

Name: _____

TA Name: _____

Secret Word: _____

Data 88S

Feb 23, 2024

Chapter 4, Exercise 7

1. A book has 20 chapters. In each chapter the number of misprints has the Poisson distribution with parameter 2, independently of the misprints in other chapters.

(a) Find the chance that Chapter 1 has more than two misprints.

(b) Find the chance that the book has no misprints.

(c) Find the chance that two of the chapters have three misprints each.

Chapter 4, Exercise 8

2. In the first hour that a bank opens, the customers who enter are of three kinds: those who only require teller service, those who only want to use the ATM, and those who only require special services (neither the tellers nor the ATM). Assume that the numbers of customers of the three kinds are independent of each other and also that:

- the number that only require teller service has the Poisson (6) distribution,
- the number that only want to use the ATM has the Poisson (2) distribution, and
- the number that only require special services has the Poisson (1) distribution.

Suppose you observe the bank in the first hour that it opens. In each part below, find the chance of the event described.

(a) 12 customers enter the bank

(b) more than 12 customers enter the bank

(c) customers do enter but none requires special services

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Chapter 4, Exercise 12

3. Each Cal Cookie contains random amounts of blue M&Ms and gold M&Ms. No other color is allowed. In one cookie, let N_b be the number of blue M&Ms and N_g be the number of gold M&Ms. Let $M = N_b + N_g$ be the total number of M&Ms in the cookie.

Suppose that N_b and N_g are independent and that each has the Poisson (4) distribution.

(a) Find $P(N_b = 3 | M = 10)$.

(b) Fill in the blanks with the name of a distribution and its parameters. Explain your answers.

Given $M = 10$, N_b has the _____ distribution with parameters _____.