
Lecture 3: R Basics

For each question below, write the R code you would use and record the result when appropriate. Answer in complete sentences when asked to explain.

Part 1: Using R as a Calculator

1. Use R to calculate each of the following expressions. Try to evaluate the expression in R and then copy/paste the code/output or take a screenshot of the solution

(a) $7^2 + \frac{3 \cdot 8}{2 + 4}$ (Answer: 53)

(b) $\frac{5^3(6 - 2)}{18 - 7}$ (Answer: 45.4545455)

(c) $\left(\frac{4 + 6}{2}\right)^3 - 9$ (Answer: 116)

2. Without running the code first, predict the value of each expression. Then run it in R and check your answers.

(a) $3 + 5 * 2 \wedge 2$

(b) $(3 + 5) * 2 \wedge 2$

(c) $2 \wedge 2 \wedge 3$

Part 2: Variables and Assignment

3. A student buys 4 notebooks that each cost \$3.25 and 2 pens that each cost \$1.80.

(a) Create variables for the notebook price, pen price, number of notebooks, and number of pens.

(b) Use those variables to calculate the total cost.

(c) Suppose the student has a coupon for \$2 off. Write code to calculate the final total.

4. Create variables `x` and `y` so that

$$x = 4^2 + 3 \quad \text{and} \quad y = \frac{2x + 5}{3}.$$

Then answer the following:

(a) What is the value of `x`?

(b) What is the value of `y`?

(c) Now overwrite (that is replace) the value of `y` with `3*y*x`. What is the value of `y` now?

Part 3: Spot the Mistake

For each line of code below decide whether it is valid R code. If it is not valid then explain what the issue is and propose how we could fix it.

5. `message <- Hello class`

6. `total <- (8 + 3 * 2`

7. `Rate <- 5`
`rate + 2`

Part 4: Putting it all Together

8. A student wants to compute the average of the numbers 14, 18, 21, 19, 17, 23, and 20, and writes:

$$14 + 18 + 21 + 19 + 17 + 23 + 20 / 7$$

(a) Why is this not the correct average?

(b) Write the corrected R code.

Final Reflection

9. What is one thing that seems easy to do in R, and what is one thing that still feels confusing?