Kruskal-Wallis-Test

Stufe 3: H aus mittleren Rängen

Name: _____ Datum: _____

Aus den mittleren Rängen: H = 12 : (N(N + 1)) · Summe n_j · (R_j – (N + 1) : 2)². Ergebnis auf 2 Nachkommastellen.

1) $k = 4$ Gruppen: $n_1 = 11$, $\overline{R}_1 = 13$; $n_2 = 8$, $\overline{R}_2 = 19{,}88$; $n_3 = 7$, $\overline{R}_3 = 20{,}43$; $n_4 = 8$, $\overline{R}_4 = 18{,}75$. H? _____

2) $k = 4$ Gruppen: $n_1 = 11$, $\overline{R}_1 = 9{,}73$; $n_2 = 6$, $\overline{R}_2 = 14{,}83$; $n_3 = 11$, $\overline{R}_3 = 22{,}36$; $n_4 = 5$, $\overline{R}_4 = 23{,}8$. H? _____

3) $k = 3$ Gruppen: $n_1 = 8$, $\overline{R}_1 = 8$; $n_2 = 5$, $\overline{R}_2 = 14$; $n_3 = 12$, $\overline{R}_3 = 15{,}92$. H? _____

4) $k = 4$ Gruppen: $n_1 = 8$, $\overline{R}_1 = 11{,}88$; $n_2 = 12$, $\overline{R}_2 = 15{,}42$; $n_3 = 10$, $\overline{R}_3 = 24{,}1$; $n_4 = 6$, $\overline{R}_4 = 24{,}17$. H? _____

5) $k = 4$ Gruppen: $n_1 = 8$, $\overline{R}_1 = 9{,}5$; $n_2 = 11$, $\overline{R}_2 = 13{,}45$; $n_3 = 6$, $\overline{R}_3 = 23{,}17$; $n_4 = 6$, $\overline{R}_4 = 22{,}17$. H? _____

6) $k = 4$ Gruppen: $n_1 = 12$, $\overline{R}_1 = 9{,}33$; $n_2 = 7$, $\overline{R}_2 = 12{,}71$; $n_3 = 8$, $\overline{R}_3 = 23{,}25$; $n_4 = 5$, $\overline{R}_4 = 28{,}2$. H? _____

7) $k = 4$ Gruppen: $n_1 = 9$, $\overline{R}_1 = 19{,}67$; $n_2 = 11$, $\overline{R}_2 = 16{,}64$; $n_3 = 9$, $\overline{R}_3 = 18{,}67$; $n_4 = 12$, $\overline{R}_4 = 27{,}75$. H? _____

8) $k = 3$ Gruppen: $n_1 = 12$, $\overline{R}_1 = 7{,}33$; $n_2 = 6$, $\overline{R}_2 = 15{,}17$; $n_3 = 12$, $\overline{R}_3 = 23{,}83$. H? _____

9) $k = 3$ Gruppen: $n_1 = 9$, $\overline{R}_1 = 6{,}44$; $n_2 = 12$, $\overline{R}_2 = 14{,}92$; $n_3 = 10$, $\overline{R}_3 = 25{,}9$. H? _____

10) $k = 3$ Gruppen: $n_1 = 11$, $\overline{R}_1 = 6{,}64$; $n_2 = 6$, $\overline{R}_2 = 18{,}67$; $n_3 = 9$, $\overline{R}_3 = 18{,}44$. H? _____

11) $k = 4$ Gruppen: $n_1 = 11$, $\overline{R}_1 = 9{,}45$; $n_2 = 5$, $\overline{R}_2 = 18{,}6$; $n_3 = 9$, $\overline{R}_3 = 17{,}44$; $n_4 = 12$, $\overline{R}_4 = 29{,}08$. H? _____

12) $k = 3$ Gruppen: $n_1 = 10$, $\overline{R}_1 = 12{,}1$; $n_2 = 11$, $\overline{R}_2 = 15{,}73$; $n_3 = 11$, $\overline{R}_3 = 21{,}27$. H? _____

13) $k = 3$ Gruppen: $n_1 = 5$, $\overline{R}_1 = 3{,}8$; $n_2 = 7$, $\overline{R}_2 = 13{,}29$; $n_3 = 9$, $\overline{R}_3 = 13{,}22$. H? _____

14) $k = 4$ Gruppen: $n_1 = 5$, $\overline{R}_1 = 15{,}8$; $n_2 = 9$, $\overline{R}_2 = 11{,}33$; $n_3 = 11$, $\overline{R}_3 = 16{,}91$; $n_4 = 8$, $\overline{R}_4 = 24{,}25$. H? _____

15) $k = 3$ Gruppen: $n_1 = 6$, $\overline{R}_1 = 4{,}5$; $n_2 = 7$, $\overline{R}_2 = 11{,}86$; $n_3 = 8$, $\overline{R}_3 = 15{,}13$. H? _____

16) $k = 4$ Gruppen: $n_1 = 9$, $\overline{R}_1 = 13{,}22$; $n_2 = 12$, $\overline{R}_2 = 18{,}42$; $n_3 = 6$, $\overline{R}_3 = 17{,}33$; $n_4 = 9$, $\overline{R}_4 = 24{,}67$. H? _____

17) $k = 3$ Gruppen: $n_1 = 10$, $\overline{R}_1 = 5{,}8$; $n_2 = 9$, $\overline{R}_2 = 14{,}67$; $n_3 = 8$, $\overline{R}_3 = 23{,}5$. H? _____

