Graphics I Problems

1. swiss
    a. Load in data(swiss)
    b. Have a quick look
        i. Names
        ii. Dimensions
        iii. Class
    c. Plot all variables in swiss
    d. Plot histogram of fertility
    e. Plot Agriculture by Examination
    f. Add a line of best fit
    g. Make it look nicer
        i. Change pch type and size
        ii. Add x and y labels
        iii. Add main title
        iv. (optional) Change colour or points
   v. Change colour, line type and thickness of line of best fit

2. mtcars
    a. Load in mtcars and have a look
    b. Plot all variables
    c. Plot histogram of mpg
    d. Plot a strip chart of horse power against number of gear
    e. Make it look nicer
        i. Change the plot to vertical
        ii. Add a wiggle or "jitter"
        iii. Add main title, x and y label
        iv. (optional) Change colour or points
    f. Plot a boxplot of miles per gallon by number of cylinders
    g. Make it look nicer
        i. Change y axis limits to 0 to 40
        ii. Add main title, x and y label
    h. Boxplot miles per gallon by cylinders and transmission (hint: am*cyl)
        i. Add main title, x and y label

ii.   Change y axis limits to 0 to 40

iii. Colour by transmission type

iv.   Change group names on x axis

v.   Add legend for transmission type

3. Matrix of mtcars

    a. Plot a matrix of 2c, 2e, 2g and 2h with margins 4, 4, 1, 1 and mgp 2.5, 1, 0

    b. Recreate this
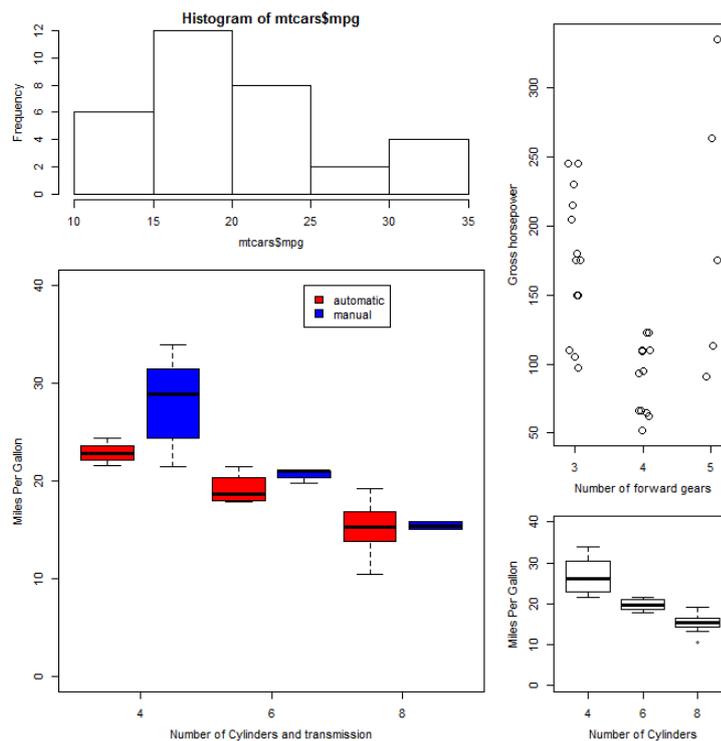
4. sciplot

    a. Install sciplot

    b. Plot a barchart with confidence intervals of horse power by number of cylinders with transmission as group with a legend

    c. Make it look nicer

        i.   Y limits of 0-400

        ii. Change legend labels

        iii. Add x and y labels and main title

        iv. Colour by transmission type

    d. Plot it again, but as a line chart

    e. Make it look nicer

<ol type="i">
Y limits of 0-400
Change legend labels
Add x and y labels and main title
Colour by transmission type
Line type by transmission type
Make lines thicker

5. Stuff to play with

http://research.stowers-institute.org/efg/R/Color/Chart/

http://www.stat.columbia.edu/~tzheng/files/Rcolor.pdf

n=20

pie(rep(1,n), col=FALSE)

layout(matrix(c(1,2,3,4,5,6), 3, 2))

par(mar=c(4, 4, 1, 1), mgp = c(2.5, 1, 0))

pie(rep(1,n),
col=c("darkred","red","brown","orange","darkgoldenrod","cornsilk","yellow","darkolivegreen1",
"green","cyan","steelblue","blue","blueviolet","blue4","darkorchid1","white","grey90","grey","g
rey20","black"), main="colours")

pie(rep(1,n), col=rainbow(n), main="rainbow")

pie(rep(1,n), col=heat.colors(n), main="heat")

pie(rep(1,n), col=terrain.colors(n), main="terrain")

pie(rep(1,n), col=topo.colors(n), main="topo")

pie(rep(1,n), col=cm.colors(n), main="cm")

http://www.endmemo.com/program/R/pchsymbols.php

########
Plot all variables in mtcars heatmap

########

```
x  <- as.matrix(mtcars)

rc <- rainbow(nrow(x), start = 0, end = .3)

cc <- rainbow(ncol(x), start = 0, end = .3)


heatmap(x, Rowv = NA, Colv = NA, scale = "column",

    main = "heatmap(*, NA, NA) ~= image(t(x))")




heatmap(x, Colv = NA, col = cm.colors(256), scale = "column",

    RowSideColors = rc, margins = c(5,10),

    xlab = "specification variables", ylab =  "Car Models",

    main = "heatmap of mtcars")
```