

Probability Quiz

- Due Jun 18 at 10am
- Points 16
- Questions 6
- Available Jun 18 at 9:40am - Jun 18 at 10:15pm 12 hours and 35 minutes
- Time Limit 20 Minutes
- Allowed Attempts 2

Instructions

This is a quiz to measure your understanding of concepts introduced to you. Try and work out the process/method of each question

Topics included in this quiz are

Notations, joint and conditional notations, and Expected value and Probability distributions

The quiz should take you 20 **minutes** max to complete.

You will have only 2 attempt

All the best

Take the Quiz Again

Attempt History

	Attempt	Time	Score
LATEST	Attempt 1	18 minutes	13 out of 16 *

* Some questions not yet graded

⚠ Answers will be shown after your last attempt

Score for this attempt: 13 out of 16 *

* Some questions not yet graded

Submitted Jun 18 at 9:59am

This attempt took 18 minutes.



Question 1

2 / 2 pts

A coin is flipped 3 times.

What is the probability of getting exactly 2 heads at the end of 3 flits



Question 2

2 / 2 pts

What is the difference between independent and disjoint events?

- ☒ Disjoint events cannot occur together, while independent events can
- ☐ They are the same
- ☐ Independent events cannot occur together, while disjoint events can
- ☐ There is no difference



Question 3

3 / 3 pts

Ω is the set of possible outcomes of an experiment

What is the Ω of rolling 2 dice 2 times?

Hint: multiply the number of outcomes for each die. a dice has 6 sides

- ☐ 32*32
- ☐ 1
- ☐ 1
- ☒ 36*36

Each die has 6 faces, and when you roll two dice, you're essentially performing two independent events. To find the total number of outcomes, you can multiply the number of outcomes for each die:

Number of outcomes for the first die = 6 (since it has 6 faces) Number of outcomes for the second die = 6 (again, it has 6 faces) Total number of outcomes for two dice = 6 (outcomes for the first die) * 6 (outcomes for the second die) = 36

So, for a single roll of two fair six-sided dice, there are 36 possible



Question 4

5 / 5 pts

$$E(f) = \sum_i p(x_i) \cdot f(x_i)$$

A slum (in some country that is not Africa) has only diseased water but you want to create an ML that detects diseases in water. You are tasked with data collection within that slum. you cannot go outside the slum, The water is either diseased or clean. Mayor Marvin says if you collect clean undiseased water he will give you \$1000 and if you bring diseased water you get \$1 dollar. What amount do you expect you will get

The probability of getting diseased water is 0.7.

☐ Approx \$700

☒ \$300.7

☐ \$1000

☐ \$300



Question 5

1 / 1 pts

Match the Examples of descriptions on the left to the appropriate distribution type on the right

An average of 0.61 soldiers died by horse kicks per year in each Prussian army corps. You want to calculate the probability that exactly two soldiers died in the VII Army Corps in 1898

Poisson Distribution



The amount of time spouses shop for anniversary cards can be modeled by ?

Exponential Distribution



Flipping a fair coin and the outcome that its head means you win

Bernoulli Distribution



Given the probability of surviving an attack by a certain disease is 60%. You are asked the probability that at least 11 out of a group of 12 people who catch the disease will survive

Binomial Distribution



Question 6

Not yet graded / 3 pts

What is wrong with the following code for the exponential distribution formula?

name a few things that you could fix to match the exponential formula for $x > 0$

NB there are at least 3 things to fix

$$f_X(x|\lambda) = \begin{cases} \lambda e^{-\lambda x} & \text{for } x > 0 \\ 0 & \text{for } x \leq 0 \end{cases}$$

```
import numpy
def exponential(lambda, x):
    return lambda*np.exp(e)**-lambda*x
```

Your Answer:

The variable name `lambda` is incorrect. Change it into `lmbda`.

Update the formula from `lambda*np.exp(e)**-lambda*x` to `lmbda * numpy.exp(-lmbda * x)` to correctly calculate the exponential term.

Use `return result` to return the computed value of the exponential distribution formula.

correct one:

```
import numpy
def exponential(lmbda, x):
    result = lmbda * numpy.exp(-lmbda * x)
    return result
```

Quiz Score: 13 out of 16
* Some questions not yet graded