

1. What is the class of the object defined as `x<-c(4,TRUE)`?

`numeric`

[1]

2. Suppose I have a list defined as `x <- list(2, "a", "b", TRUE)`. How can I fetch character vector "b" from the list?

`x[[3]]`

[1]

3. `x <- 1:4` , `y <- 2:3`, `x+y = ?`

`an integer vector with the values 3, 5, 5, 7`

`[1] 3 5 5 7`

[1]

4. (i) Open an R script **in RStudio** and evaluate any expression of your choice involving all of the following in the same expression - **summation, multiplication, exponentiation and log**. (ii) Choose the base of the log as 2 after seeing the help file of the log function for proper usage. Submit your code as (iii) **an R Script** along with a (iv) **screenshot of your RStudio after running the R Script**. Ensure that the screenshot shows the help file, environment and console windows along with the script.

[1+1+1+1]

5. (i) Create a data frame in R with five columns and 30 rows using `data.frame()` function and assign it to a variable. (ii) Populate the data frame with numeric values of your choice. (iii) Write a for loop to calculate the sum of five columns and (iv) store the values in a vector .

[1+1+1+1]

6. Al recorded his car's mileage at just last eight fill-ups: 65311 65624 6598 66219 66499 66821 67145 67447 Enter these numbers into the variable `gas`. Use the function `diff` on the data. (i) What does it give? (ii) Interpret what both of these commands return: `mean(gas)` and `mean(diff(gas))`.

The `diff` function returns the distance between fill-ups, so `mean(diff(gas))` is your average mileage per fill-up, and `mean(gas)` is the uninteresting average of the recorded mileage.

[1+1]

7. Write a function `f` which finds the average of the `x` values after squaring and subtracts the square of the average of the numbers. Verify this output will always be non-negative by computing `f(1:10)`.

[2]