Manipulation of Numbers and Vectors Exercises

1) You keep track of your mileage each time you fill up your automobile. At your last 6 fill-ups the mileage numbers were: 65311 65624 65908 66219 66499 66821 67145 67447

Enter these numbers into a vector using R. Use the function diff() on the data. What does it indicate?

< your answers in R script go here . . . try them out first >

Use the max() function to find the maximum number of miles between fill-ups, the mean() function to find the average number of miles, and the min() function to get the minimum number of miles.

< your answers in R script go here . . . try them out first >

2) Suppose you track your commute times for two weeks (10 days) and you find the following times in minutes: 17 16 20 24 22 15 21 15 17 22

Enter this into R. Use the function max() to find the longest commute time, the function mean() to find the average and the function min() to find the minimum.

< your answers in R script go here . . . try them out first >

What is the variance of this vector of commute times? The standard deviation?

< your answers in R script go here . . . try them out first >

Oops, the 24 minute entry was a mistake. It should have been 18 minutes. Fix this mistaken entry, and then find the new average.

< your answers in R script go here . . . try them out first >

How many times was your commute 20 minutes or more?

< your answers in R script go here . . . try them out first >

What do you get? What percent of your commutes are less than 17 minutes? How can you answer this with R?

< your answers in R script go here . . . try them out first >

3) Your cell phone bill varies from month to month. Suppose that is one year your phone bill has the following monthly amounts: 46 33 39 37 46 30 48 32 49 35 30 48

Enter this data into a variable called bill. Use the sum() function to find the amount you spent this year on the cell phone. What is the smallest amount you spent in a month? What is the largest? How many months was the amount greater than $40? What percentage was of total was this?

4) Try to guess the results of these R commands.

Suppose we assume:
x = c(1,3,5,7,9)
y = c(2,3,5,7,11,13)

Guess the value first, than try it out in R:
1. x+1
2. y*2
3. length(x) and length(y)
4. x + y
5. sum(x>5) and sum(x[x>5])
6. sum(x>5 | x< 3) # read | as 'or', & and 'and'
7. y[3]
8. y[-3]
9. y[x] (What is NA?)
10. y[y>=7]