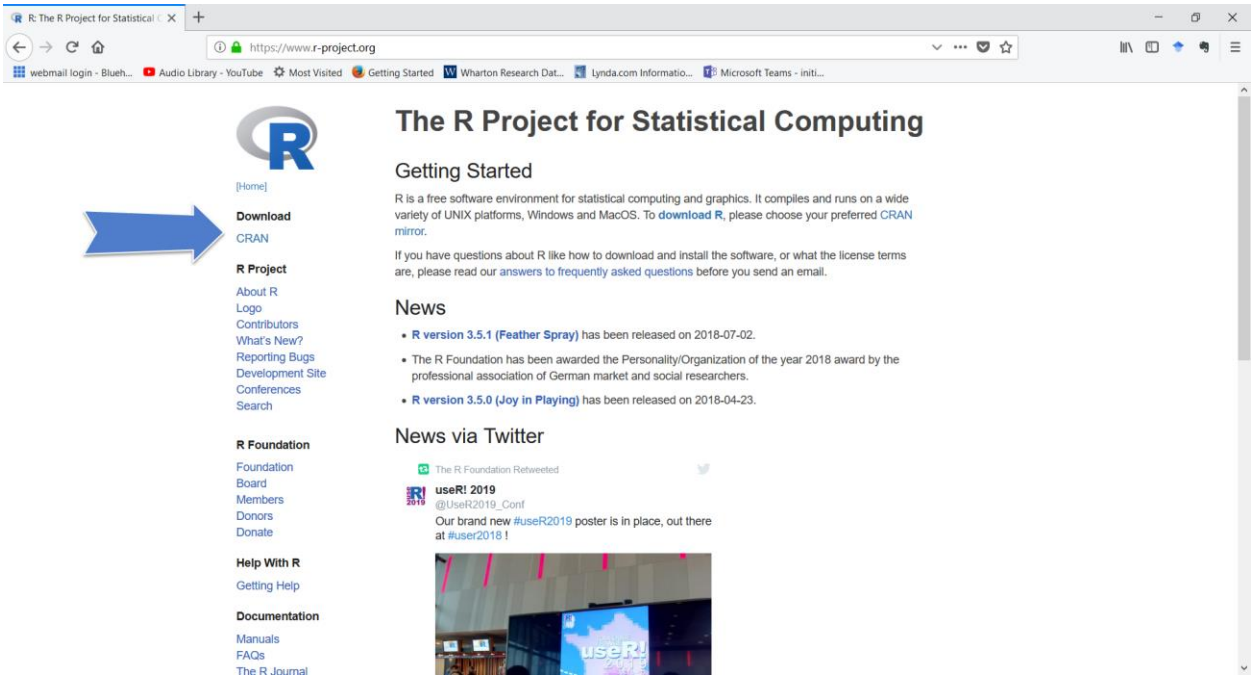
STRINGFEST ANALYTICS

FIVE THINGS EXCEL USERS SHOULD KNOW ABOUT R

Contents:

1. It's Free

According to Wikipedia, R is a "programming language and free software environment for statistical computing and graphics that is supported by the R Foundation for Statistical Computing."



You can download R for free from the R Project's website at https://www.r-project.org/.

From here, you will see a couple of links at the top directing you to https://cran.r-project.org/mirrors.html where you will download R from a mirror of CRAN, or the "Comprehensive R Archival Network." You will see that most of these sites are universities or non-profit institutions, underscoring the free and collaborative nature of the R project.

