

# Lecture 3.2 – Functions

## Specific Learning Objectives:

**1.2.1 – Understand the way computers execute commands.**

**1.2.2 – Create functions in R.**

**1.2.3 – Use functions to reduce repetitive procedures in a script.**

**1.2.4 – Use functions to automate and standardize the production of a product (e.g. a graph, an analysis).**

**1.2.5 – Create a function that vectorizes a calculation.**

**3.5 – Think and work independently with code.**

# Check Your Understanding

Add the packages `dplyr` and `ggplot2` to your global environment with `library()`.

To find the function `mean()` in the base package, what environments does R search in what order?

# Check Your Understanding

**Write a function named `add` that takes two input arguments (`a` and `b`) and then returns the sum of `a` and `b` as an output.**

**Include a line of code to see if the function works.**

# Check Your Understanding

For the function `whichisit()`:

```
whichisit <- function(j) {  
  a <- j + 1  
  h <- j*10  
  c <- 2*(2+j)+10  
  d <- j+3  
}
```

Running `whichisit(4)` would have what output?

a) 7

c) 22

b) 5

d) 40

Code it and try!

# Check Your Understanding

**Take the following code (see markdown) and make a function that will plot individual stations red. Inputs should be the station number and the output should be a plot with that station's points colored red.**

```
plot(x = quakes$depth, y = quakes$mag,  
     pch = 21, col = "gray40", bg = "gray80")  
points(x = quakes$depth[quakes$stations==12],  
       y = quakes$mag[quakes$stations==12],  
       pch = 21, bg = "red")
```

**As a bonus, you could add an option to change the color of the station's point from red to user-defined.**

# Action Items

- 1. Complete Assignment 3.2.**
- 2. Read Davies Ch. 10.1 for next time.**