Introduction to R markdown

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First Step

You need to first create a folder where you want to save your file. Name the file 'RmarkdownIntro,rmd'.

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
x <- 3:8

y <- c( 2, 5, 4, 3, 5, 9)

x
```

```
[1] 3 4 5 6 7 8
```

```
y
```

```
[1] 2 5 4 3 5 9
```

Remarks:

- The above code is called a code chunk.
- a code chunks always starts with ```` ```{r, ...} ```` and end with a ```` ``` ````.
- The `{r, echo=TRUE, eval=TRUE, comment = ""}` are the options for how RStudio will display the R code and output in the "knitr" output.
- `echo = TRUE` options tells RStudio to display code along with its results in the resulting "knitr" output.
- `echo = FALSE` will not display the R code (only display the results) in the "knitr" output.
- `eval=TRUE` tells RStudio to evalute (execute) the R code. By default, if `eval=TRUE`, the output will be displayed in the "knitr" output.
- As long as `eval=TRUE`, we can reference any objects defined in other code chunks
- If you want RStudio to evaulate the R code but not display the R output, you will need to add an additional option called `results` and set it to `results="hide"`.
- `eval=FALSE` tells RStudio NOT to evaulate R code.
- `comment = ""` tells RStudio NOT to display anything before the R output in the resulting "knitr" output.

For example, the following code chunk will display the R code, but it doesn't compute x^y

```
a=30
b=2
a+b
```

Practice:

Compare the following three chunks of R code with what is given in the "knitr" output:

```
[1] 28
```

```
a=30
b=2
a+b
```

```
The answer for this program is:  [1] 32
```

Any objects that are defined in any executed code can be used later. For example, recall that we defined `a` earlier:

