

Physics 115 – Section 0101

Homework #5

Due March 25, 2008

Essay 1, 10 points

In class, we compared temperature as measured with a thermometer with the sensations of “hot” and “cold”, as measured through the sense of touch. Are these the same things? How are they related? Give examples to support what you say from the experiment we did in class, and give at least 2 examples from “every day life” (ie, from observations from your life outside the classroom) that support your conclusions as well.

Essay 2, 10 points

In class, we took a bag full of room temperature water and put it into a cup of hot water. We observed the temperatures of the water in the bag and the water in the cup versus time. What did we learn by doing the experiment? Describe in detail how the observations from the experiment support your conclusions about what we learned.

Essay 3, 10 points

Describe three situations in day-to-day like that are similar to the experiment discussed in Essay 2. How do these situations show the same features as we saw in the laboratory experiment?

Essay 4 10 points

In the experiment described in essay 2, the hot water is at 60°C and the cold water is at 10°C . You begin the experiment by pulling out the two probes from water at some initial temperature (T_i) and putting one probe in the hot water and the other one in the cold water and start observations “immediately” and wait till the mixture comes to equilibrium. Draw the graphs of temperature (Y axis) Vs. time (X axis) if the initial temperature “ T_i ” is

- a) 80°C
- b) 40°C
- c) 0°C

Problem 1, 10 points

You mix 50 g of water at 55 degrees Celsius with 100 g of water at 22 degrees Celsius. What is the final temperature?

Problem 2, 10 points

How much 70 degree water should you add to 50 g of 24 degree Celsius water to make it end up at 35 degrees Celsius?