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Fossil Occurrence and the Age of Rocks

**Problem**

How do the effects of radiation in coastal areas, forest areas, and desert areas compare?

**Procedure**

1. Write a hypothesis about whether radiation has the same impacts on coastal areas, forest areas, and desert areas.
2. Use the Heat Absorption Gizmo to model the temperature changes of different materials due to equal amounts of radiation. You will run the experiment with water (modeling coastal areas), wood (modeling forest areas), and black brick (modeling desert areas). Make sure that the flash light (which models the sun) is directly above and shines straight down, creating a light angle of 90°.
3. Graph the data you collected. Plot the temperatures for the water, wood, and black brick against time on the same graph. Be careful to check which interval contains a data point. For example, the time t = 1 belongs to 0.5 < t ≤ 1 and not to 1 < t ≤ 1.5. When you are graphing, use the midpoints of time intervals as the data points. For example, use 0.75 as the data point for the interval 0.5 < t ≤ 1. In your spreadsheet, complete the following steps to create your graph.

Hypothesis:

Solar radiation has the same effect on all material.

**Analysis and Conclusions**

1. Use water to represent coastal areas, wood to represent forest areas, and black brick to represent desert areas. Analyze the graph you have just created. How does the changing temperature differ for the three areas?

The water changes temperature slower than the black brick and the wood is in the middle.

1. Locate Cullowhee, NC, Albuquerque, NM, and Los Angeles, CA on a map. Based on your data, which city would you expect to have the largest annual temperature range? Which city would you expect to have the least annual temperature range? Explain your answer.

The Los Angleles area would have the smallest temperature range being next to water and Albuquerque being more like a desert would heat more similarly to the brick and would have a greater temperature range. And then Cullowhee is more treed and would be more in the middle of the two.

1. Write a lab report explaining your data, analysis, and conclusions. Be sure to include all of the components identified in the Science Lab Grading rubric.

See spreadsheet.