Bookmarks

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The Binomial Distribution - Quiz

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Question 1

1/1 point (graded)

Which of the following is the appropriate interpretation of the Binomial distribution?

- a. The distribution of a series of trials, each with any number of outcomes $1, \ldots, k$ and associated probabilities $p_1, \ldots, p_k$
- b. The number of successes in a sequence of n success/failure trials, each of which may have a different associated probability, $p_1, \ldots, p_n$
- c. The distribution of the different probabilities of success, $p_1, \ldots, p_n$ for a series of n success/failure trials
- d. The number of successes in a sequence of n success/failure trials, each of which has the same probability of success, p ✔

Explanation

- Module 5: Moments of a Random Variable, Applications to Auctions, & Intro to Regression
- Module 6: Special Distributions, the Sample Mean, the Central Limit Theorem, and Estimation

Human Subjects and Special Distributions
Finger Exercises due Nov 07, 2016 at 05:00 IST

The Sample Mean, Central Limit Theorem, and Estimation
Finger Exercises due Nov 07, 2016 at 05:00 IST

Module 6: Homework
Homework due Oct 31, 2016 at 05:00 IST

- Exit Survey

A binomial distribution refers the number of successes in a sequence of n success/failure trials (meaning, there are only two outcomes) where the probability of success is constant across trials and given by p.

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)

Question 2

1/1 point (graded)

Let's go back to the example of Anna and Brian as soccer players. As before, the probability that Anna makes a shot is $p_A = 0.2$ and the probability that Brian makes a shot is $p_B = 0.5$.

Suppose that Anna takes 50 shots and that Brian takes 25 shots. For each player, the probability that they will make a shot does not change over time. In other words, each of their 25 to 50 shots are independent.

Calculate the expectation and variance for each of Anna's and Brian's shots according to the sequence of shots attempted as described above.

Provide exact answers, i.e. do not round

Expectation of Anna's 50 shots

10 ✔ **Answer:** 10

10

Variance of Anna's 50 shots

8 ✔ **Answer:** 8

8

Expectation of Brian's 25 shots

12.5 ✔ **Answer:** 12.5

12.5

Variance of Brian's 25 shots

6.25 ✔ **Answer:** 6.25

6.25

Explanation

The expectation of Anna's 50 shots is given by $np = 50 * 0.2 = 10$ and the variance is given by $npq = 50 * 0.2 * 0.8 = 8$. The expectation of Brian's 25 shots is given by $np = 25 * 0.5 = 12.5$ and the variance is given by $npq = 25 * 0.5 * 0.5 = 6.25.$

Submit You have used 1 of 2 attempts

✔ Correct (1/1 point)

Discussion
Topic: Module 6 / The Binomial Distribution - Quiz

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