Basic statistical relations:

Two relations for arithmetic mean and variance are presented.
First is mentioned for small data set.
Second is mentiond for large data set (categorized data).

Arithmetic mean

$$\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$$

$$\bar{x} = \frac{1}{n}\sum_{j=1}^{k} x_j n_j$$

Variance

$$s^2 = \frac{1}{n-1}\sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2$$

$$s^2 = \frac{1}{n-1}\left(\sum_{j=1}^{k} x_j^2 n_j - \left(\bar{x}^2 n\right)\right)$$

Standard deviation

$$s = \sqrt{s^2}$$

Coefficient of variation

$$v = \frac{s}{\bar{x}} \cdot 100 \quad [\%]$$

95% confidence interval.

$$95\% \qquad IS = \bar{x} \pm t_{(n-1)} \cdot \frac{s}{\sqrt{n}}$$

t-paremeters of Student's distribution are enclosed

Modus

The measured value which has mostly occured
For categorized data it is characteristic value of the category.

Median

Mean value – average of data sorted by size.
For categorized data it is characteristic value of the category, where the cumulative density the 50 %

t-parameters of Student's distribution

n	**$t_{0,025}$**
1	12,7
2	4,30
3	3,18
4	2,78
5	2,57
6	2,45
7	2,36
8	2,31
9	2,26
10	2,23
11	2,20
12	2,18
13	2,16
14	2,14
15	2,13
16	2,12
17	2,11
18	2,10
19	2,09

n	**$t_{0,025}$**
20	2,09
21	2,08
22	2,07
23	2,07
24	2,06
25	2,06
30	2,04
40	2,02
50	2,01
60	2,00
100	1,98
120	1,98
150	1,96
∞	1,96

Volume densities of selected textile fibers

conditioned fiber	**ρ[kg.m^{-3}]**
cotton	1520
flax	1450
viscose	1490
acetate, triacetate	1320
wool	1310
silk	1340
casein	1300
polyamide 6, polyamide 6.6	1140
polyester	1390
polyacrylonitrile	1190
polypropylene	910
polyethylene	950
glass	2500
basalt	2800