

Binomial random variables

1. A certain coin has a 25% of landing heads, and a 75% chance of landing tails.
 - (a) If you flip the coin 4 times, what is the chance of getting exactly 2 heads?

 - (b) If you flip the coin 10 times, what is the chance of getting exactly 2 heads?

2. Suppose that you are rolling a die eight times. Find the probability that the face with two spots comes up exactly twice.

3. The probability is 0.04 that a person reached on a “cold call” by a telemarketer will make a purchase. If the telemarketer calls 40 people, what is the probability that at least one sale with result?

4. A new restaurant opening in Greenwich village has a 30% chance of survival during their first year. If 16 restaurants open this year, find the probability that

(a) exactly 3 restaurants survive.

(b) fewer than 3 restaurants survive.

(c) more than 3 restaurants survive.

Poisson random variables

5. The number of calls arriving at the Swampside Police Station follows a Poisson distribution with rate 4.6/hour. What is the probability that exactly six calls will come between 8:00 p.m. and 9:00 p.m.?
6. In the station from Problem 5, find the probability that exactly 7 calls will come between 9:00 p.m. and 10:30 p.m.
7. Car accidents occur at a particular intersection in the city at a rate of about 2/year. Estimate the probability of no accidents occurring in a 6-month period.

