

## Lecture 8: Quiz

Name:

### Problem 1

Who started the investigation of probability theory?

- a) Bernoulli.
- b) Euler.
- c) Cardano.
- d) Kolmogorov

### Problem 2

What is the counting strategy to increase the winning chance in the game 21. Remember the clips of "21" and "hangover"?

- a) By summing up all the values of the previous cards.
- b) Small cards 2-7 add to a count, large ones (10,J,Q,A) decrease.
- c) Small cards 2-7 reduce the count, large ones (10,J,Q,A) increase.
- d) By counting the aces which appear.

### Problem 3

What is the Martingale strategy? a) Always bet on black.

- b) Double the bet when losing, quit after first win.
- c) Count the values of the card

### Problem 3

What is an "event"?

- a) An element in an element from the laboratory  $\Omega$
- b) The laboratory set  $\Omega$
- c) A subset of the set  $\Omega$
- d) A function from the set  $\Omega$  to the reals.

### Problem 4

In how many ways can one permute 4 letters a)  $4(3-1)/2 = 4$

- b) 4.
- c)  $4! = 24$ .
- d)  $4!3!2!1 = 288$

### Problem 5

Which mathematician is credited to have first pondered the Petersburg Casino problem?

- a) Bernoulli
- b) Kolmogorov
- c) Fermat
- d) Pascal

### Problem 6

The Monty-Hall problem has the following origin:

- a) A lecture hall name, where the question was first raised.
- b) The Monty Python sketch: on how to irritate people.
- c) Monty Hall was the name of a game show host.
- d) Monty is the main character from the movie "With honors".

### Problem 7

The expectation of a random variable  $X$  is

- a) a real number which tells, what values the variable is expected to have.
- b) a random variable which gives the best possible guess for  $X$ .
- c) in a finite laboratory, it is the event which occurs most.
- d) it is the expected deviation from the mean.

### Problem 8

Which theorem assures that a normalized sum random variables converges to the normal distribution:

- a) The weak law of large numbers.
- b) The strong law of large numbers.
- c) The central limit theorem.
- d) The law of iterated logarithm.

### Problem 8

What was the starting point of probability theory?

- a) statistical analysis of data
- b) statistical mechanics.
- c) stock market and finance.
- d) gambling

### Problem 10

The correct answer in Bertrand's Paradox is:

- a)  $1/2$
- b)  $1/3$
- c)  $1/4$
- d) it depends.