Practice #9

1. a. Using a program you have created earlier, create two permanent SAS data sets: PRACTICE.NBA2017 and PRACTICE.NBA2018. These two SAS data sets will contain only the year and the four statistics for each team in the NBA.

   b. Using the two permanent data tables in part a, create the permanent data table PRACTICE.NBA17_18. Use SAS command(s) to do this. Do not cut and paste text files. When you have combined the SAS data sets, then create the Conference variable as done in Practice 3, and LABEL each of the variables in the SAS data set. When editing a previous program, delete the steps not needed for this practice assignment.

   c. Using the combined permanent SAS data set in part b, then use the MEANS procedure compute the mean, standard deviation, and standard error of the mean of the variables for each year and conference.

      i. Do this in a single procedure ***without*** using a SORT procedure and ***without a*** BY statement. Output the mean, standard deviation, and standard error of the mean of these three variables to a permanent SAS data set PRACTICE.SUMMARYC1. Print this data set.

      ii. Do this again in a single procedure this time ***with*** a BY statement. Output the mean, standard deviation, and standard error of the mean of these three variables to a data table WORK.SUMMARYC2. Print this SAS data set. Observe the differences in the information of the output data sets.

2. a. INFILE the APARTMENT data and create a permanent SAS data set named PRACTICE.APARTMENT in a single DATA step. LABEL the variables in this permanent SAS data set.
   b. Using the permanent SAS data set from part a, construct the two-way contingency table for presence of a garage versus fitness facilities. Include only the observed frequency in the table.

Use one DATA step for problem 3 and a second DATA step for problem 4.

3. Use SAS functions to solve the following. Do all of the calculations in a single DATA step. Use the PRINT procedure to print your results.

   a. Find the probability that a normal random variable with mean 465 and standard deviation 14.5 is in the interval 470 to 485.

   b. Find the 40th percentile of the distribution in part a.

   c. Find the critical t-value that determines a left-side area of 0.43 and has 18 df.

For all practice and assignments, include TITLE statements that write the Homework # and Problem # and your name on each procedure. Always bring your Practice programs to class with you on a USB device or have access to the on your H:\ drive. You may need some of that information for the in-class assignments.

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d. Find the critical F-value that determines a right-side area of 0.15 and has 10 numerator and 15 denominator degrees of freedom.

e. Suppose a student takes a 20-question true/false quiz. If the student purely guesses on each question, what is the probability that the student will get at least 12 of the answers correct?

4. For the following sets of hypotheses and test statistics, in a DATA step use SAS probability functions to compute the observed significance levels (p-values). Use the PRINT procedure to print your results. (Values of n refer to sample size not the degrees of freedom.) Review your methods course for information on how to compute p-values.

a. H_0: $\sigma^2 = 22$ vs H_1: $\sigma^2 < 22$, $\chi^2 = 6.4$, $n = 12$

b. H_0: $\mu = 2.4$ vs H_1: $\mu \neq 2.4$, $t = -2.1$, $n = 18$

c. H_0: $\mu_1 - \mu_2 = 3$ vs H_1: $\mu_1 - \mu_2 > 3$, $t = 1.86$, $n_1 = 14$, $n_2 = 8$

d. H_0: $\sigma_1^2 = \sigma_2^2$ vs H_1: $\sigma_1^2 \neq \sigma_2^2$, $F = 3.39$, $n_1 = 16$, $n_2 = 14$