Day 1 – Exercises

Name:

1. Use R to solve these math problems:
   1. (14+2)\*(3/4)2
   2. 4!/(5!+3!)
   3. where X = -12 and Y = 4
2. Create vectors:
   1. Integers from 1 to 20
   2. From 0 to 10 by 0.5
   3. Individual words of the first line of the song Hakuna Matata (“Hakuna Matata what a wonderful phrase”)
3. Merge data
   1. Create a vector of 10 odd numbers from 1 to 19
   2. Create another vector of 10 names
   3. Merge these two vectors into two columns, but maintain the data type (i.e. number and character). Name the columns “ID” and “Name”
4. Import the dataset from the lecture (treesR.csv)
   1. Select the first 10 rows and last 10 rows of data
   2. Remove Lat/Lon columns
   3. Save as a new csv file, open in Excel
   4. Attach a screenshot of the csv file to the assignment (Do not attach the file)
5. From your new dataset in 4.
   1. Import from the newly saved csv
   2. Create a vector of 10 random numbers from 1 to 20
   3. Select the rows of data that correspond to these rows (don’t hand select them, think of a way to get R to do this)
   4. Convert OAK (cm2/ha) to OAK\_ft (ft2/acre) and add it as a new column

**Name your files: LastName\_Exercise# (e.g. Knott\_Exercise1.docx)**

Answer each question and paste screenshots of any relevant output into this document. Submit your annotated code and answers to Blackboard by the start of class tomorrow.

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| > # Question 1  >  > (14+2)\*((3/4)^2) #Q1.a (14+2)\*(3/4)^2  [1] 9  >  > factorial(4)/(factorial(5)+factorial(3)) #Q1.b 4!/(5!+3!)  [1] 0.1904762  >  > X<--12 #Q1.c(|X|+3Y)×((X+2)/√Y) where X = -12 and Y = 4  > Y<-4  > (abs(X)+3\*Y)\*((X+2)/sqrt(Y))  [1] -120  >  >  > # Question 2  >  > c(1:20) #Q2.a Integers from 1 to 20  [1] 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20  >  > c(seq(from=0,to=10,by=0.5)) #Q2.b From 0 to 10 by 0.5  [1] 0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0 5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0 9.5 10.0  >  > c("Hakuna","Matata","what","a","wonderful","phrase") #Q2.c Individual words of the first line of the song Hakuna Matata  [1] "Hakuna" "Matata" "what" "a" "wonderful" "phrase"  >  >  >  > # Question 3  >  > x<-c(seq(from=1, to=19, by=2)) #Q3.a Create a vector of 10 odd numbers from 1 to 19  >  > y<-c("Alex","Bob","Conway","David","Emma","Frank","Gabby","Helen","Iric","Kevin") #Q3.b Create another vector of 10 names  >  > my.data<-as.data.frame(x) #Q3.c Merge these two vectors into two columns, but maintain the data type  > colnames(my.data)<-c("ID")  > my.data$Name<-c(y)  >  >  >  > # Question 4  >  > my.trees<-read.csv("treesR.csv", header = T) #read in and assign to an object  >  > head(my.trees, 10) #Q4.a Select the first 10 rows and last 10 rows of data  PLOT LAT LON QUAD MAPLE ASH OAK TYPE  1 1 38.17 -86.22 SouthWest 227146 0 20650 Maple  2 2 38.82 -85.11 SouthEast 25649 25649 51299 Oak  3 3 39.08 -86.38 NorthWest 0 24005 120023 Oak  4 4 38.92 -85.06 SouthEast 1080711 71752 384880 Maple  5 5 38.83 -85.72 SouthEast 421935 0 25649 Maple  6 6 39.18 -85.41 NorthEast 21810 0 0 Maple  7 7 38.40 -86.40 SouthWest 0 299388 216308 Ash  8 8 39.00 -86.56 NorthWest 0 0 1617109 Oak  9 9 38.36 -86.51 SouthWest 438016 0 266143 Maple  10 10 38.46 -86.26 SouthWest 0 87572 58382 Ash  >  > tail(my.trees,10) #Q4.b Remove Lat/Lon columns  PLOT LAT LON QUAD MAPLE ASH OAK TYPE  155 165 39.60 -85.13 NorthEast 0 282143 0 Ash  156 166 38.26 -85.97 SouthEast 0 48914 24457 Ash  157 168 39.01 -86.52 NorthWest 0 323024 24005 Ash  158 169 39.32 -84.88 NorthEast 0 115932 1138677 Oak  159 170 38.27 -86.34 SouthWest 0 26614 558900 Oak  160 172 37.98 -86.58 SouthWest 14079 14079 28159 Oak  161 173 38.40 -86.23 SouthWest 358173 53229 0 Maple  162 174 39.42 -86.97 NorthWest 0 0 27075 Oak  163 175 38.32 -86.28 SouthWest 395807 0 35268 Maple  164 176 38.59 -86.74 SouthWest 42238 364646 0 Ash  >  > tree1.data<-as.data.frame(head(my.trees, 10))  > tree2.data<-as.data.frame(tail(my.trees, 10))  > my.trees2.data<-rbind(tree1.data,tree2.data)  > my.trees3<-my.trees2.data[, c("PLOT","QUAD","MAPLE","ASH","OAK","TYPE")]  > write.csv(my.trees3,"treesR\_new.csv", row.names = F) #Q4.c Save as a new csv file, open in Excel  >  >    >  > # Question 5  >  > my.newtree<-read.csv("treesR\_new.csv") #Q5.a Import from the newly saved csv  >  > z<-c(sample(1:20,10,replace=F)) #Q5.b Create a vector of 10 random numbers from 1 to 20  >  > my.newtree1<-my.newtree[z,] #Q5.c Select the rows of data that correspond to these rows  >  > my.rowOAK<-my.newtree1[,"OAK"] #Q5.d Convert OAK (cm2/ha) to OAK\_ft (ft2/acre) and add it as a new column  > my.rowOAK1<-0.000435\*my.rowOAK  > my.newtree1$OAK\_ft<-c(my.rowOAK1)  >  > write.csv(my.newtree1,"my.newtree\_OAK\_ft.csv") |
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