

## Minitab Handout 3

This handout illustrates Minitab commands for random assignment and sampling, which will be useful for doing Homework 5. You can download three Minitab data sets (EX03\_14.MTW, EX03\_32.MTW, and EX03\_68.MTW) from the course website. Utilize Minitab to answer all the questions in the homework that ask you to use Table B Random digits. Using Table B would be tedious and time consuming, so we will replace the usage of the table by the Minitab menu for random sampling, whenever necessary.

- **Problem 3.14(b)**

Open the data set EX03\_14.MTW in Minitab. Use the menu sequence **Calc; Random Data; Sample from Columns...** In the dialog box, first specify how many rows to be sampled from column. We have total 40 subjects here and will assign 20 subjects to one treatment and the remaining 20 to the other treatment. Type 20 in and click in the empty box under **Sample 20 rows from column(s):** to select the variable **subject**. Type a variable name or column name such as **C2** to store the names that are randomly selected in the box under **Store samples in:** and click on **OK**. Then you will see 20 names randomly selected from the column **subject** in the second column. To print these random samples in Session window, use **Manip; Display Data...** and select the second column to display.

- **Problem 3.32(a)**

The names of the subjects and their excess weights are stored in EX03\_32.MTW. To arrange the subjects (**subject**) in increasing order of excess weight (**xweight**), **Manip; Sort...** and select both variables **subject** and **xweight** in the box under **Sort column(s):**. Specify the same variable names **subject** and **xweight** under **Store sorted column(s) in:** and select **xweight** beside **Sort by column** to sort two columns according to excess weights. Note that you may specify new variables to store the sorted columns, but no information will be lost in this case even if we use the same variable names. By clicking on **OK**, we will have Minitab Worksheet with the data sorted in the increasing order of excess weights. Create a variable, say **block** for grouping by assigning the block number 1, 2, 3, 4 or 5 to each subject. Again, you print out the final grouping results in Session window by **Manip; Display Data...** and selecting the three variables **subject**, **xweight**, and **block**.

- **Problem 3.32(b)**

Now, we want to assign four regimens A, B, C, and D randomly within each block. Use **Manip; Split Worksheet...** to split the current worksheet by **block**. Starting from the worksheet with **block 1**, get a random sample of size 4 to have a random permutation of four subjects. Use **Calc; Random Data; Sample from Columns...**, sample 4 from the column **subject**, and store samples in a variable, say **sample**. You will see the subjects in a random order in column **sample**. Then create a variable **regimen** by assigning A, B, C, or D. Notice that you can freely assign the regimens systematically once you have a random permutation. Display **block**, **sample** and **regimen** in Session window to have the final output.

- **Problem 3.68**

To get a simple random sample of size 4 from the population, which contains 10 students, sample 4 rows from the column `score` in `EX03_68.MTW` and store the samples in a variable, say `C3`. Compute the mean of the four random samples by using **Calc; Column Statistics...**, checking **Mean** and specifying the variable `C3` in **Input variable:** box. For part (b), you need to repeat this procedure 10 times! You may realize that using Minitab menu sequence is not very efficient for such repetition. Here's a more efficient way of carrying out repetitive procedures in Minitab. Namely, we use the command line editor, instead of the pull-down menu. Use **Edit; Command Line Editor** or simply use the hot key `Ctrl+L` to open the command line editor. Type

```
sample 4 score C3  
mean C3
```

and click on **Submit Commands** to execute these commands, that are equivalent to the Minitab menu sequence explained above. Once you type the commands in the editor, you can easily recall them by `Ctrl+L` and repeat as many times as necessary.