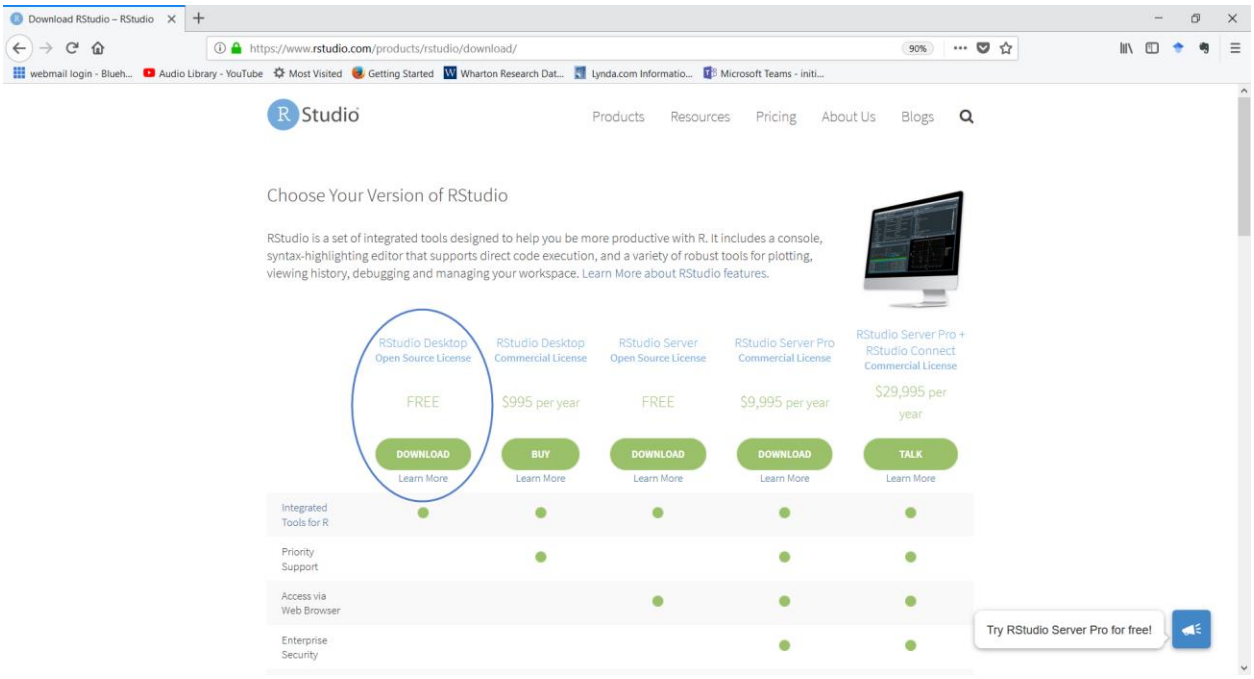
For quickest download time, pick the mirror location nearest you.

2. It's Open Source

R is an open-source platform, meaning that developers can use or modify the software's source code without restrictions. (Open-source software has a rich tradition which you can learn more about here. Given Microsoft's acquisition of the open-source development platform GitHub, the partnership between Microsoft's proprietary data platform and open-source tools like R will only grow.)

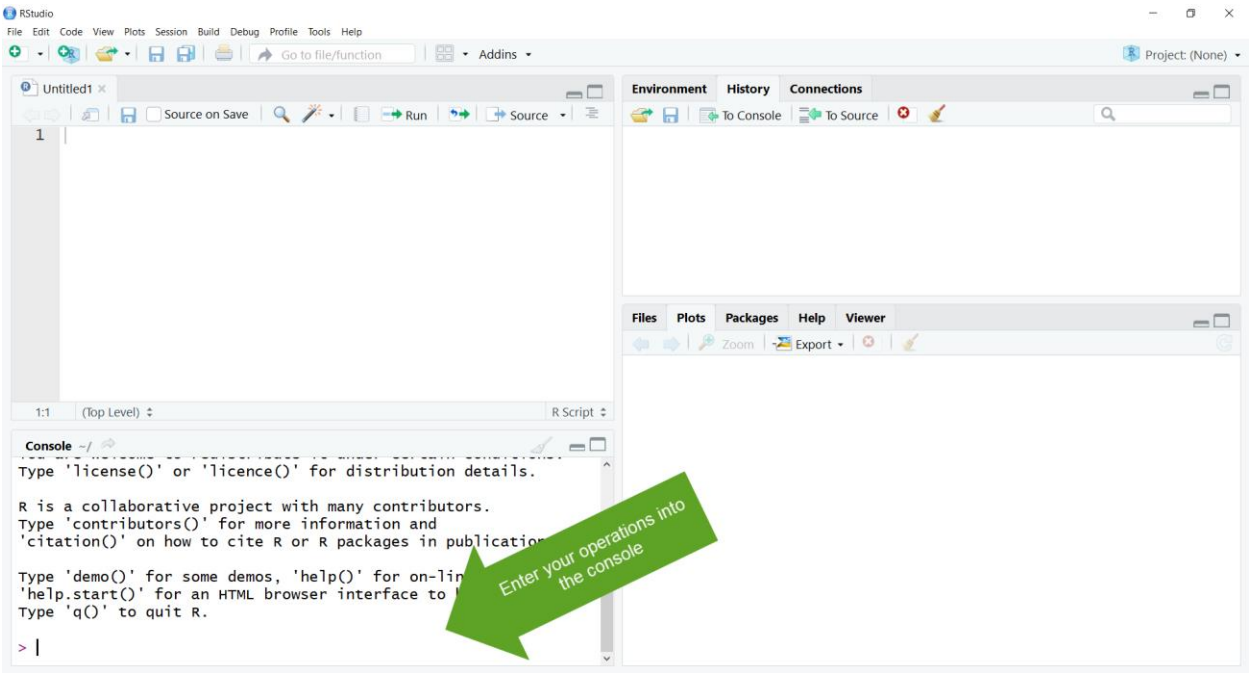
One such development on R's open-source code is RStudio. This is a so-called "integrated development environment" (IDE) that provides additional functionality over the editor that comes with R.

