Recap

Dr. Maria Tackett

09.17.19

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Announcements

- Lab 03 due tomorrow
- Writing exercise #1:
  - Peer review due **today at 11:59p**
  - Final revision due **Thursday 9/19 at 11:59p**

R/RStudio

R/RStudio

- **R**: statistical programming language
- **RStudio**: integrated development environment for the R language
- **RStudio Cloud** allows us to use RStudio without local installation (which can be hairy)
  - Interested in learning about other ways of using RStudio -- come by office hours
  - Already have another way of using RStudio -- make sure to maintain Cloud account for in-class exercises

R packages

- R is an open source language
- Packages developed by open source developers

Git/GitHub

Merge conflicts

Confused about merge conflicts?
Most people are...

- Why does a merge conflict happen?
- What questions do you have?

Tips for collaborating via Git/GitHub

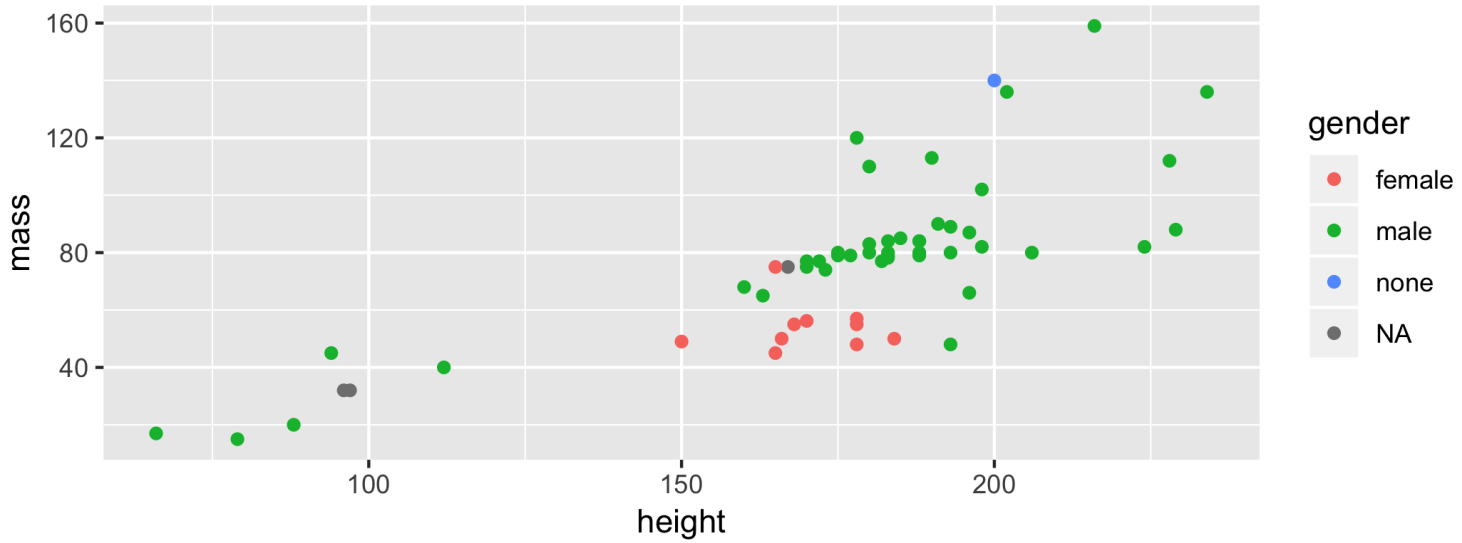
- Always pull first before you start working.
- Knit, commit, and push often to minimize merge conflicts and/or to make merge conflicts easier to resolve.
- Push **all** documents so everything is up-to-date on GitHub.
- If you find yourself in a situation that is difficult to resolve, ask questions asap, don't let it linger and get bigger.

