

Math 227 – Winter 2011 – Project #2

You will use MINITAB 14 and the data given to perform the following.

1.) It has been calculated that about 10% of the population is left handed.

a. Use MINITAB to simulate randomly selecting 1 person out of 1000 and determine. Use Calc>Random Data>Bernoulli... Generate 1000 rows with probability of success of 10%. Calculate the number of left handed people in the survey. To do so, use the column statistics sum option to add the number of left handed people in the survey.

b. Does the data and the calculated approximation of 10% agree?

2.) If 66.5% of all automobiles in Los Angeles are foreign-made

a. Find the probability that if there are 500 automobiles in the ELAC parking structure, 300 are foreign-made.

b. Find the probability that if there are 500 automobiles in the ELAC parking structure, at most 350 cars are foreign-made.

3.) You are given a 10 questions multiple choice pop quiz. The possible answers are A, B, C, D, E. Assume you had to guess on all the questions, use Minitab to determine the probability table of answering the questions.

4.) Graduate Management Aptitude Test (GMAT) scores are widely used by graduate schools of business as an entrance requirement. Suppose that in one particular year, the mean score for the GMAT was 476, with a standard deviation of 107. Assume that the GMAT scores are normally distributed. What is the probability that a randomly selected score from this GMAT falls below 650?

5.) High blood cholesterol increases the risk of atherosclerosis, the thickening of the arteries that can reduce blood flow to the heart, brain, kidneys, etc. This increases the risk of heart attack, stroke, kidney failure, etc. The cholesterol level for adult males of a specific racial group is approximately normally distributed with a mean of 4.8 mmol/L and a standard deviation of 0.6 mmol/L. A person has high risk if his cholesterol level is more than 2 standard deviations above the mean, i.e., greater than 6.0 mmol/L. Furthermore, a person has low risk if his cholesterol level is 1 standard deviation or more below the mean. Determine the probability of a male having a blood cholesterol level between the two risk values stated above.

6.) Layton Tire and Rubber Company wishes to set a minimum mileage guarantee on its new MX100 tire. Tests reveal the mean mileage is 67,900 with a standard deviation of 2,050 miles and that the distribution of miles follows the normal probability distribution. It wants to set the minimum guaranteed mileage so that no more than 4 percent of the tires will have to be replaced. What minimum guaranteed mileage should Layton announce?

7.) According to an article appearing in The Wall Street Journal, 35% of all U.S. households' use a cellular phone number as their primary phone number.

a. Construct the probability distribution, of the given information above, if a total of 10 households are randomly selected.

b. If 100 households are randomly selected, what is the probability that at least 30 households use a cellular phone number as their primary phone number?

c. If 200 households are randomly selected, what is the probability that less than 80 households use a cellular phone number as their primary phone number?

d. If 500 households are randomly selected, is it unusual that exactly 200 household's use a cellular phone number as their primary phone number?

8.) A Pizza delivery business in a large city has determined that the amount of time that a customer spends waiting for their delivery order is normally distributed with a mean of 26.5 minutes and a standard deviation of 3 minutes.

a. What is the probability that for a randomly chosen customer the amount of time spent waiting for their delivery is less than 30 minutes.

b. What is the probability that for 100 randomly chosen customers the mean amount of time spent waiting for their delivery is greater than 27 minutes.