1. The joint probability mass function (joint pmf) of two discrete random variables, X and Y, is given in the following table:

	$X=1$	$X=2$	$X=3$
$Y=1$	.02	.08	.30
$Y=2$	.04	.32	.04
$Y=3$	.10	.08	.02

   (a) Find the covariance $\text{Cov}(X, Y)$.

   (b) Find the correlation $\rho_{X,Y}$.

2. Suppose X_1, X_2 are *independent* random variables with means $E(X_1) = \mu_1$, $E(X_2) = \mu_2$ and standard deviations $SD(X_1) = \sigma_1$, $SD(X_2) = \sigma_2$. Find

   (a) $E(4X_1 - 3X_2 + 1)$

   (b) $Var(4X_1 - 3X_2 + 1)$

   (c) $\text{Cov}(X_1 + X_2, X_1 - X_2)$