

2. Suppose the national unemployment rate is 4.1%. 100 members of the labor force are selected at random.

(a) Of these 100 people, what is the expected number of unemployed?

(b) What is the standard deviation of the number of unemployed?

3. A 7-Eleven store serves 0 to 5 customers from 10 to 11:00A.M. The p.f. of the number of customers in that hours is:

Number of Customers	Probability	Number of Customers	Probability
0	0.1	3	0.20
1	0.15	4	0.15
2	0.30	5	0.10

(a) What is the expected number of customers between 10 and 11?

(b) What is the variance and the standard deviation of the number of customers?

4. Nine percent of undergraduate college students have a balance on their credit card that exceeds \$7000. 10 undergraduates are selected at random and are interviewed about their credit card usage.

(a) Is the selection of these 10 students a binomial experiment? Explain.

(b) What is the probability that 2 of these 10 students will have a credit card balance that exceeds \$7000 (each)?

(c) What is the probability that none of them will have a credit card balance in excess of \$7000?

(d) What is the probability that at least 3 will have a credit card balance that exceeds \$7000?

5. In the 2002 baseball season, Barry Bonds had the highest batting average in the major leagues at 0.370. Suppose the probability Barry Bonds gets a hit during a particular at bat is 0.37. If Bonds gets 5 at bats in a game, what is the chance he:

(a) Will get exactly 3 hits?

(b) Will get at least 1 hit?

6. Airline passengers arrive randomly and independently at the passenger-screening facility at O'Hare International Airport. The mean arrival rate is 10 passengers per minute.

(a) How is this experiment distributed?

(b) What is the probability of no arrivals in a one-minute period?

(c) What is the probability that fewer than 4 passengers arrive in a one-minute period?

(d) What is the probability that no passengers arrive in a 15 second period?

(e) What is the probability of at least one passenger arrives in a 15 second period?

7. Given $Z = \alpha_0 + \alpha_1 W$, where Z and W are random variables. Derive:

(a) Expected value of Z .

(b) Variance of Z .