Visualizing Star Wars

Starting point

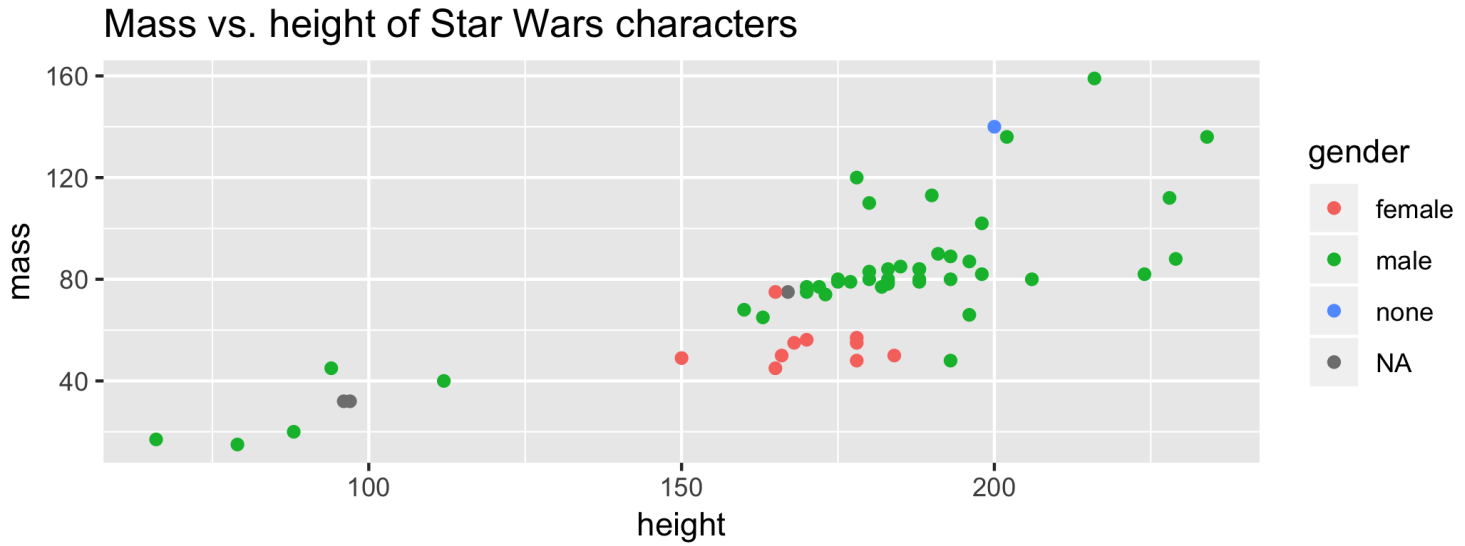
```
starwars <- starwars %>%
  filter(mass < 500)

ggplot(data = starwars, aes(x = height, y = mass, color = gender)) +
  geom_point()
```



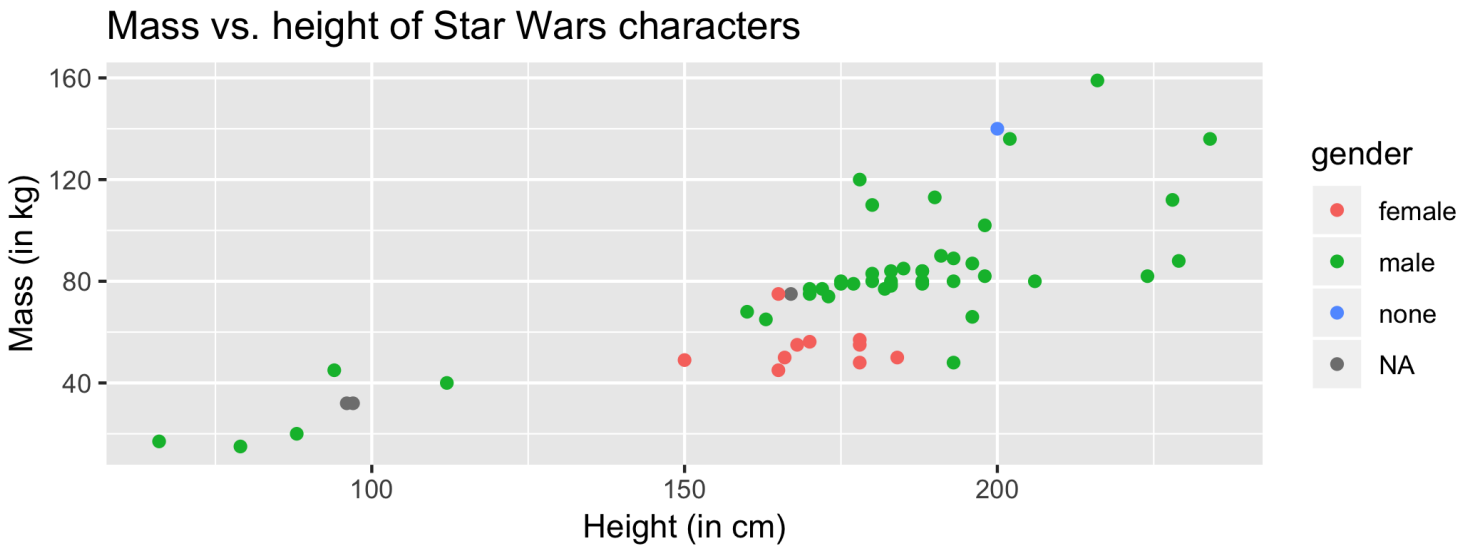
Add title

```
ggplot(data = starwars, aes(x = height, y = mass, color = gender)) +
  geom_point() +
  labs(title = "Mass vs. height of Star Wars characters")
```



