Institut of Mathematical Stochastics
assoc. Prof. Dr. W. Kahle

Original

Examination in Statistical Analysis II
Part I (Feb. 19., 1999)

1. A sample of credit card purchase amounts is gathered from each of two competing department stores. The data are shown in the table:

Purchase Amounts for Store 1	Purchase Amounts for Store 2
\$ 17.95	\$ 26.36
\$ 16.53	\$ 35.32
\$ 54.76	\$ 16.53
\$ 19.86	\$ 25.43
\$ 20.54	\$ 67.32
\$ 25.65	\$ 24.33
\$ 24.21	\$ 76.33
\$ 13.27	\$ 32.15
\$ 78.32	\$ 23.15
\$ 25.47	

Use the Mann-Whitney test to test whether the average credit card purchase amount is in one store larger than in the other. Dicuss your findings.

2. Parents of blood type AB can have children of three different types: AA, AB, and BB. If the hypothesis of Mendelian inheritance is true, these three types will be born 25%, 50%, and 25% of the time in a long run. The following data gives the blood types of 284 children born of 100 AB couples.

Blood type	Number of children
AA	65
AB	152
BB	67

Test the hypothesis of Mendelian inheritance!

3. The accompanying table shows, for seven grown-up sons, the height of a son (y) and the height of his father (x) (in cm):

height of father x	175	177	178	180	182	183	185
height of son y	177	178	179	182	181	181	182

(a) Find the sample correlation between height of father and height of son.
(b) Test at the 5% level the hypothesis that the population correlation coefficient is zero.
(c) Estimate the linear regression of height of son on height of father.
(d) Interpret the estimated slope of the regression line.
(e) Find a 90% confindence interval for the slope of the population regression line.