Lösungen: Kruskal-Wallis-Test

Stufe 3: H aus mittleren Rängen

1) $N = 34$, $\frac{N+1}{2} = 17{,}5$; $H = \frac{12}{34 \cdot 35} \sum n_j(\overline{R}_j - 17{,}5)^2 \approx 3{,}44$ ($\chi^2_{3;\,0{,}95} \approx 7{,}81$) $\Rightarrow$ H_0 nicht ablehnen

2) $N = 33$, $\frac{N+1}{2} = 17$; $H = \frac{12}{33 \cdot 34} \sum n_j(\overline{R}_j - 17)^2 \approx 12{,}37$ ($\chi^2_{3;\,0{,}95} \approx 7{,}81$) $\Rightarrow$ H_0 ablehnen

3) $N = 25$, $\frac{N+1}{2} = 13$; $H = \frac{12}{25 \cdot 26} \sum n_j(\overline{R}_j - 13)^2 \approx 5{,}67$ ($\chi^2_{2;\,0{,}95} \approx 5{,}99$) $\Rightarrow$ H_0 nicht ablehnen

4) $N = 36$, $\frac{N+1}{2} = 18{,}5$; $H = \frac{12}{36 \cdot 37} \sum n_j(\overline{R}_j - 18{,}5)^2 \approx 8{,}75$ ($\chi^2_{3;\,0{,}95} \approx 7{,}81$) $\Rightarrow$ H_0 ablehnen

5) $N = 31$, $\frac{N+1}{2} = 16$; $H = \frac{12}{31 \cdot 32} \sum n_j(\overline{R}_j - 16)^2 \approx 11{,}45$ ($\chi^2_{3;\,0{,}95} \approx 7{,}81$) $\Rightarrow$ H_0 ablehnen

6) $N = 32$, $\frac{N+1}{2} = 16{,}5$; $H = \frac{12}{32 \cdot 33} \sum n_j(\overline{R}_j - 16{,}5)^2 \approx 20{,}07$ ($\chi^2_{3;\,0{,}95} \approx 7{,}81$) $\Rightarrow$ H_0 ablehnen

7) $N = 41$, $\frac{N+1}{2} = 21$; $H = \frac{12}{41 \cdot 42} \sum n_j(\overline{R}_j - 21)^2 \approx 5{,}72$ ($\chi^2_{3;\,0{,}95} \approx 7{,}81$) $\Rightarrow$ H_0 nicht ablehnen

8) $N = 30$, $\frac{N+1}{2} = 15{,}5$; $H = \frac{12}{30 \cdot 31} \sum n_j(\overline{R}_j - 15{,}5)^2 \approx 21{,}09$ ($\chi^2_{2;\,0{,}95} \approx 5{,}99$) $\Rightarrow$ H_0 ablehnen

9) $N = 31$, $\frac{N+1}{2} = 16$; $H = \frac{12}{31 \cdot 32} \sum n_j(\overline{R}_j - 16)^2 \approx 21{,}98$ ($\chi^2_{2;\,0{,}95} \approx 5{,}99$) $\Rightarrow$ H_0 ablehnen

10) $N = 26$, $\frac{N+1}{2} = 13{,}5$; $H = \frac{12}{26 \cdot 27} \sum n_j(\overline{R}_j - 13{,}5)^2 \approx 15{,}34$ ($\chi^2_{2;\,0{,}95} \approx 5{,}99$) $\Rightarrow$ H_0 ablehnen

11) $N = 37$, $\frac{N+1}{2} = 19$; $H = \frac{12}{37 \cdot 38} \sum n_j(\overline{R}_j - 19)^2 \approx 19{,}16$ ($\chi^2_{3;\,0{,}95} \approx 7{,}81$) $\Rightarrow$ H_0 ablehnen

12) $N = 32$, $\frac{N+1}{2} = 16{,}5$; $H = \frac{12}{32 \cdot 33} \sum n_j(\overline{R}_j - 16{,}5)^2 \approx 5{,}12$ ($\chi^2_{2;\,0{,}95} \approx 5{,}99$) $\Rightarrow$ H_0 nicht ablehnen

13) $N = 21$, $\frac{N+1}{2} = 11$; $H = \frac{12}{21 \cdot 22} \sum n_j(\overline{R}_j - 11)^2 \approx 8{,}84$ ($\chi^2_{2;\,0{,}95} \approx 5{,}99$) $\Rightarrow$ H_0 ablehnen

14) $N = 33$, $\frac{N+1}{2} = 17$; $H = \frac{12}{33 \cdot 34} \sum n_j(\overline{R}_j - 17)^2 \approx 7{,}67$ ($\chi^2_{3;\,0{,}95} \approx 7{,}81$) $\Rightarrow$ H_0 nicht ablehnen

15) $N = 21$, $\frac{N+1}{2} = 11$; $H = \frac{12}{21 \cdot 22} \sum n_j(\overline{R}_j - 11)^2 \approx 10{,}26$ ($\chi^2_{2;\,0{,}95} \approx 5{,}99$) $\Rightarrow$ H_0 ablehnen

16) $N = 36$, $\frac{N+1}{2} = 18{,}5$; $H = \frac{12}{36 \cdot 37} \sum n_j(\overline{R}_j - 18{,}5)^2 \approx 5{,}42$ ($\chi^2_{3;\,0{,}95} \approx 7{,}81$) $\Rightarrow$ H_0 nicht ablehnen

17) $N = 27$, $\frac{N+1}{2} = 14$; $H = \frac{12}{27 \cdot 28} \sum n_j(\overline{R}_j - 14)^2 \approx 22{,}2$ ($\chi^2_{2;\,0{,}95} \approx 5{,}99$) $\Rightarrow$ H_0 ablehnen