RStudio "sits on top" of the R application you downloaded from CRAN, so you *must download R from CRAN before downloading RStudio.* Download RStudio here. The free Desktop version is just fine (That's what I'm using.).



When you open RStudio you may be overwhelmed. There is a lot going on and the course will provide an in-depth "tour of RStudio" so you are familiar with this excellent environment.

For now, we are going to focus on the *console* or simply, **the box at the lower left**. Here is where we will do our coding for now.



To clear the information that shows up on your console upon open, select **Ctrl + L**.

I told you we would get right into the coding! Here goes.

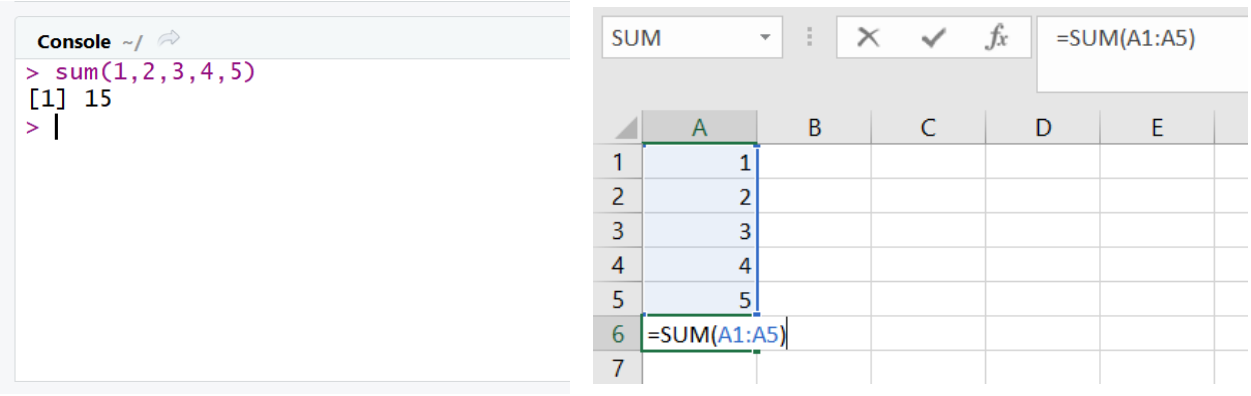
3. It calculates like Excel…

Just like Excel, you can use R as a glorified calculator. Like Excel, R follows the order of operations and uses scientific notation.

Go ahead and try a few different calculations, like above. Feel free to get a little crazy with exponents or scientific notation. **R was designed for statisticians, so it can probably handle it**.

Like Excel, R also has functions for some of the most common mathematical operations. For example, you might use the SUM function in Excel to add up several numbers at once rather than repeatedly hitting the + sign.

