

**STATISTICS 2**  
**WS 2023/24 (Mag. Thomas Forstner)**

Course-Number: 366.554

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- 19) In educational experiments, it has generally been observed that children tend to mix more with adults than other children whom they do not know. But with the lapse of time, the feeling of strangeness disappears and they mix more with other children than adults in the school. The following table gives responses of 25 children of a class in school.

Object of initiation on first day	Object of initiation after 30 days	
	Adult	Child
	Adult	13
	Child	3

Find out if there is a statistically relevant change in children's initiation ( $\alpha = 5\%$ ).

- 20) In a small company, the numbers of promotions in the past year are examined for a possible association between gender and promotion. The hypothesis of association between gender and promotion should be tested (type I error of 5%).

The records show the following:

		Promotion	
		Yes	No
Gender	Male	5	2
	Female	1	6

Compare the results of the Chi square test, the Chi square test with Yates Correction and the Fisher's Exact test.

- 21) To evaluate the performance of a new diagnostic test, the developer checks it out on 100 known cases of the disease for which the test was designed, and on 200 controls known to be free of the disease. Ninety of the cases yield positive tests, as do 30 of the controls. Calculate the sensitivity, specificity, positive predictive value and negative predictive value of this new diagnostic test.