**Review**

**Question 1**

1) Data

a. make a 2 x 3 (2 rows, 3 columns) matrix called 'a' from c(2,4,6,5,7,9).

make a matrix 'b' that is also 2x3 from c(1, 3, 5, 2, 4, 6).

b. combine a and b (a above b) into a new matrix. Get the result of b times 2. Calculate how many rows and columns does ‘a’ have and give each row and column a name.

c. set and name a vector of 5 elements (5, 6, ‘7’, ‘a’, TRUE) using list(), get the real type of the third element in that list.

2) Distributions

a. assumes that the test scores of a college entrance exam fits a normal distribution. Furthermore, the mean test score is 55, and the standard deviation is 26.8. What is the percentage of students scoring 84 or more in the exam?

b. what is P(X = 1) when X has the B(30, 0.005) distribution.

c. set a seed and then generate 100 random normal distribution values. Summary them and get 1 sample with 10 values. For this sample, if its value is greater than the mean value of all elements’ values, set its value to 1, otherwise set to 0. Use ifelse function to achieve this.

**Question 2**

1. Use ‘read.csv’ to read in the wolf dataset from the class folder on the P drive. Provide the R command you used as your answer here.
2. Make a wolf.sub dataframe from wolf dataset by following a, b and c.
3. remove ‘population 3’ from the variable ‘Population’.
4. Make a new factor called ‘Hunting’ with levels ‘Light’ and ‘Heavy’ (population 1 is light and population 2 is heavy).
5. Get rid of the empty ‘U’ factor for ‘Sex’

3) Create subsets and calculate some statistics

1. Produce a table to see how many male wolves are in each hunting group.

b. Use the sort() function to sort ‘Tpgmg’ values for each of the two levels of ‘Hunting’

c. Create these two subsets: ‘Light\_M’ (male wolves which are lightly hunted) and ‘Heavy\_M’ (male wolves who are heavily hunted.)

d. Calculate the mean, max and min values of ‘Cpgmg’ in male wolves which are lightly hunted (‘Light\_M’ group)

4) Plot 3 histograms and save them as pdf file called ‘histogram.pdf’

1. make first two histograms of Cpgmg in ‘Heavy\_M’ and ‘Light\_M’ groups and put them side by side.
2. make the third histogram which should meet the following requirements

* plot first 2 histograms in one plot
* change the fonts as follows: labelling font is bold; title font is bold and italic; axes are italic
* title is ‘Cpgmg in male wolves’, x label is ‘Cpgmg’
* set appropriate xlim and ylim (look at the first two histograms to figure out)
* Specify the bin size for the bars as ‘2’
* Colour the ‘light group’ blue and ‘heavy group’ red

5) Plot 2 boxplots and save them as pdf file called ‘boxplot.pdf’

1. do first boxplot for Cpgmg with Sex and Col

* the order is male&Dark, female&Dark, male&White, female&White,
* Add names=c('M-Dark', 'F-Dark', 'M-White', 'F-White')

b. do a boxplot of Cpgmg by Hunting

* colour the ‘light hunting’ blue and ‘heavy hunting’ red
* add the title ‘Cpgmg by Hunting’