1. Two random variables X and Y have the following joint probability mass function:

p(x,y)	$X=-1$	$X=0$
$Y=0$	a	0.1
$Y=1$	0.1	0.2

   Find:

   (a) what is a ?

   (b) Cov(X, Y)

   (c) The correlation coefficient ρ between X and Y.

   (d) If $Z = 3X + 4Y$ then Find $E(Z)$ and $Var(Z)$.

2. Let X and Y be two random variables. Then show that $cov(X, Y) = E(XY) - E(X)E(Y)$

3. Let X and Y be two random variables. What does it mean if:

   (a) $Cov(X, Y) > 0, < 0 = 0$.

   (b) Correlation coefficient of $X, Y > or < or = 0$

   (c) What happens to the above quantities when X and Y are independent ?

4. Example 5.13, with r=5, N=5,n=4. Find E(Y) and Var(Y).

[1] **Office hours:** Monday:2:00-3:00pm, Tuesday:10:30-11:30, 3:30-4:30 pm