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**Begonnen am** Freitag, 24. Februar 2023, 19:03**Status** Beendet**Beendet am** Freitag, 24. Februar 2023, 19:33**Verbrauchte Zeit** 29 Minuten 52 Sekunden**Bewertung** 9 von 10 (90%)**Feedback** Congratulations! You have successfully passed the test!

Frage 1

Vollständig

Erreichte  
Punkte 1 von 1

A dice is tossed 120 times with the following results

number turned up	1	2	3	4	5	6
frequency	30	25	18	10	22	15

Mark tests the hypothesis that the dice is unbiased. If the rejection region is  $R = [11.7, +\infty)$ , which one of the following statements is correct?

- ☐ a.  $\chi^2 = 12.3$  he should not reject the null.
- ☐ b.  $\chi^2 = 11.3$  and he should reject the null.
- ☒ c.  $\chi^2 = 12.9$  and he should reject the null.
- ☐ d.  $\chi^2 = 10.9$  and he should not reject the null.

Frage 2

Vollständig

Erreichte  
Punkte 1 von 1In the context of the goodness of fit  $\chi^2$ -test for four categories let the observed frequencies be 5, 10, 10 und 15. Let the null hypothesis be that no category is preferred. Further let the rejection region be  $R = [7, \infty)$ . Then,

- ☐ a. we can not say of whether we reject the null hypothesis
- ☒ b. we do not reject the null hypothesis
- ☐ c. we reject the null hypothesis
- ☐ d. due to the data type we should have performed another test

Frage 3

Vollständig

Erreichte  
Punkte 1 von 1Is there a relationship between education level and sports interest? A study cross-classified 1500 randomly selected adults in three categories of education level (not a high school graduate, high school graduate, and college graduate) and five categories of major sports interest (baseball, basketball, football, hockey, and tennis). The  $\chi^2$ -value is 13.95. Is there evidence of a relationship between education level and sports interest?

- ☐ a. There is sufficient evidence at the 5% significance level of a relationship between education level and sports interest.
- ☒ b. There is sufficient evidence at the 10% significance level, but not at the 5% significance level, of a relationship between education level and sports interest.
- ☐ c. The data prove there is a relationship between education level and sports interest.
- ☐ d. The  $P$ -value is greater than 0.10, so there is no evidence of a relationship between education level and sports interest.

Frage 4

Vollständig

Erreichte  
Punkte 1 von 1

For a project, a student randomly picks 100 fellow AP Statistics students to survey on whether each has either a PC or Apple at home (all students in the school have a home computer) and what score (1, 2, 3, 4, 5) each expects to receive on the AP exam. A chi-square test of independence results in a test statistic of 8. How many degrees of freedom are there?

- ☒ a. 4
- ☐ b. 1
- ☐ c. 9
- ☐ d. 7

Frage 5

Vollständig

Erreichte  
Punkte 1 von 1

A geneticist claims that four species of fruit flies should appear in the ratio 1:3:3:9. Suppose that a sample of 2000 flies contained 110, 345, 360, and 1185 flies of each species, respectively. Is there sufficient evidence to reject the geneticist's claim?

- ☐ a. The data do not give sufficient evidence to reject the geneticist's claim.
- ☐ b. The data prove the geneticist's claim.
- ☐ c. The data prove the geneticist's claim is false.
- ☒ d. The data give sufficient evidence to reject the geneticist's claim.

Frage 6

Vollständig

Erreichte  
Punkte 0 von 1

To test the claim that dogs bite more or less depending upon the phase of the moon, a university hospital counts admissions for dog bites and classifies with moon phase.

	New moon	First quarter	Full moon	Last quarter
Dog bite admissions	32	27	47	38

Which of the following is the proper conclusion?

- ☒ a. The data give evidence that dog bites do not occur equally during all moon phases.
- ☐ b. The data give evidence that dog bites occur equally during all moon phases.
- ☐ c. The data do not give sufficient evidence to conclude that dog bites are related to moon phases.
- ☐ d. The data prove that dog bites occur equally during all moon phases.

Frage 7

Vollständig

Erreichte  
Punkte 1 von 1

You perform a  $\chi^2$ -test for independence in R using `chisq.test()`. A sufficient input is

- ☐ a. the total number of observations
- ☐ b. the matrix of relative cell-frequencies
- ☐ c. the vector of all observations
- ☒ d. the matrix of absolute cell-frequencies

Frage 8

Vollständig

Erreichte  
Punkte 1 von 1

According to theory, blood types in the general population occur in the following [proportions](#): 46% O, 40% A, 10% B, and 4% AB. Anthropologists come upon a previously unknown civilization living on a remote island. A random sampling of blood types yields the following counts: 77 O, 85 A, 23 B, and 15 AB. Is there sufficient evidence to conclude that the distribution of blood types found among the island population differs from that which occurs in the general population?

- ☐ a. The data give sufficient evidence at the 1% significance level that blood type distribution on the island is different from that of the general population.
- ☐ b. The data do not give sufficient evidence at the 5% significance level that blood type distribution on the island is different from that of the general population.
- ☐ c. The data prove that blood type distribution on the island is not different from that of the general population.
- ☒ d. The data give sufficient evidence at the 5% significance level, but not at the 1% significance level, that blood type distribution on the island is different from that of the general population.

Frage 9

Vollständig

Erreichte  
Punkte 1 von 1

In crosses between two types of maize four distinct types of plants were found in the second generation.

In a sample of 1301 plants there were 773 green, 231 golden, 238 green-striped, 59 golden-green-striped.

According to a simple theory of genetical inheritance the probabilities of obtaining these four plants are  $\frac{9}{16}$ ,  $\frac{3}{16}$ ,  $\frac{3}{16}$ ,  $\frac{1}{16}$  respectively.

Is the theory acceptable as a model for this experiment?

- ☐ a. The model is not specified.
- ☐ b. Yes, the test statistic is 9.272
- ☐ c. Yes, at 5% level.
- ☒ d. No, the  $P$ -value is 0.026.

Frage **10**

Vollständig

Erreichte  
Punkte 1 von 1

A food biologist surveys people at an ice cream parlor, noting their taste preferences and cross-classifying against the presence or absence of a particular marker in a saliva swab test.

	Presence	Absence
Vanilla	32	12
Chocolate	15	7
Strawberry	24	19

Is there sufficient evidence of a relationship between taste preference and the marker presence?

- ☐ a. There is sufficient evidence at the 5% significance level of a relationship between taste preference and the presence of the marker.
- ☐ b. There is sufficient evidence at the 10% significance level, but not at the 5% significance level, of a relationship between taste preference and the presence of the marker.
- ☒ c. There is not sufficient evidence at the 10% significance level of a relationship between taste preference and the presence of the marker.
- ☐ d. At the 10% significance level, the data prove that there is no relationship between taste preference and the presence of the marker.

[◀ Test 10 - Confidence intervals](#)

Direkt zu:

[Test 12 - Review Part 2 ▶](#)