Freezing and melting of water.

Environment, Water

Freezing and Melting of Water. 10/24 Richard Landolfi Due Date: 11/1 Purpose the purpose of this lab is to determine the freezing and melting temperature of water. Freezing temperature, the temperature at which a substance turns from a liquid to a solid, and melting temperature, the temperature at which a substance turns from a solid to a liquid. Hypothesis If the water is at a low temperature then it will freeze. If it is at a high temperature then it will melt. Materials 1. Computer 2. Vernier Computer Interface Logger Pro Temperature probe Ring Stand Utility Clamp Test Tube 400ml Beaker water 10ml graduated cylinder ice salt stirring rod Safety considerations During this lab you will need to have googles on throughout the whole lab. I will also be very careful when handling glass lab equipment such as a beaker. when moving the glass lab equipment one should handle the equipment with both hands. Also no horseplay will be allowed during the lab or around the lab equipment. Also it is important to use common sense, determine what you think is safe from unsafe. Procedure Part: Freezing One of the many steps towards the experiments completion was to collect all of the lab equipment listed above in the materials list. Next the program was opened for the lab. After water was put in a 400ml beaker 1/3 full with ice, then there was a 100ml of water added. Then 5ml of water was put in a test tube and the utility clamp was used to fasten the test tube to the ring stand. Once done a temperature probe was placed into the water inside the test tube. After the probe was connected to the computer interface. The computer was prepared for data collection by opening the file “ 02 Freeze Melt Water" from the chemistry vernier folder of Logger Pro. After all of this had been completed the collect button was clicked so that data collection

could start. Then the test the test tube was lowered into the ice-water bath. After lowering the test tube 5 spoons of salt was added to the beaker, the salt was stirred continuously until it was dissolved. The probe was moved during the first 10 minutes. More ice was added as the other ice melted in the beaker. After the flat part of the curve was analyzed to determine the freezing temperature of water. Part II Melting The first step was to click to begin data collection, after that the test was raised out of the water and fastened above the ice-water bath. Next the ice water was disposed of, after 12 minutes had passed the test tube was lowered into the warm-water bath. After 15 minutes the data collection had stopped. Next the flat part of the graph was analyzed to determine the melting temperature of water. The last thing done was the printing of the graph of temperature vs. time. Data to be collected Freezing temperature of water. Melting temperature of water. The mean temperature value Data and observations Freezing temperature of water sample- . 6995 Celsius Melting temperature of water sample- . 6305 Celsius ï¿¼ Discussion In this experiment i found that the more salt you added the faster and lower the temperature would good. I also found that it is important to keep the right amount of ice in your beaker at all time and to keep fresh ice in the beaker. My lab partners and i mad the mistake of not reading the directions about the computer logging thoroughly and made some minor mistakes that may have caused our results not be accurate. We started the data collection a little late. In the future i now know that i need to read the lab over and take my time. My data showed that the freezing temperature and the melting temperature were very close. The graph shows that the melting temperature spikes but the freezing temperature steadily is

more steady. Conclusion In conclusion the purpose of this lab is to determine the freezing and melting temperature of water. Freezing temperature, the temperature at which a substance turns from a liquid to a solid, and melting temperature, the temperature at which a substance turns from a solid to a liquid. IN this lab all of the objectives were met despite a slight error in the data collection. We collected temperature data during the freezing and melting of water. We analyzed graphs to determine the freezing and melting temperature of water. I discovered that if you add salt to ice and water it helps it freeze faster. My data confirms my original my original hypothesis that if the temperature is low the water will freeze faster. My data confirms my original hypothesis that if the temperature is low the water will freeze and if the temperature is high the water will not freeze. After the lab a question i though of was why the salt helped the water freeze because some salts are used to melt ice.