MULTIVARIATE DATA AND ANALYSIS EXERCISES

Easy Questions:

1. Find the correlation matrix and covariance matrix of the **`age`**, **`IQ`** and **`weight`** variables in the hypo data after filling in the missing values with mean replacements (i.e. the mean of that column for the existing data) rounded to the nearest whole integer.

2. Create and examine both the normal probability plots of each variable in the archaeology data and the chi-square plot of the data. Do the plots suggest anything unusual about the data?

More Difficult Questions, 'Extra Credit':

3. Manually convert this covariance matrix into the corresponding correlation matrix:

   3.8778 2.8110 3.1480 3.5062
   2.8110 2.1210 2.2669 2.5690
   3.1480 2.2669 2.6550 2.8341
   3.5062 2.5690 2.8341 3.2352

   Note that there is an R function that already does this: **`cov2cor(),`** which you can use to check your work. Once you successfully 'hand-crank' the computations to convert a covariance matrix into a corresponding correlation matrix, then write a user-defined R function, **`cor.matrix()`** to do it for you. Make sure that your **`cor.matrix()`** function prints out the: (1) original covariance matrix; (2) the **`cov2cor()`** computed correlation matrix, and then finally, just beneath (3) your own **`cor.matrix()`** computed correlation matrix. Are they the same?