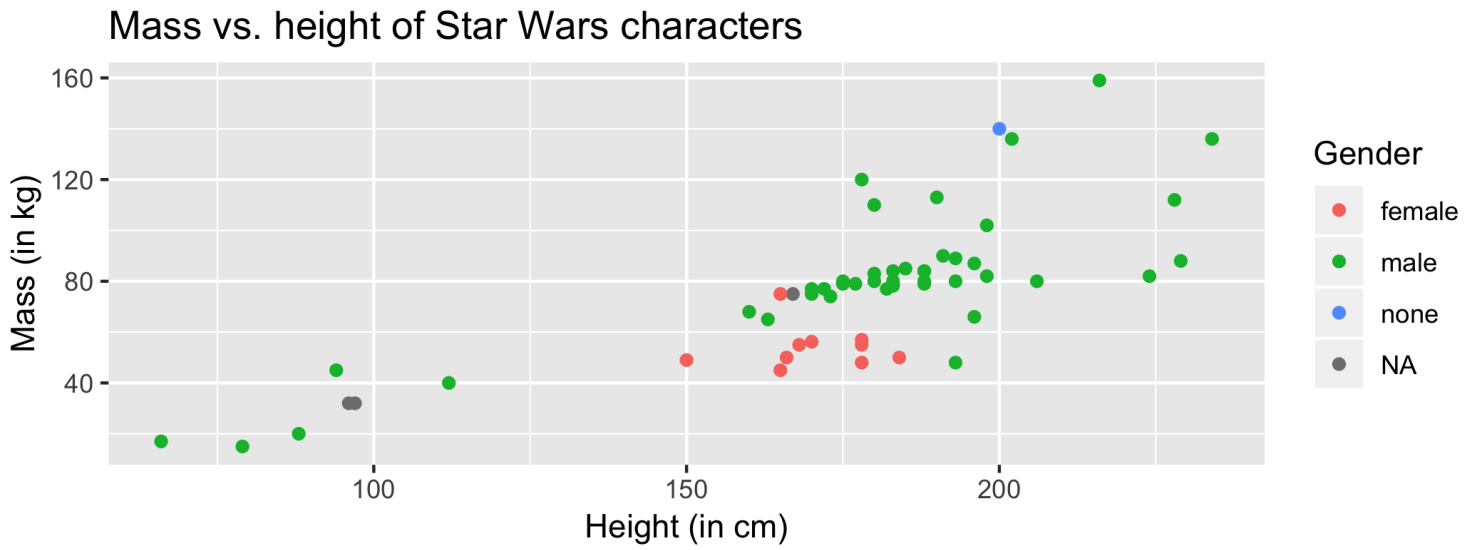
Add x and y labels

```
ggplot(data = starwars, aes(x = height, y = mass, color = gender)) +
  geom_point() +
  labs(title = "Mass vs. height of Star Wars characters",
       x = "Height (in cm)", y = "Mass (in kg)")
```



