**Directed Work Series No. 3**
**(Statistical Indicators)**

**Exercise 1:** A javelin throw competition during an athletics meeting produced the following results:

| Throw Length (m) $x_i$ | Frequency $n_i$ |
|---|---|
| $[60-65[$ | 7 |
| $[65-70[$ | 3 |
| $[70-75[$ | 6 |
| $[75-80[$ | 9 |
| $[80-85[$ | 2 |

1. Calculate the mean and the mode of this series.
2. Indicate the median class of this series.
3. What percentage of athletes achieved a throw of at least 75 m?
4. What percentage of athletes achieved a throw of less than 70 m?

**Exercise 2:** Consider the series given by the following table:

| Value | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 |
|---|---|---|---|---|---|---|---|---|---|---|
| Frequency | 3 | 4 | 7 | 14 | 16 | 24 | 15 | 7 | 6 | 4 |

1. Determine the mean, variance, standard deviation, and coefficient of variation of this series.
2. Calculate the mode, median, and quartiles of this series.
3. Determine the range and the interquartile range.

**Exercise 3:** According to a study conducted in several companies, the distribution of workers by salary ranges was:

| Salary ($10^3$ DA) | $< 20$ | $20-25$ | $25-30$ | $30-40$ | $40-50$ | $50-70$ |
|---|---|---|---|---|---|---|
| $f_i$ | 0.05 | 0.14 | 0.37 | 0.27 | 0.14 | 0.03 |

1. Calculate the mean, standard deviation, and coefficient of variation of this distribution.
2. Determine the mode, median, interquartile range, and range of this distribution.

**Exercise 4:** For the distributions given in the following tables, plot the cumulative frequency curve, then determine the median graphically.

| $x_i$ | 2 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|
| $n_i$ | 1 | 2 | 2 | 1 | 3 | 2 | 1 | 1 |

| $x_i$ | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|
| $n_i$ | 1 | 1 | 1 | 1 | 1 | 2 | 1 |

**Exercise 5:** We are given the distribution of 75 children according to their height: Draw the curve of the increasing and decreasing cumulative frequencies, then graphically determine the median.

| Height $x_i$ | $[80-90[$ | $[90-95[$ | $[95-100[$ | $[100-105[$ | $[105-110[$ | $[110-120[$ |
|---|---|---|---|---|---|---|
| Frequency $n_i$ | 3 | 15 | 22 | 18 | 12 | 5 |