Scientifc method lab 1

3/22/2013 Lab 1- The scientific method In this lab I am learning about the steps of the scientific method and how it can be applied to daily life. In my first exercise I analyzed data presented to me in a table (table 2) on fish population in relation to the amount of dissolved oxygen (ppm) in the water. The patterns indicate that when more dissolved oxygen (ppm) is present in the water, the number of fish observed increases. In developing a hypothesis for this theory, I have decided that if the amount of dissolved oxygen (ppm) is added to the water, then more fish we be observed, than water without adding dissolved oxygen to the water.

My approach would be to devise an experiment in which the amount of dissolved oxygen (ppm) can be changed in a controlled manner, then measure and record the changes. My independent variable would be the amount of dissolved oxygen (ppm) in the water, while the dependent variable would be the amount of fish present. The control I would use in this specific experiment would be the temperature of the water. I would graph this data using a bar graph because the results I am comparing are not representative in a continuous series, and doesn't include dates, or days that samples are taken.

The results are independent from each other. When presenting the data from table 2: Water Quality vs. fish Population, I would use a bar graph using the number of fish observed on the horizontal, and the amount of dissolved water (ppm) vertical. Such as in the graph presented in figure 4: Top speed for cars. The data presented in my graph would show that when higher amounts of dissolved oxygen (ppm) are present, the higher the quantities of fish are observed. In exercise 2 , I have determined that number 1, 5 and 10

are testable, while 2, 3, 4, 6, 7, and 9 are not testable. . When a plant is placed on a window sill, it grows faster than when it is placed on a coffee table in the middle of the living room. Hypothesis: If the plant is placed on the window sill and getting more sunlight, then I will grow faster than the plant placed on the coffee table in the middle of the living room where it receives less sunlight. Null Hypothesis: If I place the plant on the window sill, it will grow at the same rate as the plant on the coffee table. My approach would be to create an experiment where the amount of sunlight can be changed in a ontrolled manner, then measure and record the results. The independent variable would be the amount of sunlight the plants are exposed to, while the dependent variable would be the amount of growth of the plants. My controls could be the amount of water given to each plant, the humidity, or the time of day, to name a few. I would collect my data by recording the amount of time each plant is exposed to sunlight, and measuring the amount of growth each day. The data would then be presented using a line graph, representing growth in height, by day, Day 1, day 2, day 3 and day 4. separate lines will represent each plant. One line with sun light and another line without sunlight. My data will then be taken and analyzed from the tests, documentation and recordings done daily. Then I would use the data to support or nullify the hypothesis. 5. When Sally eats healthy foods and exercises regularly, her blood pressure is lower than when she does not exercise and eats fatty foods. Hypothesis: If Sally eats healthy foods and exercises, then her blood pressure will be lower than if she does not exercise and eats fatty foods.

Null hypothesis: If Sally eats healthy foods and exercises her blood pressure will be the same as if she does not exercise and eats fatty foods. My approach would be to record blood pressures for one week while not exercising and eating fatty foods. Then I would record blood pressures the following week while exercising and eating healthyfood. The dependent variable will be blood pressure while the independent variable will be exercise, what kind of food eaten such as healthy versus fatty.

The control variable would be the intensity of exercise and the time of day eating the foods. I would collect my data by keeping a log of daily blood pressures. Also I would log the amount of exercise and what food is being eaten. In presenting the data I would use a graph showing the blood pressure trends. Analyzing the data with given results of the tests, and other support or nullify the hypothesis. 10. Ice cream melts faster on a warm summer day than on a cold winter day. Hypothesis: If it is a warm summer day then ice cream will melt faster than it would on a cold winter day.

Null hypothesis: If ice cream melts on a warm summer day, then it will melt just as fast on a cold winter day. My approach would be to record the amount of time it takes for ice cream to melt on both warm summer days and on cold winter days. The dependent variable would be the amount of time it takes for ice cream to melt, while the independent variable would be the type of day, warm summer day, or cold winter day. The control would be the amount of ice cream and the type of ice cream.

I would collect my data by recording the type of day and the amount of time it takes for the ice cream to melt. I would then present it by using a bar graph to compare. Analyzing the data is achieved by using all the data

collected and either support or nullify the hypothesis. An example of using the scientific method to an everyday problem would besaving moneyon a utility bill. Unplugging all unused appliances and turning off lights when not in use to cut back on the bill. I could test this by using the scientific method and performing experiments to support or nullify my hypothesis.