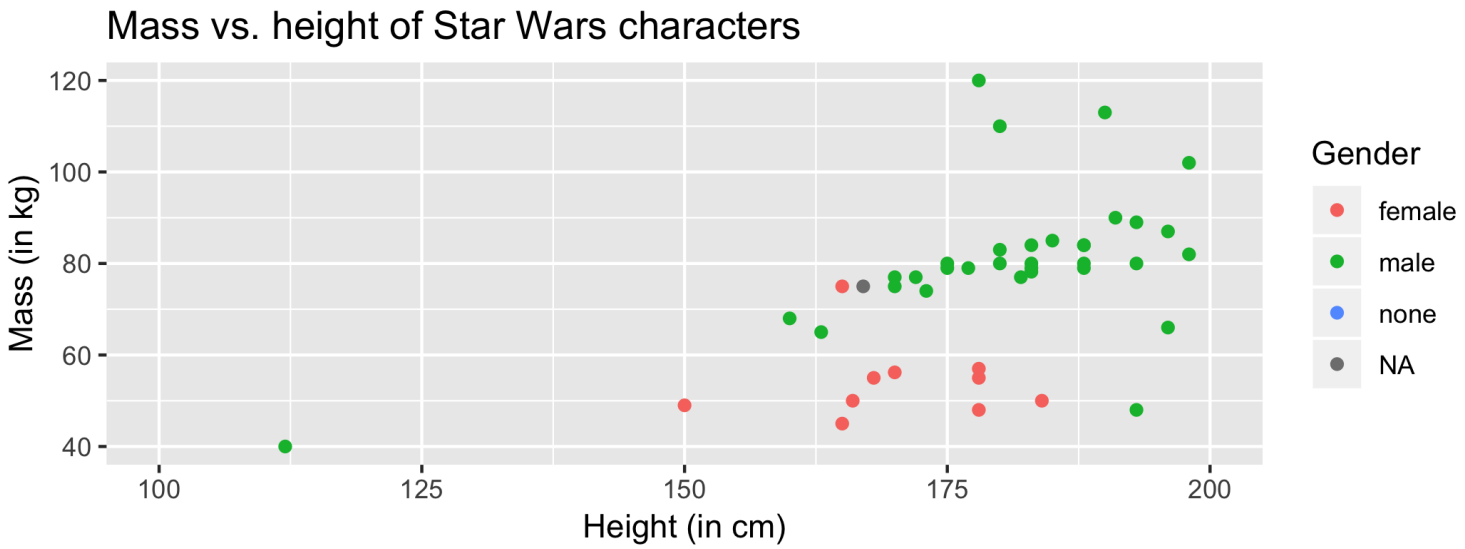
Change legend label

```
ggplot(data = starwars, aes(x = height, y = mass, color = gender)) +
  geom_point() +
  labs(title = "Mass vs. height of Star Wars characters",
       x = "Height (in cm)", y = "Mass (in kg)", color = "Gender")
```