```
a + 9
```

```
[1] 39
```

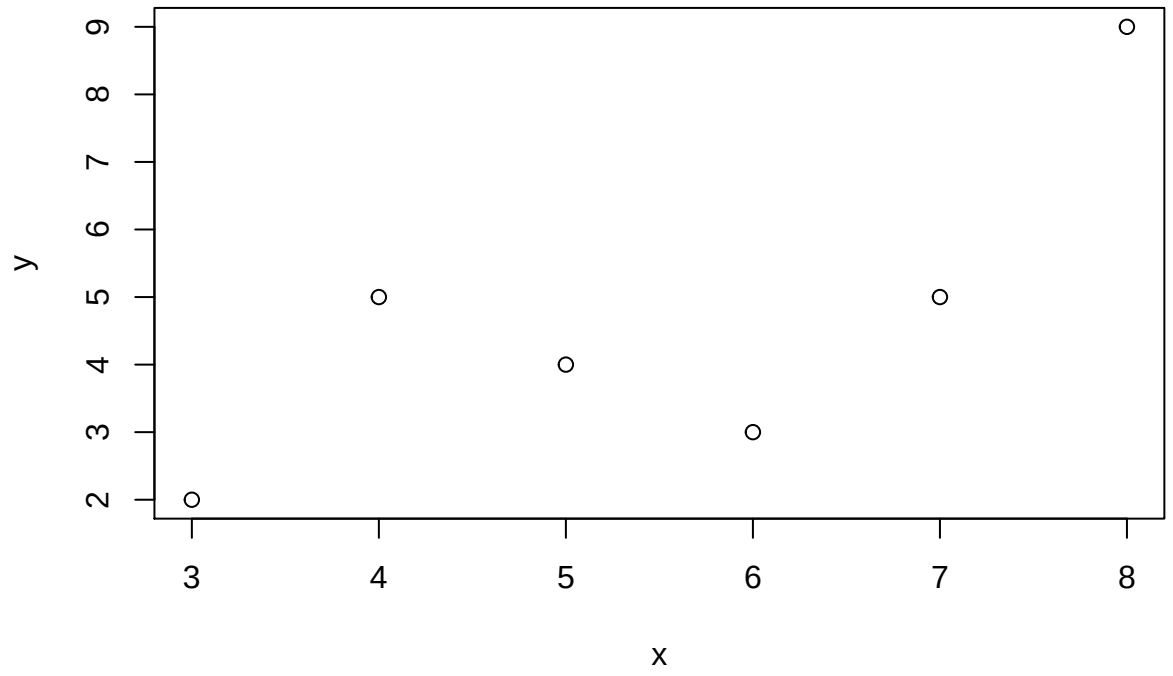
```
b - 5
```

```
[1] -3
```

Including Plots:

You can also embed plots, for example:

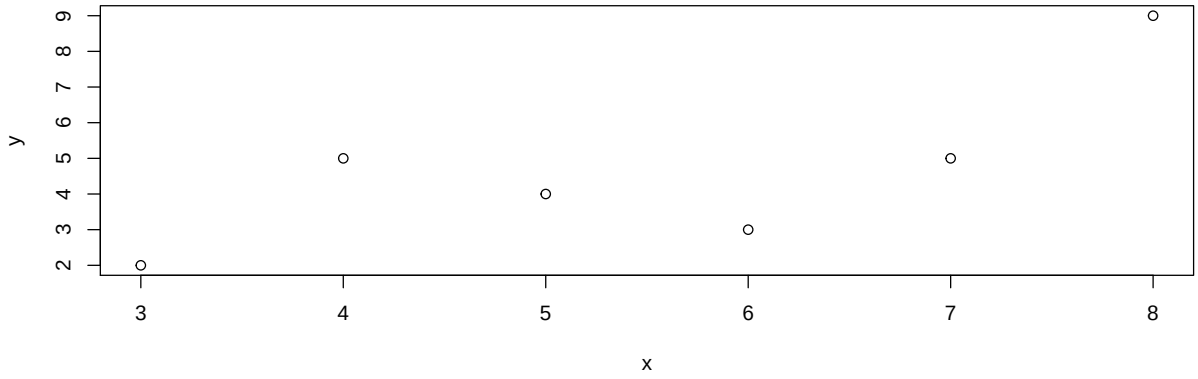
```
plot(x, y) # we haven't discussed this function yet
```



If you would like more space between lines use a single `<br>` or more.

Control the size:

```
plot(x, y) # we haven't discussed this function yet
```



Including SAS Codes:

We can embed SAS code chunks but we can't execute the code:

```
DATA Sales;
  INFILE 'c:\MyDir\sales.txt' ;
  INPUT  First_Name $ Last_Name $  Job_Title $ Amount;
RUN;

PROC print data=Sales;
RUN;

PROC means data=Sales;
  var Amount;
RUN;
```

Some Useful Tips:

- You should always run your R code first in the console window before knitting the file.
- You don't need to knit the file to run the R code.
- It is recommended to knit your file along the way.
- If there is an error in your R code, the file may not compile. Try to fix the error first. If you cannot fixt it, then simply set `eval=FALSE` and make a comment in your code (e.g. # I cannot fix the error)
- You can knit a PDF, HTML, or Word document by selecting the option on the knit button in RStudio. The name of your document should not contain spaces or special characters, and should end in ".Rmd". We will use HTML in class.

RStudio Cheat Sheet

Headers are indicated with the `#` symbol

First level

Second level

Third level

Forth level

Lists can be made with numbers or letters:

1. first item
2. second item
    a. nested list (use two indents)
    b. nested item 2

Bulleted lists are made with `*` or `-`:

- item 1
- item 2
- item 3

If you plan to use a list, you must follow this format in terms of spacing! If your list doesn't look right, simply use the above as a template. Same code but different results:

- item 1

  ```
  * item 2
  ```

- item 3 - item 4

Lists with sub-items

- item 1
    – subitem
- item 2

End a line with two spaces to start a new paragraph

Emphasis

italic

bold
superscript^2
~~strikethrough~~ [link] (www.rstudio.com)
inline equation: $X = \frac{\pi * r^2}{2}$