**Ch. P - Statistics**

**Opening Activity: The Sexual Discrimination Problem:**

An airline has just finished training 25 people – 15 male and 10 female – to become captains. Unfortunately, only eight captain positions are available right now. Airline managers announce that they will use a lottery to determine which pilots will fill the available positions. The names of all 25 pilots will be written on identical slips of paper, placed in a hat, mixed thoroughly, and drawn out one at a time until all eight captains have been identified.

 A day later, managers announce the results of the lottery. Of the 8 captains chosen, 5 were female and 3 are male. Some of the male pilots who weren’t selected suspect that the lottery was not carried out fairly. Do these results provide *convincing* evidence of discrimination?

Def: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the science of collecting, analyzing, and drawing conclusions from data. Statistics is also the art of distilling meaning from data.

Def: The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the entire collection of individuals or objects about which information is desired.

Def: When you study an entire population, it is called a \_\_\_\_\_\_\_\_\_\_\_\_.

Def: A \_\_\_\_\_\_\_\_\_\_\_\_\_ is a subset of the population, selected for study in some prescribed manner.

Def: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ statistics is the branch of statistics that includes methods for summarizing data.

Def: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ statistics is the branch of statistics which involves generalizing about a population based on information from a sample of that population. Statistical \_\_\_\_\_\_\_\_\_\_\_ is the process of drawing these generalizations.

**Types of Data**

Def: A \_\_\_\_\_\_\_\_\_\_\_\_ is any characteristic whose value may change from one individual to another.

Def: \_\_\_\_\_\_\_\_ results from making observations on one or more variables. It is important to remember that a set of information is not data unless it comes in a context.

Def: A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ shows the values a variable can take and how often it takes those values.

Def: A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ data set consists of observations of a single variable.

Def: A \_\_\_\_\_\_\_\_\_\_\_\_\_\_ data set consists of observations of 2 variables for each member of the sample.

Def: a variable is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (or qualitative) if the possible responses fall into categories.

Def: a variable is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (or quantitative) if the possible responses are numerical in nature.

* Note: quantitative variables usually include units, which tell how the variable was measured. For example, if you are told the weight of an animal is 12, you wouldn’t know very much until you were informed of the unit (e.g. tons or milligrams).
* Note: observations of categorical data are usually recorded with words (e.g. Honda, brown), but can also be recorded with numbers. Area codes are an example. Living in the 626 area code isn’t necessarily better than living in the 310 area code, even though it is higher numerically. In cases like these, the numbers are just labels for different categories.
* Note: Many variables can be used as a categorical variable or a quantitative variable. For example, scores on the STAR test are recorded numerically, but also placed into categories such as “proficient” and “basic”.

Def: numerical data is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ if the possible values are isolated points on the number line.

Def: numerical data is \_\_\_\_\_\_\_\_\_\_\_ if the possible values form an entire interval on the number line.

NOTE: In general, you \_\_\_\_\_\_\_\_\_\_\_\_ continuous variables and \_\_\_\_\_\_\_\_\_\_ discrete variables.

For each of the following variables, determine if they are categorical or numerical. If it’s numerical, determine if it is continuous or discrete:

 -length of a pencil -type of pencil -number of pencils in a box

 -color of pants -number of pockets -length of inseam

 -subject of book -number of pages -area of a page