**Learning Goals**

- Identify and handle special values in R (`NA`, `NaN`, and ± `Inf`) using `is.na()`, `is.nan()`, and `is.infinite()`, and explain how they affect calculations.
- Convert character strings into valid date/time objects in R using `strptime()`, `as.Date()`, `as.POSIXct()`, and `as.POSIXlt()`, and recognize the differences between these storage formats.
- Perform basic date/time computations by subtracting dates/times and using `difftime()` to measure differences in different units.
- Create and work with factors for categorical data, including converting to factors, setting correct ordered levels, and renaming factor levels.

# Key Definitions

- `NA/NaN/±Inf`:
- `is.na()`:
- `POSIXct/POSIXlt`:
- `strptime()`:
- `as.Date()`:
- `difftime()`:
- `factor()`:

# Practice Problems

For each task below, write the R code you would use *and* briefly describe what you expect the output to look like.

1. Given a vector `air_temperature`, how could we determine how many missing values are present?

2. Using the same vector `air_temperature`, how could we compute the mean of the vector (assuming missing values are in-fact present)

3. What would be the exact code we would need to use to turn "March 14th, 2026" ($\pi-$day) into a Date in R? (use the `as.Date()` function)

4. Using the following two events that are stored as character strings, how could we convert both to `POSIXct` values, and then use them to determine the time difference in minutes? (do both the "hard" way with `as.POSIXct` and the "easy" way with `lubridate`)

```
event1 <- "January 27th, 2026 at 11:02 AM" # L3 reading-quiz begins
event2 <- "January 27th, 2026 at 11:08 AM" # L3 reading-quiz ends
```