		Value of Y				
		14	**22**	**30**	**40**	**65**
Value of X	**1**	0.02	0.05	0.10	0.03	0.01
	5	0.17	0.15	0.05	0.02	0.01
	8	0.02	0.03	0.15	0.10	0.09

That is, $\Pr(X = 1, Y = 14) = 0.02$, and so forth.

a. Calculate the probability distribution, mean, and variance of Y.

b. Calculate the probability distribution, mean, and variance of Y given $X = 8$.

c. Calculate the covariance and correlation between X and Y.

2.10 Compute the following probabilities:

a. If Y is distributed $N(1, 4)$, find $\Pr(Y \leq 3)$.

b. If Y is distributed $N(3, 9)$, find $\Pr(Y > 0)$.

c. If Y is distributed $N(50, 25)$, find $\Pr(40 \leq Y \leq 52)$.

d. If Y is distributed $N(5, 2)$, find $\Pr(6 \leq Y \leq 8)$.

2.11 Compute the following probabilities:

a. If Y is distributed χ^2_4, find $\Pr(Y \leq 7.78)$.

b. If Y is distributed χ^2_{10}, find $\Pr(Y > 18.31)$.

c. If Y is distributed $F_{10,\infty}$, find $\Pr(Y > 1.83)$.

d. Why are the answers to (b) and (c) the same?

e. If Y is distributed χ^2_1, find $\Pr(Y \leq 1.0)$. (*Hint:* Use the definition of the χ^2_1 distribution.)

2.12 Compute the following probabilities:

a. If Y is distributed t_{15}, find $\Pr(Y > 1.75)$.

b. If Y is distributed t_{90}, find $\Pr(-1.99 \leq Y \leq 1.99)$.

c. If Y is distributed $N(0, 1)$, find $\Pr(-1.99 \leq Y \leq 1.99)$.

d. Why are the answers to (b) and (c) approximately the same?

e. If Y is distributed $F_{7,4}$, find $\Pr(Y > 4.12)$.

f. If Y is distributed $F_{7,120}$, find $\Pr(Y > 2.79)$.