

# Biometry. Lecture 2

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## 1 Questions and answers

## 2 R

- Non-R software
- Starting with R



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## 2 R

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# Previous final question: the answer

What is sampling?



# Previous final question: the answer

What is sampling?

- Taking few from many



# R

## Non-R software



# Calculators

- Calculator is almost always embedded into OS
- Too elaborative if we use samples



# Spreadsheets

- MS Excel, OpenOffice.org/LibreOffice Calc, Gnumeric
- Very handy for data input and visualization
- Do not contain advanced and optimized statistical methods
- Are not able to conduct complex calculations





# Graphical statistical software

- SPSS, MiniTab and many others
- Have a high diversity of different graphs and plots
- Will fail if you need to repeat the complex procedures with different datasets



# Statistical environments

- SAS, S-Plus and R
- Full control: it is possible to implement *every* statistical method
- User should remember commands



# R

## Starting with R



# R history

- Started in 1993 as non-commercial analog of S-Plus
- R is just another implementation of S statistical language developed in AT&T
- In last five years, became a standard for statistical research
- Has more than 6,200 extension packages



# R pros and cons

- Extremely flexible, open source
- No GUI: which command?



# Installing R

Windows: SDI, "-no-save" (if possible)



# Do something with R (1)

Simple math:

```
> 3+2
```

Do not enter “greater” ( $>$ ) sign; at the end of each line, type “Enter”.

Be careful with lower/upper case, brackets and quotes!

Spaces, however, are not at all important

Use "arrow up" to repeat command!



## Do something with R (2)

Plot and average:

```
> plot(1:20)
> mean(1:20)
> 1:20 # What is 1:20?
```

To repeat previous command, use “arrow up”.

“#” is a comment, everything is ignored after that symbol.

Function starts with letters and contains round brackets ( )





# Do something with R (3)

## Quit R:

```
> q # definition of command  
> ?q # help for command  
> q() # always answer "No"!  
> q("no") # another variant  
# (if you are bored with answering)
```



# For Further Reading



A. Shipunov.

*Biometry* [Electronic resource].

2012—onwards.

Mode of access:

[http://ashipunov.info/shipunov/school/biol\\_240](http://ashipunov.info/shipunov/school/biol_240)



A. Shipunov, and many others.

*Visual statistics. Use R!*

Ongoing translation from Russian.

