

①

$$a) \sum_{i=1}^5 x_{i,1} = 20 + 30 + 55 + 19 + 40 = \underline{\underline{164}}$$

$$b) \sum_{i=1}^2 x_{i,1} \cdot x_{i,2} = 20 \cdot 2200 + 30 \cdot 2400 = \underline{\underline{116000}}$$

$$c) \sum_{i=1}^4 2 \cdot x_{i,1} = 2 \cdot \sum_{i=1}^4 x_{i,1} = 2 \cdot (20 + 30 + 55 + 19) = \underline{\underline{248}}$$

$$d) \frac{1}{4} \sum_{i=1}^4 x_{i,1} = \frac{1}{4} \cdot (20 + 30 + 55 + 19) = \underline{\underline{31}}$$

$$e) \sum_{i=1}^5 \sum_{j=1}^2 x_{i,j} = 20 + 2200 + \dots + 40 + 4800 = \underline{\underline{14904}}$$

$$f) \prod_{i=1}^3 x_{i,2} = 2200 \cdot 2400 \cdot 3640 = \underline{\underline{19219200000}}$$

g) arithm. Mittel der ersten vier Messwerte in Spalte 1.

② $n = 16$ Schrauben

x_j	f_j	r_j	r_j^+
18	2	0,125	0,125
19	2	0,125	0,250
20	8	0,5	0,750
21	4	0,25	1

③

$$\bar{x} = \frac{1}{16} \cdot \sum_{i=1}^{16} x_i = \frac{21+20+18+\dots+20+21}{16} = \underline{\underline{19,875}}$$

$$\bar{x} = \frac{1}{16} \sum_{f=1}^h f_f x_f = \frac{2 \cdot 18 + 2 \cdot 19 + 8 \cdot 20 + 4 \cdot 21}{16} = \underline{\underline{19,875}}$$

$$\bar{x} = \sum_{f=1}^h f_f x_f = 0,125 \cdot 18 + 0,125 \cdot 19 + 0,5 \cdot 20 + 0,25 \cdot 21 = \underline{\underline{19,875}}$$

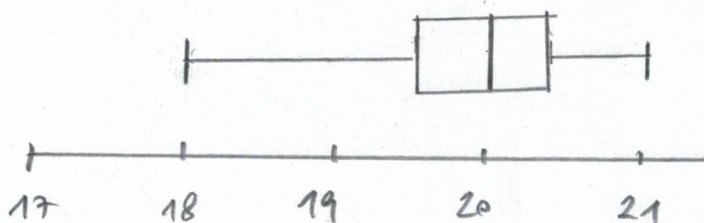
④ glordet:

18, 18, 19, 19, 20, 20, 20, 20, 20, 20, 20, 20, 21, 21, 21, 21

$\min = 18$, $\max = 21$,

Median = $\frac{20+20}{2} = 20$, $q_1 = 19,5$, $q_3 = 20,5$.

Boxplot:



⑤

$$x_{geom} = \sqrt[n]{\prod_{i=1}^n x_i} = \sqrt[3]{1,02 \cdot 1,03 \cdot 1,02}$$

$$= 1,023322$$

das ist ca. 2,3322% p.a.