ocean vs crust temperatures on the planet? Use your data to support your answer.
3. The Earth is almost 75% water. Why is it so important for the planet to have such a large quantity of water? Use your data to support your answer.