

Verbs and Nouns

In Section 1.3, we learned about variables—the “nouns” of R. In Section 1.4, we introduce the **Function**. If a variable is a thing you have, a function is something you do to that thing. Include all code in your R script, `Chap1Lab.r`.

Bill the Statypus says: Mathematically, a function is a mapping. It takes inputs or arguments if you are using R, applies a specific transformation, and yields a predictable outputs.

Sally the Statypus says: I prefer to think of them as machines! You put your data (the noun) into the machine, the machine (the verb) does its job, and it hands you back a result.

1. Anatomy of an instruction

Consider the following line of code: `mean(rivers)`

Identify the **Noun** and the **Verb** in this instruction. What is the researcher asking R to do?

2. The Parentheses: The Input Room

In R, a function is always followed by parentheses: `()`. Think of these parentheses as the “room” where you put the data you want the function to work on.

Statypus Insight: The Naming Rule

How do you know if a word in R is a function or a variable? Look for the parentheses! If it has `()` after it, it's a verb (action). If it doesn't, it's a noun (data).

3. Arguments: The “How” of the Action

Sometimes a verb needs more instruction. We call these additional instructions **Arguments**.

Example: `mean(rivers, na.rm = TRUE)`

In this example, the verb is still *mean* and the noun is still *rivers*. However, we have added an “adverb” (`na.rm = TRUE`). Based on your reading of Section 1.4, what is this argument telling R to do with missing values?

The Right Tool for the Job

You do not need to memorize every function in R. There are thousands of them! Instead, you need to learn how to find the right “verb” when you need it.

Bill the Statypus says: Efficiency is found in documentation, not memorization. Knowing the names of functions is less important than understanding the logic of their parameters.

1. The AI Scavenger Hunt

Open your favorite AI assistant. Your goal is to find the R “verbs” for specific statistical tasks.

AI Mission

Use a prompt like this: *“I am a beginner in R. I am working with the vector `rivers`. What are the base R functions to find...”*

2. The Scavenger Report

Based on your AI search, write the name of the function (the verb) used for each task, run the command in your R script, and give the result.

1. **Task:** Find the smallest value. **Function:** _____ **Output:** _____
2. **Task:** Find the largest value. **Function:** _____ **Output:** _____
3. **Task:** Find the total sum of all values. **Function:** _____ **Output:** _____

3. Function Nesting

R allows you to put one function inside another. Example: `round(mean(rivers), 2)`

Describe, in plain English, what this line of code is asking R to do. (Hint: Work from the inside out! Use AI if you need to, but make sure you understand what is going on.)

Reflection: The Language of Action

Why do you think R uses words like `mean` or `sum` instead of complex mathematical symbols? How does thinking of code as a “sentence” change the way you feel about looking at a script?