# functions-prep

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2022-11-08

**Writing your own functions in R**

## Intro

```
sum(c(1, 2, 3))
```

```
## [1] 6
```

```
function_name <- function(inputs) {
  output_value <- do_something(inputs)
  return(output_value)
}

{
  a = 2
  b = 3
  a + b
}
```

```
## [1] 5
```

```
calc_shrub_vol <- function(length, width, height) {
  area <- length * width
  volume <- area * height
  return(volume)
}

calc_shrub_vol(0.8, 1.6, 2.0)
```

```
## [1] 2.56
```

```
shrub_vol <- calc_shrub_vol(0.8, 1.6, 2.0)
```

## How functions execute

```r
calc_shrub_vol <- function(length, width, height) {
  area <- length * width
  volume <- area * height
  return(volume)
}

shrub_vol <- calc_shrub_vol(0.8, 1.6, 2.0)
```

### Setting default values for arguments

```r
calc_shrub_vol <- function(length, width, height) {
  area <- length * width
  volume <- area * height
  return(volume)
}

calc_shrub_vol(0.8, 1.6, 2.0)
calc_shrub_vol(0.8, 1.6)
```

### When to use names and unnamed arguments

```r
calc_shrub_vol <- function(length, width, height = 1) {
  area <- length * width
  volume <- area * height
  return(volume)
}

calc_shrub_vol(0.8, 1.6, 2.0)
```

```
## [1] 2.56
```

```r
calc_shrub_vol(0.8, 1.6)
```

```
## [1] 1.28
```

```r
calc_shrub_vol(length = 0.8, width = 1.6, height = 2.0)
```

```
## [1] 2.56
```

```r
calc_shrub_vol(height = 2.0, length = 0.8, width = 1.6)
```

```
## [1] 2.56
```

```r
calc_shrub_vol(0.8, 1.6, height = 2.0)
```

```
## [1] 2.56
```

## Combining functions

```
library(dplyr)
```

```
##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
calc_shrub_vol <- function(length, width, height = 1) {
  area <- length * width
  volume <- area * height
  return(volume)
}

est_shrub_mass <- function(volume) {
  mass <- 2.65 * volume^0.9
  return(mass)
}

shrub_volume <- calc_shrub_vol(0.8, 1.6, 2.0)
shrub_mass <- est_shrub_mass(shrub_volume)

shrub_mass <- calc_shrub_vol(0.8, 1.6, 2.0) %>%
  est_shrub_mass()

shrub_mass <- est_shrub_mass(calc_shrub_vol(0.8, 1.6, 2.0))
```

## Calling functions inside of other functions

```
calc_shrub_vol <- function(length, width, height = 1) {
  area <- length * width
  volume <- area * height
  return(volume)
}

est_shrub_mass <- function(volume) {
  mass <- 2.65 * volume^0.9
  return(mass)
}

est_shrub_mass_dim <- function(length, width, height = 1) {
  volume <- calc_shrub_vol(length, width, height)
```

```
  mass <- est_shrub_mass(volume)
  return(mass)
}

est_shrub_mass_dim(0.8, 1.6, height = 2.0)
```

```
## [1] 6.175354
```

### Tips and tricks

```
calc_shrub_vol <- function(length, width, height = 1) {
  area <- length * width
  volume <- area * height
  return(volume)
}

est_shrub_mass <- function(volume) {
  mass <- 2.65 * volume^0.9
  return(mass)
}

est_shrub_mass_dim <- function(length, width, height = 1) {
  volume <- calc_shrub_vol(length, width, height)
  mass <- est_shrub_mass(volume)
  return(mass)
}

est_shrub_mass_dim(0.8, 1.6, height = 2.0)
```

```
## [1] 6.175354
```