



INTRODUCTION TO R

R: The true basics

What is R?

- Language for Statistical Computing
- Ihaka & Gentleman
- Auckland, New Zealand
- Open-source implementation of S
- Statistical Techniques
- Visualization Capabilities
- Highly extensible

Advantages

- Open source! free!
- Master at graphics
- Command-line interface
- Reproducibility through R scripts
- R packages: extensions of R
- Vibrant community

Disadvantages

- Easy to learn, hard to master
- Command-line interface daunting at first
- Poorly written code hard to read/maintain
- Poorly written code is slow



[RDocumentation.org](https://rdocumentation.org)

Console

How it works

100 XP

In the editor on the right you should type R code to solve the exercises. When you hit the 'Submit Answer' button, every line of code in the script is interpreted and executed by R and you get a message that indicates whether or not your code was correct. The output of your submission is shown in the console in the lower right corner.

You can also execute R commands straight in the console. This is a good way to experiment with R code: When you type in the console, your submission will not be checked for correctness!

Instructions

Add another line of code to that calculates the sum of 6 and 12, and hit the 'Submit Answer' button.

my_script.R

```
1 3 + 4
2
3
```



Get Hint (-30 XP)

Submit Answer

R Console

```
> |
```

Console

```
> 1 + 2  
[1] 3
```

```
> "Hi there, console!"  
[1] "Hi there, console!"
```

```
> 2  
[1] 2
```

Variables

- Store a variable to reuse later
- `<-`

```
> height <- 2
```

```
> height  
[1] 2
```

```
> width <- 4
```

```
> width  
[1] 4
```


Workspace

```
> ls()
[1] "height" "width"

> depth
Error: object 'depth' not found

> height * width
[1] 8

> area <- height * width
> area
[1] 8

> ls()
[1] "area"    "height" "width"
```

R script

- Text file with R commands
- Automate your work

 rectangle.R

```
height <- 2
width <- 4
area <- height * width
area
```

Submit Answer

R script

 rectangle.R

```
height <- 2  
width <- 4  
area <- height * width  
area
```

```
> height <- 2  
  
> width <- 4  
  
> area <- height * width  
  
> area  
[1] 8
```

R script

 rectangle.R

```
height <- 3  
width <- 6  
area <- height * width  
area
```

```
> height <- 3  
  
> width <- 6  
  
> area <- height * width  
  
> area  
[1] 18
```

Comments

 rectangle.R

```
# Create variables height and width
height <- 3
width <- 6

# Calculate the area
area <- height * width

# Print the area
area

# x <- 3    not executed!
```

Workspace (2)

```
> ls()
[1] "area"    "height" "width"

> rm(area)

> ls()
[1] "height" "width"

> area
Error: object 'area' not found
```



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Let's practice!