Statistics I in English
Exercises from *Übungsaufgaben und Lösungen zu Statistik I und II*
Part 2

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Exercise 1:
Consider the following situations. There is an inspection in a factory of iodized salt. An inspector investigates whether a quality of the product is good enough to sell it on the market. He takes 2 packages from the lot of 100 without replacement. If there is at least one defected package, the lot is rejected, otherwise accepted. The random variable Y express the number of checked boxes that does not meet the requirements:

$$Y = \begin{cases} 2 & \text{two are bad,} \\ 1 & \text{one is bad,} \\ 0 & \text{zero is bad.} \end{cases}$$

Assume that 90% packages meet the industry standards and are good enough to be sold on the market.
What is the distribution of the random variable Y?

Exercise 2:
A company wants to check the customers' opinion about the product in a town of one million inhabitants. The customers are describing their level of satisfaction $Y(\omega) \in \{0, 1, 2, 3, 4, 5\}$ with the product where 0 denotes "very unsatisfied", 1 means "unsatisfied", 2 "little unsatisfied", 3 „indifferent", 4 "satisfied", 5 "very satisfied".
The random variable Y defines the satisfaction level of the customers from the chosen town. What is the distribution of the random variable Y? Assume that one third of the inhabitants is very unsatisfied, indifferent and very satisfied.

Exercise 3-3:
Give the scale of the following items: 1) sex 2) temperature in Celsius 3) body height 4) number of children 5) post code 6) school grade 7) classification of companies according to their size 8) deviation from the norm

9) length of an item 10) newspaper subscriptions 11) nationality 12) election results of a political party 13) rank in the military 14) transportation fees 15) occupation in spare time 16) stock of books in a library 17) wind force 18) speed 19) shirt numbers 20) level of difficulty of a hiking trip 21) fuel consumption per 100km 22) insurance classification 23) quality category 24) price of a commodity 25) age 26) income 27) family status 28) learned occupation 29) birth year 30) page number in a book 31) reasons for death 32) yearly turnover 33) property size 34) specialization 35) latitude 36) classification of fruits 37) eye colour 38) address 39) telephone number 40) aggressiveness 41) legal form of a company 42) intelligence 43) social status 44) financing of studies 45) duration of production 46) number of semesters 47) exam grades