

Ch. 16 Probability Models Practice #2

Directions: Read carefully. Use proper notation, and write each answer as a decimal, and percent. Round to the nearest hundredth and nearest percent.

1) Geometric, Binomial, or Neither? Justify your answer with conditions and definitions.

a) The pool of potential jurors for a murder case contains 100 persons chosen at random from the adult residents of a large city. Each person in the pool is asked whether he or she opposes the death penalty. We are interested in the number of jurors we must interview before we obtain the first "yes." Assume p is the same for all people.

2) Geometric Probability Models (pdf= 1 outcome and cdf=sum of multiple outcomes)

a) A basketball player makes 80% of her free throws. We put her on the free-throw line and ask her to shoot free throws until she misses. Let X = the number of free throws the player takes until she misses. Assuming that her shots are independent, what is the probability that she will make 5 shots before she misses?

b) Carla makes random guesses on her Statistics multiple-choice test, which has five choices for each question. We want to know how many questions Carla answers until she gets one correct. What is the probability that Carla's first correct answer occurs within the first 6 questions?

3) Binomial Probability Models (pdf = x successes out of n trials, cdf = sum of x or fewer successes)

a) A hotel has four elevators. One of them is a freight elevator. When pressing the button, one of the elevators randomly services your floor. If you use the elevators ten times, what is the probability that you use the freight elevator exactly seven times?

b) An archer has a 38% chance of hitting the bullseye on a target. What is the probability that the archer will hit the bullseye up nine out of twenty-one times?