

Name: _____

TA Name: _____

Secret Word: _____

Data 88S

Feb 28, 2024

Chapter 5, Exercise 2

1. A true/false test consists of 25 questions. A student knows the correct answer to 10 of the questions. She guesses each of the other answers independently based on the toss of a coin.

(a) Find the expectation of the number of correct answers.

(b) Find the chance that the student gets more than 20 questions right.

Chapter 5, Exercise 1

2. Let X have the distribution displayed in the table below.

x	-2	-1	0	1
$P(X = x)$	0.2	0.25	0.35	0.2

(a) Find $E(X)$

(b) Find $E(X - 1)$

(c) Find $E(|X - 1|)$

(d) Find $E(|X - 1|^2)$

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Chapter 5, Exercise 3

3. A box contains four blank index cards and one that has a gold star on it. Cards are drawn one by one at random without replacement until the gold star appears. Let D be the number of cards drawn.

(a) Find the distribution of D .

(b) Find $E(D)$.

Chapter 5, Exercise 5

4. A coin is tossed four times. Let X be the number of heads in the first three tosses and let Y be the number of heads in the last three tosses.

(a) Do X and Y have different distributions? Explain.

(b) Are X and Y independent? Explain.

(c) Make a joint distribution table for X and Y . It might help to write out all the possible outcomes of four tosses of a coin, though it is not necessary.

(d) Use your table in Part c to find $P(X = Y)$.

(e) Use your table in Part c to find the marginal distribution of X , and check that it is consistent with your answer in Part a.