Exercise Sheet 1

R.G. Pierse

1. Let X and Y be random variables with

$$\begin{aligned} E(X) &= 4, \qquad E(Y) = 3, \qquad Var(X) = 2, \\ Var(Y) &= 1, \qquad Cov(X, Y) = 0.5 \end{aligned}$$

   Evaluate:

   (a) $E(X + Y)$

   (b) $Var(X + Y)$

   (c) $E(3X)$

   (d) $Var(3X)$.

2. A is a discrete random variable taking four values with probabilities given by the table

A	1	2	3	4
$P(A)$	0.3	0.1	0.4	0.2

   Evaluate:

   (a) $E(A)$

   (b) $E(A^2)$

   (c) $Var(A)$.

3. Given 3 observations on variable B given by the table

	1	2	3
B_i	10	50	30

   Calculate:

   (a)

$$\sum_i B_i$$

(b)

$$\sum_i B_i^2$$

(c)

$$\sum_{j \neq i} \sum_i B_i B_j$$