

2.3: Exercises

1. In Exercise 1 of Chapter 1 you created a data frame with the following information about the first 18 elements.

- name
- symbol
- atomic number
- atomic weight
- phase (gas, liquid, solid)
- group number (1–18)
- row number
- atomic radius (in picometers)
- electronegativity
- first ionization potential (in electron volts)

(a) Setting aside name and symbol, which of the remaining variables are categorical or numerical?

(b) For those variables that are categorical, which are nominal and which are ordinal?

(c) For those variables that are numerical, which are ratio and which are interval?

(d) For those variables that are numerical, which are discrete and which are continuous?

2. Use this [link](#) to download and save the spreadsheet `marlybone_2018.csv`. The data in this file gives the daily average level of NOX (the combined concentrations of NO and of NO₂) in $\mu\text{g}/\text{m}^3$ and the daily average temperature in $^{\circ}\text{C}$ as recorded in 2018 at a roadside monitoring station located on Marylebone Road in Westminster, which is near Regents Park, Madame Tussaud's Wax Museum, and Baker Street, the "home" of Sherlock Holmes. The data is made available by London Air, a website managed by Kings College in London that reports results from the continuous monitoring of air quality at hundreds of sites spread throughout the greater London area. As in most long-term monitoring project, some data is missing for various reasons, such as equipment failure; these values appear in the spreadsheet as empty cells. If you wish, you can visit the London Air web site [here](#).

(a) Use the `read.csv()` function to bring the data into R as a data frame and examine the dataset's structure using the `head()` function.

(b) Add a new column to the data frame that contains the running day number (January 1st is day 1 and December 31st is day 365).

(c) Use the `subset()` function to create separate data frames for each month.

(d) Save all of your data frames in a single `.RData` file so that it is available to you when working problems in other chapters.

3. Use this [link](#) to access a case study on data analysis and complete the five investigations included in Part I: Ways to Describe Data.

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