Chapter 3: Covariance, regression, and correlation

## Covariance

Covariance is a measure of association and the covariance between x and y would be denoted by . If x and y are independent then , BUT if , x and y aren’t necessarily independent.

### Useful identities for cov

Covariance of x with itself = variance of x:

For constants (here represented by a):

The covariance of 2 sums can be written as the sum of covariances, i.e. just multiply out the brackets (I’ve left this blank, do it yourself or check book):

Variance of a sum is sum of variances and covariances (figure this out):

## Least squares linear regression

Linear model:

Continuing on, and will be the true population values and a and b will be the intercept and slope for the line of best fit derived from observed data. The derivation of a and b using the least-squares model can be found on pages 39-41. Buuut, who cares about that, here are the results: