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# Water or Soil?

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## Background

Have you ever gone swimming on a hot summer day? The water feels cool and refreshing while the sand at the beach is hot. But at night, just the opposite is true. The water seems warm at night while the air is cool. Why is this? Let's see if we can find out!

## Problem Statement

Which warms and cools faster, land or water?

## Hypothesis

Formulate your hypothesis based on the problem statement:

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## Equipment

Casio EA100 Data Analyzer  
2 temperature probes  
Casio CFX 9850G Color Graphing calculator  
2 plastic boxes, one half-filled with water, the other half-filled with soil  
a ringstand  
a light to mount on the ringstand  
a metric ruler



## Procedure

1. Into the EA100 plug one temperature probe into Channel One and the other into Channel Two. Turn on the EA100 and press SHIFT then MODE.
2. Select 60 sec by pushing the datalog key.
3. Press TRIGGER button and select 20 by pressing datalog key
4. Press TRIGGER again and use datalog to select "1"
5. Press TRIGGER again and EA100 will display "READY".
6. Insert one probe into the dry soil and the other into the water.
7. Turn the overhead light on.
8. Press the TRIGGER button to begin recording data.
9. After 10 minutes, turn off the light and continue recording until display reads "DONE"
10. Design a data table for this part of your experiment. Your table should include columns for each of your thermometers as well as a column for temperature observation times.
11. Make a line graph of the results of your experiment using colored pencils.

## Data

1. During the day (light on) what was the highest temperature reached by the water? \_\_\_\_\_

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2. By the soil?

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3. At night (light off) what was the lowest temperature reached by the water?

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4. By the soil?

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## Results

State the interpretation of your data.

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## **Conclusions**

Relate your conclusions to your original hypothesis.

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