

# Exercise Sheet

## Exemplary R exercise

Hand in: **None**

R-exercises need to be handed in on paper. You should practice this as writing a scientific work. In order to avoid that you simply copy a classmates work on Wednesday morning you have to write your name and student id number on the paper electronically - otherwise, you won't get any points. Please also note that you have to document the output of your code to get all the points. In particular, you have to hand in all plots!

### Exercise 1 (Must):

1. (1 point) Try the assignment of one and several values to an *object*. Create a variable 'z' with the value 5 and a vector 's' with the integers 2 to 7. Multiply 'z' with 's' and study the result. Access the 'z'-th entry of 's'.

#### Hints

Sequential numbers can be created with a ':', for example, '1:5' gives a vector (1, 2, 3, 4, 5). The function 'seq()' is also very useful.

2. (1 point) Load the dataset 'milben.dat' from the internet and have a look at it.

#### Hints

Use the functions 'read.table()' and 'summary()'. The dataset is available at <http://stat.ethz.ch/Teaching/Datasets/milben.dat>, but can be directly loaded from R :  
> dat <- read.table("http://stat.ethz.ch/Teaching/Datasets/milben.dat", header=TRUE)

3. (1 point) Access the first column 'n' on the *data frame* 'dat'. Calculate the sum of all the entries of 'n'.

#### Hints

There are two ways to access a column. Firstly, with the indices, e.g. 'dat[,2]', where one simply leaves the first entry inside the square brackets before the comma empty. This means as much as *all rows*. The same can be achieved with 'dat[1:8,2]'. Secondly, one uses the name of the column and the *operator* '\$', e.g. 'dat\$frequency'.

Use the function 'sum()' to calculate the sum.

4. (1 point) Return all frequencies from the Milben-dataset for a 'n' greater than 3. To achieve that, use an appropriate condition on the column 'frequency'.
5. (2 points) Which are the 'n' for frequencies in [10, 40]?
6. (1 Punkt) Represent the data graphically.

**Hints**

Use the standard function 'plot()'. Without additional input the names of the columns will be used to label the axes. You can add a title with the argument 'main', for example use 'main="Milben"'.