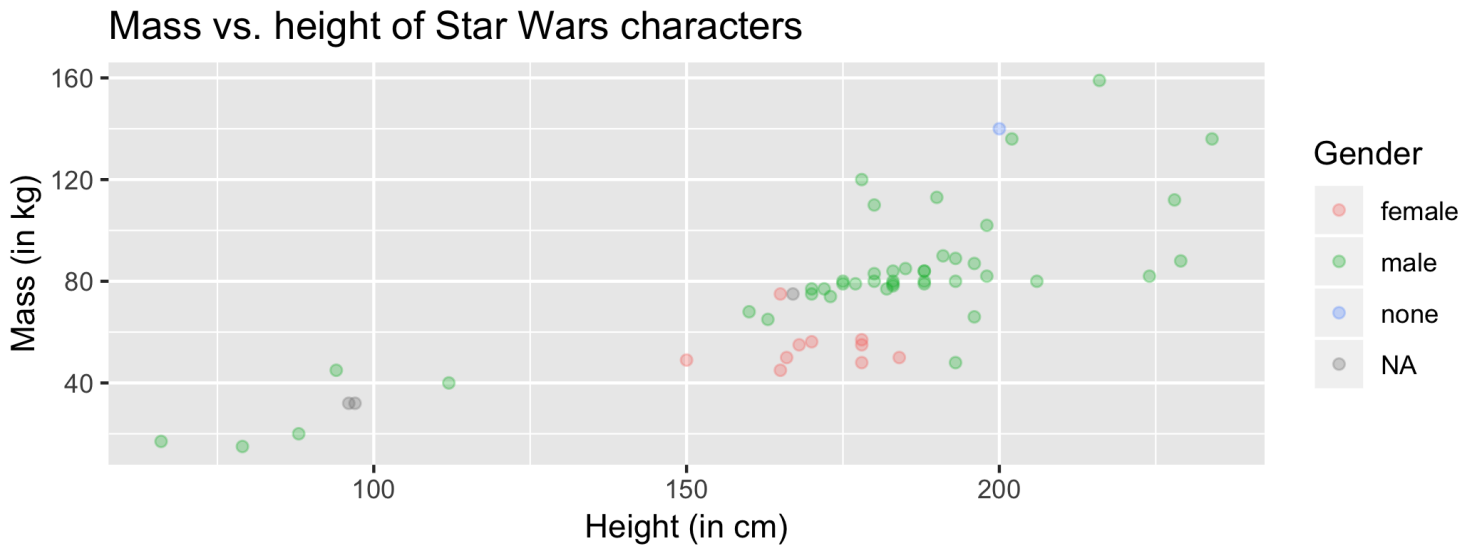
Change zooming

```
ggplot(data = starwars, aes(x = height, y = mass, color = gender)) +
  geom_point() +
  labs(title = "Mass vs. height of Star Wars characters",
       x = "Height (in cm)", y = "Mass (in kg)", color = "Gender") +
  xlim(c(100, 200)) +
  ylim(c(40, 120))
```



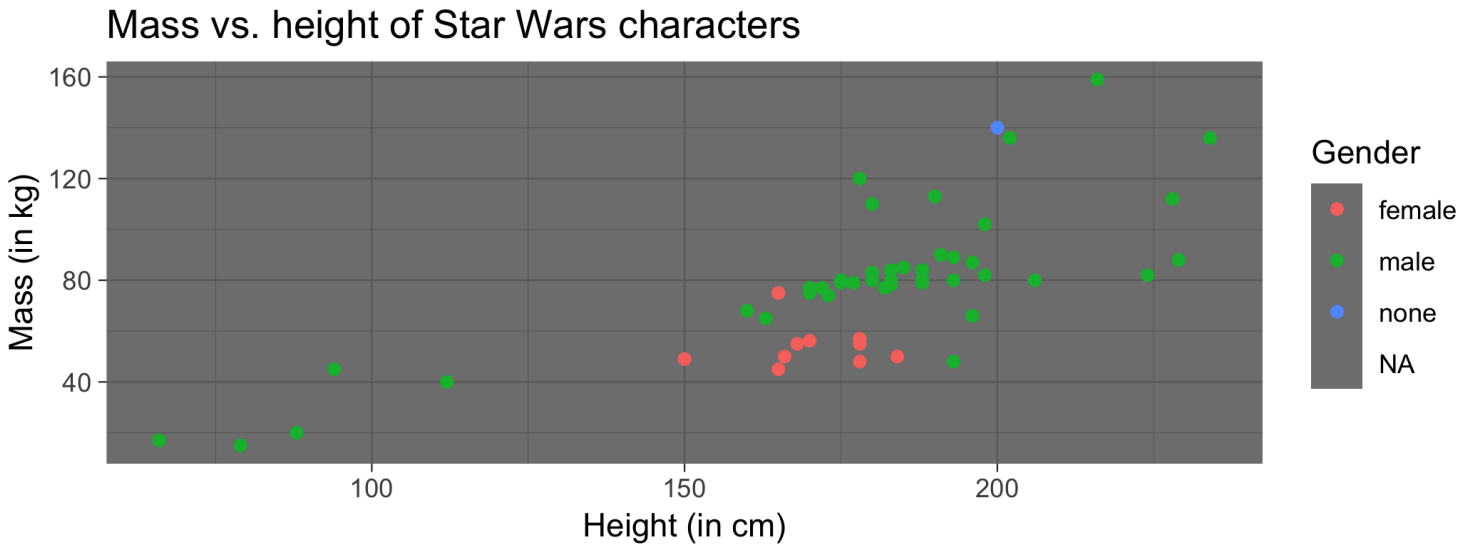
Change transparency

```
ggplot(data = starwars, aes(x = height, y = mass, color = gender)) +
  geom_point(alpha = 0.3) +
  labs(title = "Mass vs. height of Star Wars characters",
       x = "Height (in cm)", y = "Mass (in kg)", color = "Gender")
```



