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Exam 1

PS217, Fall 1996

OK, here's the drill. Read each question carefully and answer it completely. Show all your work! Keep your eyes firmly fixed on your own exam. The point value of each question is indicated on the question. I think of a point as a minute, so a 5-point question should take you 5 minutes (or less). If you find yourself working for 10 minutes on a 5-point question, you're digging a hole for yourself. Good Luck!! [And Good Luck to the Women's Soccer Team this weekend!]

1. Below is a sample. For the data from this sample, compute the mean, median, mode, variance and standard deviation. [10 pts]

1
4
6
5
3
5
2
5
3

2. Test the hypothesis that the sample you see in the first question was drawn from a normal population with $\mu = 5$ and $\sigma = 2$. [10 pts]

3. You all remember the OJ Simpson trial, right? OK, tell me in words what a Type I and a Type II error would be for that trial, which tested the H_0 that Simpson was not guilty. In this context, which error would be more serious? Why? In typical psychological research, we set $\alpha = .05$. What level do you think α is set to for most criminal trials in this country? Why? [10 pts]

4. The average age for registered voters in the county is $\mu = 39.7$ years with $\sigma = 11.8$. The distribution of ages is approximately normal. During a recent jury trial in the county courthouse, a statistician noted that the average age for the 12 jurors was $\bar{X} = 50.4$ years. [10 pts]

a. How likely is it to obtain a jury this old or older by chance?

b. Is it reasonable to conclude that this jury is not a random sample of registered voters?

5. As we saw in class, gestation periods are normally distributed with $\mu = 268$ days and $\sigma = 16$ days. Suppose that 16 women became pregnant. How likely is it that the mean gestation period for this sample would fall between 276 and 284 days? [5 pts]

6. A normal distribution has a mean of 120 and a standard deviation of 20. For this distribution, [5 pts]

a. What score separates the top 40% (highest scores) from the rest?

b. Scores between 60 and 100 make up what percentage of the distribution?

c. What range of scores would form the middle 60% of this distribution?