

Fall 2018, Statistics I

HW #7

1. Approximately 0.5% of items sold by a major department store are returned for refund. The department store sells 1000 items during a week.
 - (a) How many items is expected to be returned?
 - (b) What is the probability that less than 4 items are returned?
2. Assume that on the average 3% of passengers who make hotel reservations cancel their reservations. A hotel has 115 rooms but makes 120 reservation. What is the probability that every passenger will have a room?
3. On the average 5 cars arrive at a service station to buy gas in any 4-minute interval. Find the probability that during a 4-minute interval 6 cars enter the station. What is the probability that in a 2-minute interval 4 cars enter the station?
4. A major oil company drills 6 independent test well in Alaska. If the probability of any well reaching oil is 0.40, find the probability of the following
 - (a) two of the wells reach oil.
 - (b) five of the wells reach oil.
 - (c) none of the wells reach oil.
5. 80% of the patients who go a medical clinic are covered by some type of medical insurance. Find the probability of the following among the next 8 patients:
 - (a) Only 3 are covered.
 - (b) More than 4 are covered.
 - (c) Less that 6 are covered.
6. Based on data from the last several years in Manhattan, the probability that a car it totally destroyed in a car accident is 0.00032. A car insurance company has insured about 15000 cars in this area. What is the probability that the company must pay the value of three or more cars destroyed in accidents?

7. Management of a company producing dishwasher has set the standard that only 0.1% of the dishwasher produced could be defective. This company produces 3000 dishwashers per month. The company promises its employees a bonus for every month on which no defective dishwasher is produced. What is the probability that employees get bonus on any given month?
8. A life insurance salesman sells life insurance policies to four men 50 years and over. Assume probability is 0.8 that any of these men die within the next 20 years. Let the random variable X denote the number of men who die within the next 20 years.
- (a) Construct and graph the probability distribution of X .
 - (b) Calculate the mean and variance of X .