

7.34 Suppose that for a given computer salesperson, the probability distribution of x = the number of systems sold in 1 month is given by the following table:

x	1	2	3	4	5	6	7	8
$p(x)$	.05	.10	.12	.30	.30	.11	.01	.01

- Find the mean value of x (the mean number of systems sold).
- Find the variance and standard deviation of x . How would you interpret these values?
- What is the probability that the number of systems sold is within 1 standard deviation of its mean value?
- What is the probability that the number of systems sold is more than 2 standard deviations from the mean?

7.41 Consider a large ferry that can accommodate cars and buses. The toll for cars is \$3, and the toll for buses is \$10. Let x and y denote the number of cars and buses, respectively, carried on a single trip. Cars and buses are accommodated on different levels of the ferry, so the number of buses accommodated on any trip is independent of the number of cars on the trip. Suppose that x and y have the following probability distributions:

x	0	1	2	3	4	5
$p(x)$	.05	.10	.25	.30	.20	.10
y	0	1	2			
$p(y)$	.50	.30	.20			

- Compute the mean and standard deviation of x .
- Compute the mean and standard deviation of y .
- Compute the mean and variance of the total amount of money collected in tolls from cars.
- Compute the mean and variance of the total amount of money collected in tolls from buses.
- Compute the mean and variance of z = total number of vehicles (cars and buses) on the ferry.
- Compute the mean and variance of w = total amount of money collected in tolls.

A non-for-profit organization is running a festival. Tickets to festival cost \$5 for children, \$15 for adults, and \$12 for senior citizens. The organization pays \$5,000 to rent the space needed from the county.

Based on previous years the organization knows that the mean and st. deviations of children, adults and senior citizen tickets sales are: 600 and 80, 500 and 50, and 200 and 25 respectively.

What is the expected value and st. deviation of the profit of the organization from this festival?

7.107 A business has six customer service telephone lines. Let x denote the number of lines in use at a specified time. Suppose that the probability distribution of x is as follows:

x	0	1	2	3	4	5	6
$p(x)$	.10	.15	.20	.25	.20	.06	.04

Write each of the following events in terms of x , and then calculate the probability of each one:

- At most three lines are in use
- Fewer than three lines are in use
- At least three lines are in use
- Between two and five lines (inclusive) are in use
- Between two and four lines (inclusive) are not in use
- At least four lines are not in use