Quiz Questions 6 (Group) for Statistics 213
Probability and Decision Theory - Spring 1999
Material Covered: Sections 8.4,8.5 of Workbook and text
For: 16th April

This is a 15 minute quiz, worth 6% and marked out of 6 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an $8\frac{1}{2}$ by 11 inch piece of paper may be used as a reference during this quiz. A calculator and appropriate statistical tables may also be used. No other aids are permitted.

Name 1 (please print): _____.
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Name 2 (please print): _____.
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Name 3 (please print): _____.
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Name 4 (please print): _____.
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1. It was found in 1979 the brain weights of a certain population of adult chimps follow approximately a normal distribution with mean 270 gm and standard deviation 40 gm.

(a) [1] The fraction of adult chimps with brains weighing between 250 gm and 300 gm is:

(a) 0.383 (b) 0.465 (c) 0.547 (d) 0.651 (e) 0.782

(b) [1] A brain weight of 240 gm, expressed as a percentile, is:

(a) 12th (b) 23rd (c) 35th (d) 41st (e) 45th

2. A lawyer, who presently represents 14 defendants, estimates she wins 27% of her cases. Assume this problem obeys the conditions of a binomial experiment.

(a) [1] The (exact) probability of winning 2 or 3 trials, using the binomial, is _____.

(b) [1] The number of trials she expects to win, is $\mu = np =$ _____.

(c) [1] The binomial random variable here is approximately $N(\mu, \sigma^2)$ where $\sigma =$ _____.

(d) [1] The normal approximation to the exact probability of winning 2 or 3 trials is _____.

1. It was found in 1979 the brain weights of a certain population of adult chimps follow approximately a normal distribution with mean 270 gm and standard deviation 40 gm.

(a) [1] The fraction of adult chimps with brains weighing between 250 gm and 300 gm is: (b) 0.465

(b) [1] A brain weight of 240 gm, expressed as a percentile, is (b) 23rd

2. A lawyer, who presently represents 14 defendants, estimates she wins 27% of her cases. Assume this problem obeys the conditions of a binomial experiment.

(a) [1] The (exact) probability of winning 2 or 3 trials, using the binomial, is **0.377** (using binomial(14,0.27))

(b) [1] The number of trials she expects to win, is $\mu = np =$ **3.78**

(c) [1] The binomial random variable here is approximately $N(\mu, \sigma^2)$ where $\sigma =$ **1.67** (using $\sqrt{np(1-p)}$)

(d) [1] The normal approximation to the exact probability of winning 2 or 3 trials is $\boldsymbol{P(1.5 \leq X \leq 3.5) \approx 0.348}$