STA 6934 – Fall 2002 – Quiz 1

Print Name: **SSN:**

1) A study is conducted to determine whether silicone breast implants increase the risk of breast cancer. A group of 500 middle aged women who recently obtained implants, and a similar group (demographically) of 500 women without implants are selected. The women are followed for 10 years, and are asked at follow-up if they have developed breast cancer. None of the women had breast cancer prior to the study. **Circle the correct answer**.

a) This is an example of what type of study design?

i) Case-Control Study
ii) Cohort Study
iii) Randomized Clinical Trial
iv) Cross-Sectional Study

b) The **I**ndependent and **D**ependent variables are:

i) **I**: The 1000 women **D:** Implant status
ii) **I**: Breast cancer status **D:** Implant status
iii) **I**: Implant status **D:** Breast cancer status
iv) **I**: The 1000 women **D:** Breast cancer status

2) For each of the following outcomes, is it best defined as **N**ominal, **O**rdinal, **C**ontinuous, or **D**iscrete?

a) Change in diastolic blood pressure after 6 weeks of treatment. _____

b) Number of children in a rural county coming down with mumps in a school year. _____

c) A rating of quality of children's health care in 3rd world countries from very poor to very good. _____

d) The nationality of a patient suffering from a particular disease. _____

e) The duration of erection for a male subject receiving a 50 mg dose Seldanafil. _____

3) A diagnostic test for a particular sexually transmitted disease (STD) has a sensitivity of 95% and a specificity of 90%. On a large singles cruise ship, 200 passengers have the STD, 800 do not. All passengers are given the diagnostic test and given a garnet badge (test positive) or an orange badge (test negative).

a) How many people would you expect to **correctly** be wearing a **garnet** badge?_____

b) How many people would you expect to **correctly** be wearing an **orange** badge?_____

c) How many people would you expect to **incorrectly** be wearing a **garnet** badge?_____

d) How many people would you expect to **incorrectly** be wearing an **orange** badge?_____

e) Given you are paired with a date with an **orange** badge, what is the probability (s)he **does not** have the STD? _____

f) Given you are paired with a date with a **garnet** badge, what is the probability (s)he **does** have the STD?

_____

4) A sample of $n = 6$ adults who have been taking a test drug for weight loss are observed after 5 weeks to have the following weight losses: 10, 5, 1, 15, and 9 pounds, respectively. Give the mean, median, and standard deviation of the weight losses.

5) A Swedish randomized clinical trial involved subjects receiving either aspirin or placebo. Of the 676 who received aspirin, 18 suffered death due to myocardial infarction (MI)within 3 years. Among the 684 receiving placebo, 28 died from MI. Complete the following table by showing how many subjects fall in each cell. Give the sample proportions of deaths due to MI for each treatment group.

	MI Death	No MI Death
Aspirin		
Placebo		

$\hat{\pi}_{\text{Aspirin}} =$ _____

$\hat{\pi}_{\text{Placebo}} =$ _____

6) Among a large population of health professionals (excluding physicians) in a city, salaries are approximately normal with a mean of \$80,000 and a standard deviation of \$20,000.

a) What proportion of health professional have salaries above \$100,000?

b) What proportion make below \$50,000?

c) Give a range of salaries that includes the middle 95% of health professionals in this city.

d) If we took a random sample of $n = 100$ health professionals from this population, the probability the sample mean falls in the range (A, B) is approximately .95. Assuming A and B are equal distance from the mean, give A and B.

$A =$ _____

$B =$ _____