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| **2023 MFRE SUMMER PROGRAM** |  |
| **R Workshop 1: R Programming Basics** | |
| **CASE** | |
| It’s been years since you graduated from the MFRE program and you’ve happily settled into your job as an economic consultant. You do your analysis in Excel, and when that won’t cut it, let a co-worker do the coding. But then your boss calls you in with an *amazing* opportunity: you’re going to write up your own report on the growing gap between food and conventional inflation. ”You’re not our most technical person, but that’s no problem – you mentioned you were a real expert on R back at university, right?” he says. You *may* have exaggerated just a little bit to get the job. Now it’s time to make up lost ground – and fast! | |

1. **Review data structures and manipulation**
   1. Data structures in R:
      1. Basic structures
      2. Boolean operators
      3. Vectors
      4. Matrices
      5. Arrays
   2. Control flow
      1. `if` statements
      2. Loops
      3. Functions
2. **Best practices for R programming**
   1. Indentation and line spacing
   2. Naming variables and functions
   3. Commenting code
   4. Calling libraries, data import
   5. Projects and `here()`
   6. Headers in Markdown
   7. Code cells

**Sample questions**

1. Is `TRUE` equal to 1?
2. How do you access the different elements of a vector?
3. How do you create a matrix of given dimensions?
4. Write a `for` loop to print all numbers from 1 to 20.
5. Write a function that determines if a given number is even or odd.
6. Fix the line spacing on a working, but poorly-formatted, function.
7. Rename the variables inside a defined function to aid interpretability.
8. Adjust the distribution of code between cells to group similar operations and optimize program length.