STAT 614 HOMEWORK 5 CHAPTER 4

You are to work on and submit for credit problems 1,2,3, 4.51, and 4.52)

1)

Let y = the number of sports that a person can play. For residents of county A, y has a probability distribution of P(0) = 0.05, P(1) = 0.85, P(2) = 0.10.

a) Is y a discrete variable or a continuous variable?

b) Construct a table showing the probability distribution of y.

c) Find the probability that a resident of county A does not play more than one sport.

d) Find the mean of this probability distribution

2)

On the midterm exam in mathematics, an instructor always gives a grade of A to students who score between 90 and 95. One year the scores have approximately a normal distribution with a mean of 83 and a standard deviation of 7. About what proportion of the students get an A?

3)

Five students; the females (Angeline and Belle) and the males (Charlie, David and Edmond) are equally qualified for admission to medical school, ahead of other applicants. However all but two positions have been filled for entering the class. The admissions committee can admit only two more students, so it decides to randomly select two of these five candidates. For this strategy, let y = number of males admitted. Using the first letter of the name to denote a student, the different combinations that can be admitted are (A,B), (A,C), (A,D), (A,E), (B,C), (B,D), (B,E), ((C,D), (C,E), and (D,E)

a) Construct the probability distribution of y.

b) Construct the Sampling Distribution of the sample proportion of the students selected who are male.

Select the correct response(s) in multiple-choice questions 4.51—4.52. There may be more than one correct answer.

4.51. The standard error of a statistic describes

(a) The standard deviation of the sampling distribution of that statistic.

(b) The standard deviation of the sample data.

(c) How close that statistic is likely to fall to the parameter that it estimates.

(d) The variability in the values of the statistic for repeated random samples of size n.

(e) The error that occurs due to nonresponse and measurement errors.

4.52. The Central Limit Theorem implies that

(a) All variables have bell-shaped sample data distributions if a random sample contains at least about 30 observations.

(b) Population distributions are normal whenever the population size is large.

(c) For large random samples, the sampling distribution of $\bar{y}$ is approximately normal, regardless of the shape of the population distribution.

(d) The sampling distribution looks more like the population distribution as the sample size increases.