Change theme - `theme_dark()`

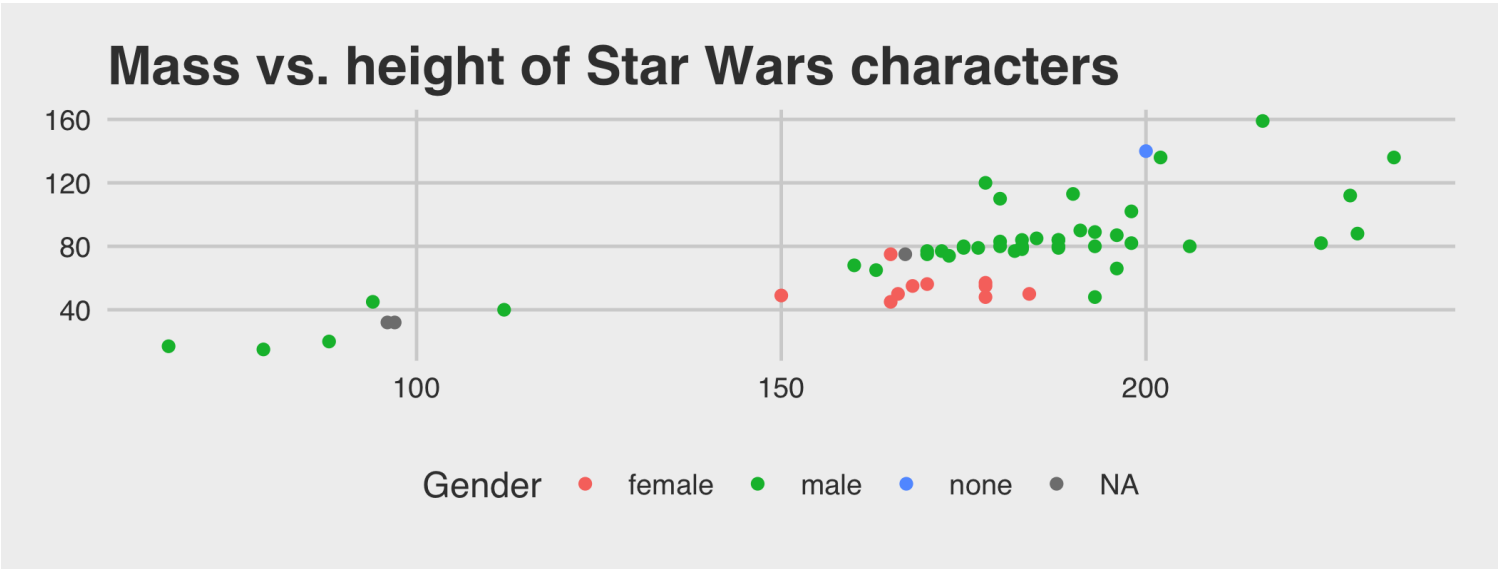
```
ggplot(data = starwars, aes(x = height, y = mass, color = gender)) +
  geom_point() +
  labs(title = "Mass vs. height of Star Wars characters",
       x = "Height (in cm)", y = "Mass (in kg)", color = "Gender") +
  theme_dark()
```



