

In the table, there are given amounts of chocolate bars bought in particular shops in 2 weeks  
**Task:** Find number of observations, minimum, maximum, range, sum, average value, mode, n, standard deviation and variance coefficient, skewness, kurtoses.

14	12	28	18	20	Number of cases
18	15	20	14	16	Minimum
25	27	22	17	15	Maximum
21	10	25	25	24	Range
20	11	16	25	20	Sum
13	20	18	29	30	Average value
18	17	19	11	14	Mode
27	19	26	27	19	Median
15	17	24	26	26	Variance
19	22	16	22	27	Standard deviation
20	25	19	25	13	Variance coefficient
24	18	26	14	17	Skewness
					Kurtoses

cs.  
nedian, variance,



Results are in table.

Calculate weighted average of grades.

Grade	Credits
2	6
1	6
1	6
2	3
3	5
1	6
1	5
1	3
2	6
3	2
1	6
2	3
1	6
3	6
2	5
2	3
1	6
3	6
3	3
3	6
1	5
2	6

EXCEL (CZE)

**Measures of central tendency:  $\tilde{x}$**

Mode:  $\tilde{x}$  most frequent value =MODE

Median: middle value =MEDIAN

p-% quantil =PERCENTIL

Mean:  $\mu = \frac{1}{N} \sum_{i=1}^N x_i$

Sample average value:  $\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$  =PRŮMĚR

Geometric mean:  $x_g = \sqrt[n]{x_1 \cdot x_2 \cdot \dots \cdot x_n}$  =GEOMEAN

**Measures of variability:**

Range:  $R = \max x_i - \min x_i$

Population variance:  $\sigma^2 = \frac{1}{N} \sum_{i=1}^N (x_i - \mu)^2$  =VAR

Sample variance:  $s^2 = \frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2$  =VAR.VÝBĚR

Population standard deviation:  $\sigma = \sqrt{\sigma^2}$  =SMODCH

Sample standard deviation:  $s = \sqrt{s^2}$  =SMODCH.VÝBĚR

Coefficient of skewness:  $s_k = \frac{\sum (x - \bar{x})^3}{s^3}$  =SKEW

Coefficient of kurtoses =KURT

Varianceí coefficient:  $V = \frac{\sigma}{\bar{x}}$

Nástroje → Analýza dat → Popisná statistika

**Histogram**

Sturgers rule:  $k = \text{Rou}(n^{1/5}) + 1$

Nástroje → Analýza dat → Histogram

### Weighted characteristics

Weighted average value:

$$x_w = \frac{\sum_{i=1}^k w_i x_i}{\sum_{i=1}^k w_i}$$

Weighted variance:

$$s_w^2 = \frac{\sum_{i=1}^k w_i (x_i - x)^2}{\sum_{i=1}^k w_i - 1}$$

Weighted standard deviation:

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

EXCEL (ENG)

Excel 2013

=MODE.SNGL

=MEDIAN

=AVERAGEA

=GEOMEAN

=VAR.P

=VAR.S

=STDEVA

=STDEVA

=SKEW

=KURT