Zur LVA in TISS

Dashboard / Meine Kurse / 107.254-2022W / Tests / Test 2 - Conditional probabilities and the Bayes theorem

Begonnen am	Samstag, 25. Februar 2023, 18:44
Status	Beendet
Beendet am	Samstag, 25. Februar 2023, 18:49
Verbrauchte Zeit	4 Minuten 54 Sekunden
Bewertung	**10** von 10 (**100**%)
Feedback	Congratulations! You have successfully passed the test!

Frage **1**
Vollständig
Erreichte Punkte 1 von 1

Tom enters a chess tournament where his probability of winning a game is 0.3 against half of the players (category I), 0.4 against a quarter of the players (category II), and 0.5 against the remaining quarter of the players (category III). Tom plays a game against a randomly chosen opponent. Suppose that he wins. What is the probability that he had an opponent from category I?

a. 0.24
b. 0.56
c. 0.20
d. 0.40

Frage **2**
Vollständig
Erreichte Punkte 1 von 1

Which **one** of the following statements is **true**?

a. $P(B|A) + P(B^c|A) = 1$
b. $P(A) = P(A|B) + P(A|B^c)$
c. $P(B|A) + P(B^c|A^c) = 1$
d. $P(B|A) + P(B|A^c) = 1$

Frage **3**
Vollständig
Erreichte Punkte 1 von 1

We toss two fair coins simultaneously and independently. If the outcomes of the two coin tosses are the same, we win, otherwise, we lose. Let A be the event that the first coin comes up heads, B be the event that the second coin comes up heads and C be the event that we win. Which of the following statements is true?

a. Events A and B are not independent.
b. Events A and C are independent.
c. The probability of winning is 3/4.
d. Events B and C are not independent.

Frage **4**
Vollständig
Erreichte Punkte 1 von 1

A computer technician notes that 40% of computers fail because of the hard drive, 25% because of the monitor, 20% because of a disk drive, and 15% because of the microprocessor. If the problem is not in the monitor, what is the probability that it is in the hard drive?

a. 0.400
b. 0.650
c. 0.533
d. 0.150

Frage **5**
Vollständig
Erreichte Punkte 1 von 1

Nina and Adam both need to buy a bicycle. The bike store has a stock of four green, three yellow and two red bikes. Nina randomly picks one of the bikes and buys it. Immediately after, Adam does the same. The sale price of the green, yellow and red bikes are 300, 200 and 100 euro, respectively. Let N be the event that NIna bought a green bike, and A be the event that Adam bought a green bike. Which of the following statements is **true**?

a. The probability that Nina and Adam bought bicycles of different colors is bigger than 5/9.
b. The probability that at least one of them bought a green bike is bigger than 8/9.
c. The probability that Nina and Adam bought bicycles of different colors is the same as the probability that they bought bicycles of the same color.
d. The probability that Nina and Adam bought bicycles of different colors is smaller than 5/9.

Frage **6**
Vollständig
Erreichte Punkte 1 von 1

Let A and B be two independent events such that $P(A|B) = 0.3$ and $P(B|A) = 0.6$. Compute the probability $P(A^c \cap B)$.

- a. 0.18
- b. 0.42
- c. 0.12
- d. 0.56

Frage **7**
Vollständig
Erreichte Punkte 1 von 1

Let the probabilities $P(A) = 0.4$ and $P(A \cup B) = 0.6$ be given. Compute the probability $P(B)$ if

(i) A and B are mutually exclusive

(ii) A and B are independent

respectively.

- a. $\frac{3}{5}, \frac{1}{3}$
- b. $\frac{1}{5}, \frac{2}{5}$
- c. $\frac{1}{3}, \frac{1}{5}$
- d. $\frac{1}{5}, \frac{1}{3}$

Frage **8**
Vollständig
Erreichte Punkte 1 von 1

A plumbing contractor obtains 60 of her boiler circulators from a company whose defect rate is 0.005, and the rest from a company whose defect rate is 0.01. What proportion of the circulators can be expected to be defective? If a circulator is defective, what is the probability that it came from the first company?

- a. 0.007 and 0.429
- b. 0.034 and 0.882
- c. 0.007 and 0.571
- d. 0.034 and 0.118

Frage **9**
Vollständig
Erreichte Punkte 1 von 1

Suppose that 60% of students who take the AP Statistics exam score 4 or 5, 25% score 3, and the rest score 1 or 2. Suppose further that 95% of those scoring 4 or 5 receive college credit, 50% of those scoring 3 receive such credit, and 4% of those scoring 1 or 2 receive credit. If a student who is chosen at random from among those taking the exam receives college credit, what is the probability that she received a 3 on the exam?

- a. 0.822
- b. 0.701
- c. 0.125
- d. 0.178

Frage **10**
Vollständig
Erreichte Punkte 1 von 1

Suppose box A contains 4 red and 5 blue coins and box B contains 6 red and 3 blue coins. A coin is chosen at random from box A and placed in box B. Finally, a coin is chosen at random from among those that are now in box B. What is the probability a red coin was transferred from box A to box B given that the coin chosen from box B is blue?

- a. 2/9
- b. 3/8
- c. 16/45
- d. 5/8

◀ Test 1 - Counting and computing probabilities | Direkt zu: | Test 3 - Random variables and distributions ▶