

Herschel Experiment Worksheet

DATA / OBSERVATIONS

Record the temperature of the three thermometers in the shade.

	Thermometer #1 (blue)	Thermometer #2 (yellow)	Thermometer #3 (just beyond red)
Temperature			

Place the thermometers in the box in the spectrum such that one of the bulbs is in the blue region, another is in the yellow region, and the third is just beyond the (visible) red region. Now record the temperatures in each of the three regions of the spectrum: “blue”, “yellow” and “just beyond red” after 1, 2, 3, 4 and 5 minutes.

	Thermometer #1 (blue)	Thermometer #2 (yellow)	Thermometer #3 (just beyond red)
Temperature at 1 min			
Temperature at 2 mins			
Temperature at 3 mins			
Temperature at 4 mins			
Temperature at 5 mins			

TEMPERATURE DIFFERENCES

Calculate the differences between the final temperatures measured in the spectrum and the temperatures measured in the shade for the three thermometers.

	Thermometer #1 (blue)	Thermometer #2 (yellow)	Thermometer #3 (just beyond red)
Temperature in the spectrum (T_{spectrum})			
Temperature in the shade (T_{shade})			
Difference ($T_{\text{spectrum}} - T_{\text{shade}}$)			

Calculate the differences between the **final** temperatures in each part of the spectrum

$T_{\text{yellow}} - T_{\text{blue}}$	$T_{\text{just beyond red}} - T_{\text{yellow}}$	$T_{\text{just beyond red}} - T_{\text{blue}}$

CLASS AVERAGE TEMPERATURES

Compute the average **final** temperature measured by the class in each part of the spectrum.

	Sum of all class temperatures (T_{sum})	Total Number of Observations (N)	Class Average (T_{sum} / N)
Yellow			
Blue			
Just Beyond Red			

Compute the average differences measured by the class between the **final** temperatures in the spectrum and the shade temperatures for the three thermometers.

	Sum of class temperature differences (T_{sum})	Total Number of Observations (N)	Class Average (T_{sum} / N)
$T_{\text{yellow}} - T_{\text{blue}}$			
$T_{\text{just beyond red}} - T_{\text{yellow}}$			
$T_{\text{just beyond red}} - T_{\text{blue}}$			

QUESTIONS

What did you notice about your temperature readings?

Did you see any trends?

Where was the highest temperature?

What do you think exists just beyond the red part of the spectrum?

Discuss any other observations or problems.