

PROBLEMS BY EXAMPLES

The following problems are examples for practical exam in Medical Informatics and Biostatistics. You will have at the exam some problems that will sum a number of 9 points out of 10 (see the points in round branches at the beginning of the problem).

Problem for requests 1 - 13

An anthropometric study was conducted on the newborn children born in 1st Gynecological Clinic in Cluj-Napoca between 1st January and 31 March 2005. The following variables were collected: sex, ethnicity, the living place (rural or urban), weight (g), length (cm), cranial perimeter (cm), and thoracic perimeter (cm). Data were stored into the **PA7-2.xls** Excel file.

Request 1.

(1 point) Compute for each patient the energy needs (estimated energy requirements based on basic body metabolism, growth and activity; units of measurements kcal). Use the following formula:

$$(89 \cdot \text{weight}[\text{kg}] - 100) + 175$$

Request 2.

(1 point) Compute descriptive statistics parameters for the quantitative variables.

Request 3.

(1 point) Represent graphically the relation between thoracic perimeter and cranial perimeter. Interpret your graphic.

Request 4.

(1 point) Represent graphically each qualitative variable.

Request 5.

(1 point) Create the histogram for the **Energy needs** variable.

Request 6.

(1 point) Is there a statistically significant correlation between the Weight of the newborns (grams) and Length (cm)?

Request 7.

(1 point) Is there a statistically significant difference between the mean of the weight at birth in patients from urban and rural? Use the 95% confidence intervals for mean in order to answer to this question.

Request 8.

(1 point) Is there a statistically significant correlation between the Weight of the newborns (grams) and Length (cm)?

State the null and alternative hypothesis. & Interpret the results from statistical and clinical point of views by using a PowerPoint presentation.

Request 9.

(1 point) Is there a statistically significant difference between the mean of the weight at birth in patients from urban and rural?

State the null and alternative hypothesis. & Interpret the results from statistical and clinical point of views by using a PowerPoint presentation

Request 10.

(1 point) Is there a statistically significant difference between the mean of the male and female thoracic perimeter?

State the null and alternative hypothesis. & Interpret the results from statistical and clinical point of views by using a PowerPoint presentation.

Request 11.

(1 point) Is there a significant difference between Body Mass Index of patients from rural compared with the patients from urban?

State the null and alternative hypothesis. & Interpret the results from statistical and clinical point of views by using a PowerPoint presentation.

The formula for body mass index is: $BMI (kg/m^2) = (weight(kg)) / (height(m^2))$

Request 12.

(1 point) Is sex dependent by living place?

State the null and alternative hypothesis. & Interpret the results from statistical and clinical point of views by using a PowerPoint presentation.

Request 13.

(1 point) Is sex a risk factor for underweight?

A new born is considered underweight if weight at birth is less than 2.2 kg.

State the null and alternative hypothesis. & Interpret the results from statistical and clinical point of views by using a PowerPoint presentation.