

Heating Land vs. Water

Name: _____

BACKGROUND: In this lab, you will model the difference in the heating of land and water when it is subjected to a source of radiation. You will observe and record data, and explain the results of the experiment and how they relate to the influence of water on air temperatures near the Earth's surface.

PROBLEM: How do the heating of dry land, saturated land and water compare?

MATERIALS:

- Beakers
- Dry Sand
- Tap Water
- Heating Lamp
- Thermometers

SKILLS:

- Graphing
- Observing
- Measuring
- Analyzing Data

PROCEDURES:

1. Fill one beaker with dry sand, one with wet sand and another with water.
2. Place a thermometer in each beaker, trying to suspend the bulb in the material.
3. Record the **INITIAL** temperature of each in the data section.
4. Turn on the heat lamp and make sure that all beakers are centered under the lamp.
5. Record the temperature at 1 minute intervals.
6. When you reach the 10 minute mark, turn off the lamp.
7. Continue to take temperature readings until you reach 15 minutes.
8. *Do not touch the lamp, light bulb, or beakers at anytime during the lab, as they may be hot!*



DATA: On back of lab sheet

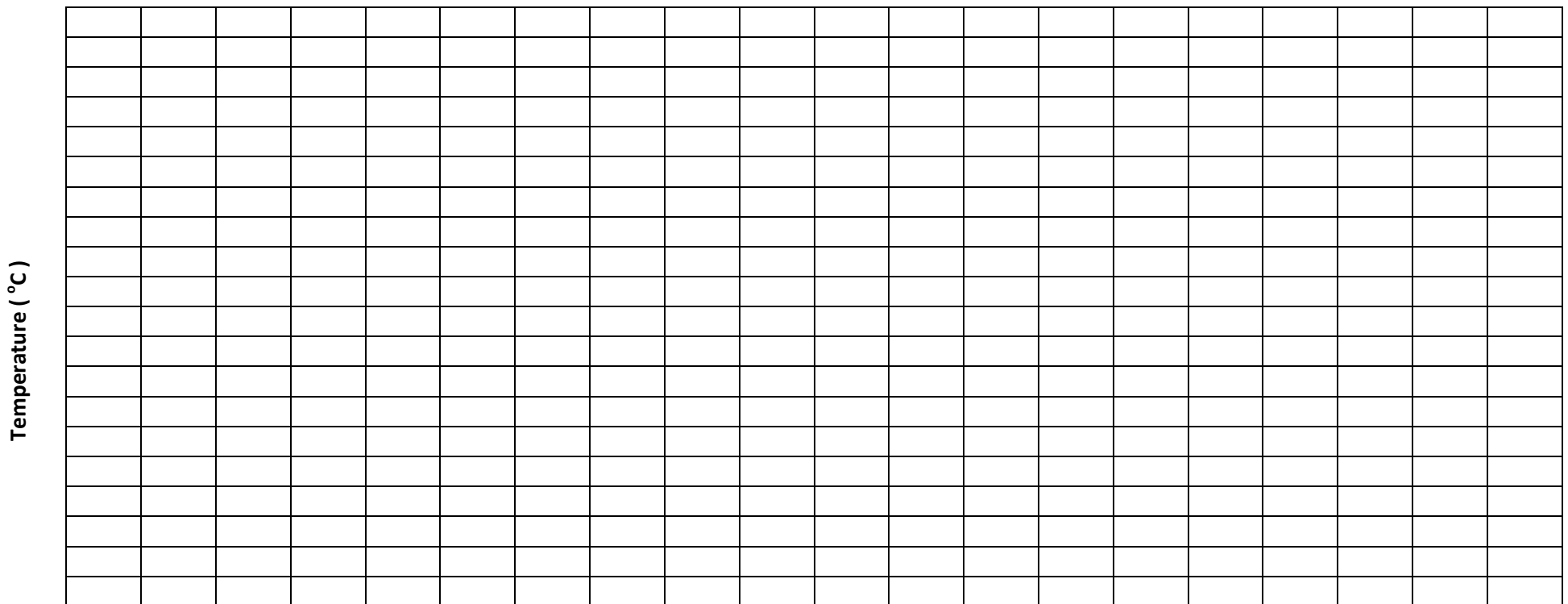
CONCLUSION/ANALYSIS:

1. Which of the three beakers heated the **fastest**? Explain why.
2. Which of the three beakers reached the **highest** temperature? Explain why.
3. Which of the three beakers retained heat the **longest**? Explain why.
4. Discuss the fluctuations in temperature that you would expect (over the course of 24 hours) in a **desert**.
5. Discuss the fluctuations in temperature that you would expect (over the course of 24 hours) in a **forest**.
6. Discuss the fluctuations in temperature that you would expect (over the course of 24 hours) near the **ocean**.
7. Which of the three (questions 4, 5, 6) would show the **greatest** fluctuation in temperature? Explain why.
8. Which of the three (questions 4, 5, 6) would show the **least** fluctuation in temperature? Explain why.

Data:

Material	Temp (°C)	1 min	2 min	3 min	4 min	5 min	6 min	7 min	8 min	9 min	10 min	11 min	12 min	13 min	14 min	15 min
Dry Sand																
Wet Sand																
Water																

Land vs. Water Heating Graph



Time (minutes)

- Dry Sand
- Wet Sand
- Water