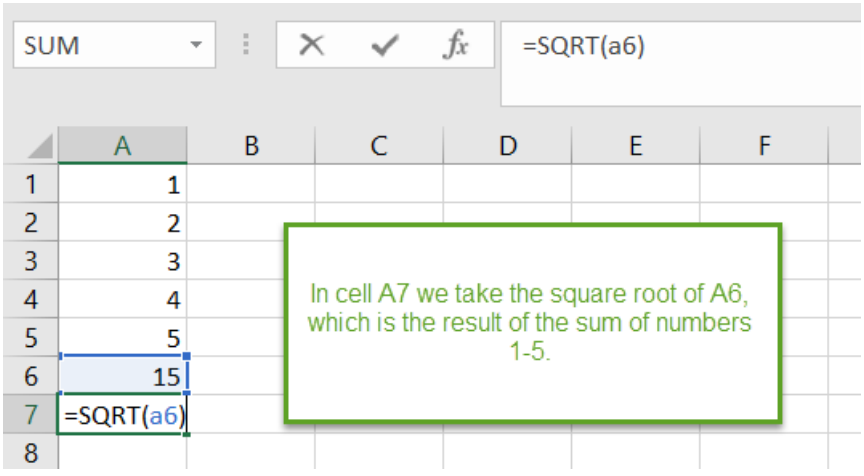
R also has a SUM function, "sum" *(Careful – this is and everything else in R is case-sensitive!)*. Below we use the same function in each program to add up the numbers from 1 to 5.



4. …But stores output differently.

In our example, after we sum the numbers 1 through 5, we want to take the square root of our result.

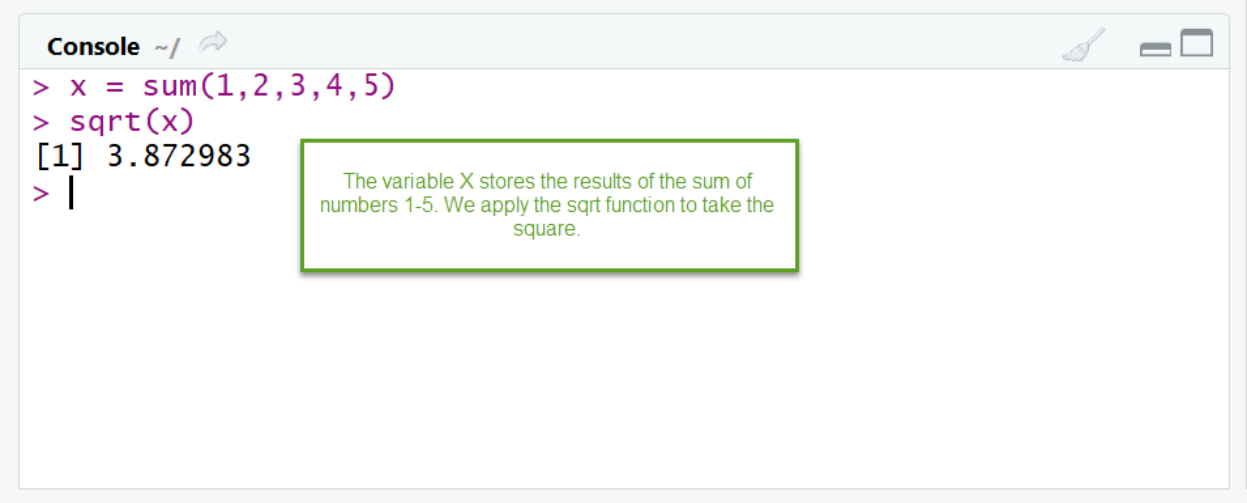
This is easy enough in Excel. In another cell we write a formula to take the square root of what has been returned in cell A6.



R works a little differently. We cannot refer to the results of summing the numbers from 1 to 5 without first assigning it to a variable.

This might be a new programming concept to you, but think back to your algebra class for right now. How were variables represented? That's right, with an "x."

So, we will assign the summation from 1 to 5 to the variable X, as shown below.



