Name: _____ Math 227 / Fall 2019 / Prof. Soto

Module 2. Sections 2.0, 2.1, 2.2, 2.3

- Open Data Camp Sandbox.
- The following list are the numbers of hours worked in a given week by employees of a small company: 25, 15, 35, 20, 15, 20, 25. Put all these values in a vector named **HoursWorked**. Write the values in exactly the same order.
- The following list are the hourly pay for the list of employees (in corresponding order): 14, 16, 15, 15, 14, 14, 16. Put all these values in a vector named **HourlyPay**. Write the values in exactly the same order.

Question 1: Multiply the vectors **HoursWorked** and **HourlyPay**. Save this computation to a vector **MyAnswer.** Print **MyAnswer**. What is the printout in the console? What is the meaning of these values?

Question 2: What do you have to type in the script.R screen to sort the values of **HoursWorked** and save the new sorted values to a vector **HoursWorkedSorted**?

Question 3: What do you have to type in the script.R screen to create a frequency table of **HourlyPay**?

Question 4: What is the print out in the R Console when creating a frequency table of **HourlyPay?**

Now, we switch from vectors to data frames.

Question 5: Use the correct instruction to display the structure of the data frame **ACS.** How many observations (cases) do we have in this data frame? How many variables do we have in the data frame ACS? What are the names of these variables?

Question 6: Use the correct instruction to display the first six cases of the data frame **ACS**. What are the values of the variables for "case 2" (that is, row 2).

Question 7. Use the instruction **tally(~ Age, data = ACS)** to create a frequency table to see how many individuals there were of each age. How many individuals 67 years-old there were in this study?

Question 8. How many individuals of each race do you find in this study?

Question 9. Use the instruction **ACSbyAge <- arrange(ACS, Age)** to sort the data frame in ascending values of Age and to save this new arrangement to the data frame **ACSbyAge**. Print ACSbyAge in the R Console. Scroll up to the top. What are the ages of the first eleven individuals? How do you explain this?

Question 10. Sort the data frame **ACS** by **Income** and save this sorting to a new data frame **ACSbyIncome**. What is the largest annual income recorded in the data frame?

Question 11. Which variables are quantitative and which are categorical in the data frame **ACS**?

Question 12. If you look up the structure of **ACS** data frame, you will notice that several categorical variables are listed as **int** type (integer). For example, **$Sex** contains 0's and 1's. "0" correspond to female and "1" correspond to male individuals. Use the instruction **sum(ACS$Sex)** to add all values of the Sex variable. What does the output tell you about the data set?

Question 13. In the data set ACS, "1" correspond to the individual being a US citizen and "0" corresponds to the individual not being a US citizen. How many US citizens there are in the data set?