538 theme

```
library(ggthemes)

ggplot(data = starwars, aes(x = height, y = mass, color = gender)) +
  geom_point() +
  labs(title = "Mass vs. height of Star Wars characters",
       x = "Height (in cm)", y = "Mass (in kg)", color = "Gender") +
  theme_fivethirtyeight()
```



Further customization

- It is possible to do a lot more customization to your plots
- See http://ggplot2.tidyverse.org/ for help on using the ggplot2 package
  - You can find a list of all ggplot2 functions in the Reference tab of the package homepage
- Sometimes customization is valuable. Other times, the defaults work well and further customization is not needed.

Wrangling diamonds data

Follow along on RStudio Cloud: Review - Diamonds

The data

Diamond prices are driven by 4Cs: carat, cut, color, and clarity. We'll explore a dataset containing the prices and other attributes of almost 54,000 diamonds from the tidyverse package.

View the codebook:

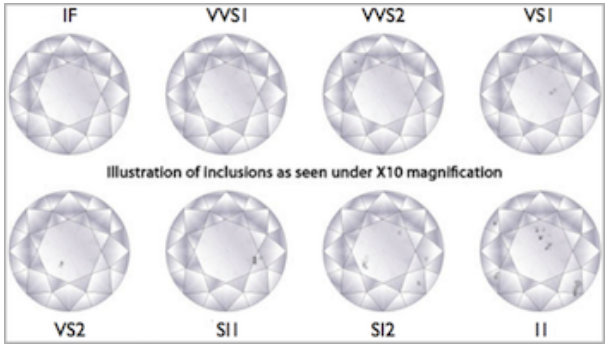
```
?diamonds
```

or at http://ggplot2.tidyverse.org/reference/diamonds.html

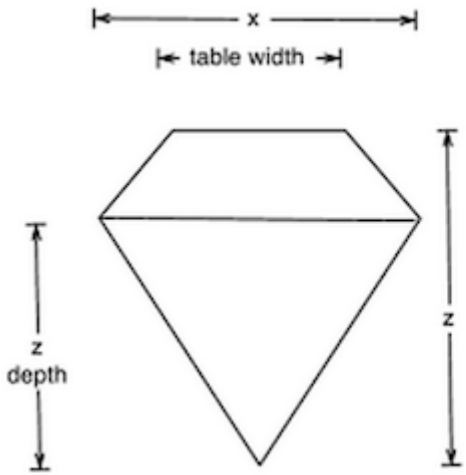
4Cs of diamonds

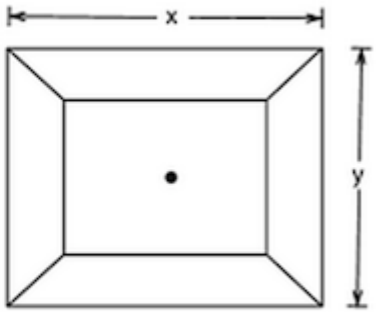
- **Carat**: unit of mass equal to 200 mg used for measuring gemstones and pearls
- **Cut**: objective measure of a diamond's light performance / sparkle
- **Color**:

- **Clarity**:



Measurements





depth = z depth / z * 100
table = table width / x * 100

Cut

How many diamonds of each type of cut are there?

Clarity

Calculate the relative frequency (proportion) of each clarity of diamonds.

Clarity by cut

Calculate the relative frequency of each clarity of diamonds by cut.

Depth and price

Plot the relationship between depth and price of only fair cut diamonds.

Cut and price

For each type of cut, calculate minimum (**`min`**), maximum (**`max`**), mean (**`mean`**), and median (**`median`**) price of diamonds of that type.

Recap

- Start with data frame
- Pipe into a function (verb)
- Only print output if counting, summarizing, etc.
- Save output as the original data frame (or something else) if you want to use the updated data frame later in the analysis

Writing Exercise #1 Peer Review