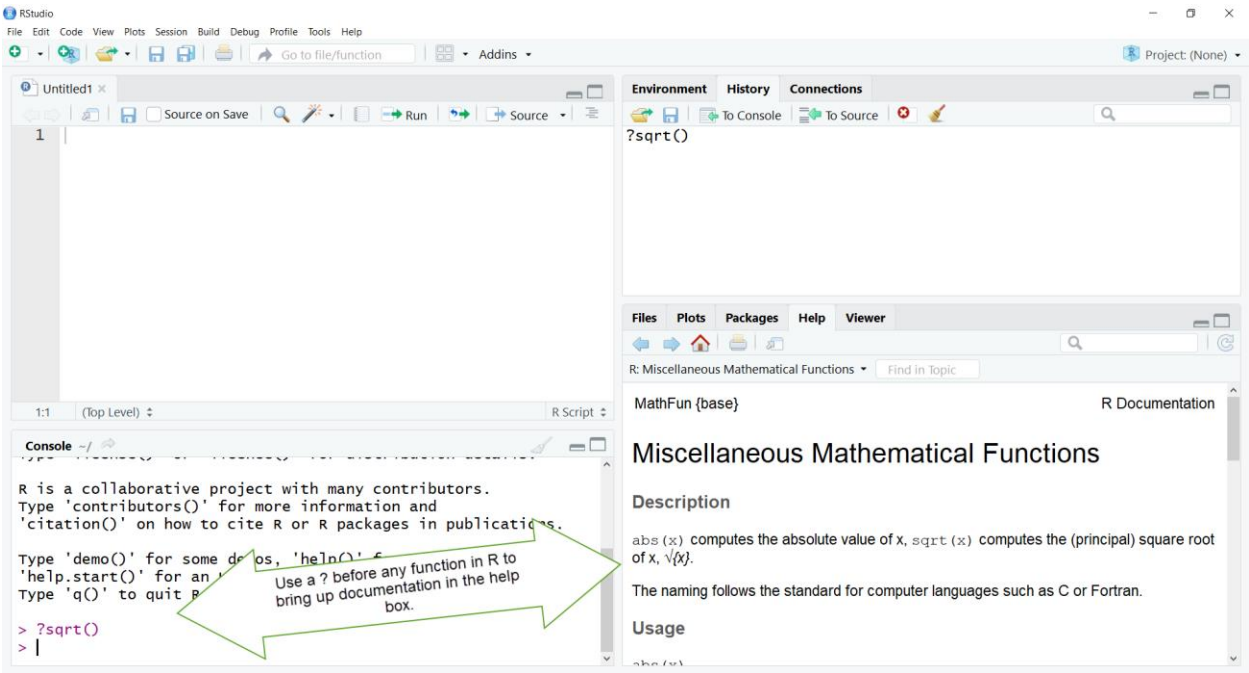
Once we have passed this value to x, we can apply the sqrt function in R to get the square root of 15 (Note this is also the same function in both Excel and R, but *case-sensitive!*).

5. Do not panic.

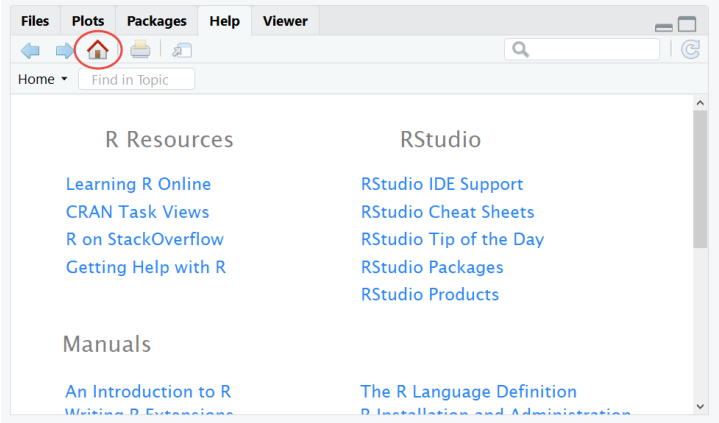
Those last points may have been confusing for right now, but you will soon come to master them and see them as merely a tiny, tiny beginning in R programming.

That's a way to say that R has a notoriously steep learning curve. But fortunately there are many great resources to master R, both from within and without.

For example, let's say you read the code above and you didn't understand what the sqrt function was doing. Simply type "?" and any function into R and you will get help documentation for it in the lower right of your RStudio viewer.



While you are in this window, click the "home" icon at the top of the toolbar to see a wonderful set of links for R.



Conclusion and Next Steps

Thank you for checking out my white paper. I look forward to your comments and suggestions for curriculum and future posts. As always, check back on the site for new content and updates: http://georgejmount.com/.

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