Test II

MAT 203, Elementary Statistics, Term IV   Dowman P Varn, Instructor
Coker College   Test Date: 09 April 2009

Please complete the following problems. You may use a $4'' \times 6''$ formula sheet, a calculator and paper and pencil, but you may not use your text or any other resources. You must work alone. Please write legibly. **Please clearly indicate how you do each problem.** This test counts 20% toward your final grade. Good Luck!

1. Tonya shuffles a standard deck of 52 cards. She turns over the the top two cards and finds that they are the K♣ and the 8♠. (a) What is the likelihood that the third card in the deck is the 5♥? (b) What is the likelihood instead that the third card is either an Ace or a ♠?

2. Calculate $_8C_3$.

3. A car towing service company averages two calls per hour. Use the Poisson distribution to find the probability that in a randomly selected hour the number of calls is three.

4. Paula's Pizza Parlour makes pizzas with none, one, two or at most three toppings. Table 1 gives the average number of pizzas made in each month with each number of toppings. (a) Draw the probability distribution, and (b) find the probability that a randomly chosen pizza has two or more toppings.

5. What is the area under the standard normal curve to the left of $z = -0.4$?

6. Assume that the salaries of elementary school teachers are normally distributed with a mean of \$36,000 and a standard deviation of \$4000. What salary separates the top 10% of teachers from the rest? (ie, What salary represents the 90th percentile?)

7. The mean age of employees at a large corporation is 51.5 years, with a standard deviation of 4.0 years. Random samples of size 64 are drawn from this population and the mean of each sample is determined. Use the Central Limit Theorem to find: (a) the mean of the means of the sample distributions, and (b) the standard error of the mean.

8. For the distribution in Table 2, find (a) the mean and (b) the standard deviation.

9. For the distribution in Table 2, find the 95% confidence interval about the mean.

10. Suppose instead that there were only fifteen data points in Table 2 and the population from which they were drawn was normally distributed. What distribution would you use now to estimate the 95% confidence interval?

Number of Toppings	Number of Pizzas
0	121
1	204
2	340
3	135

Table 1: Number of toppings and the number of pizzas made with that number of toppings.

20	12	30	29	42	28	22	32	15	17
33	22	20	19	22	18	32	33	13	19
11	15	35	21	22	11	25	31	27	26

Table 2: A sample of numbers drawn randomly from some population. You do not know the nature of the distribution of the population.