

Quantitative Methods

Mid-term Exam

1. Dice is thrown 8 times. What is the probability that fall 4 “1”, 2 “2” and 2 “3”?
2. Two hunters hit the target with probabilities 0.7 and 0.6 respectively. What is the probability that the target will be hit exactly 3 times, if each hunter shot twice?
3. Calculate mean, variance, median for the sample:

x_i	4	5	8	11	14
m_i	5	3	2	8	2

Build the empirical distribution function, histogram.

4. Lawyer wins with probability 0.9. How many cases it is necessary to hold to win at least 25 cases with probability 0.8?
5. Assurance company has three branches in different cities. After submitting the annual report CEO complains about the difference in results among branches and the necessity to replace some executives. CEO knows about your recent success in studying “Quantitative methods” course and asked you to prepare the recommendation report based on data provided.

Month	Kyiv			Lviv			Kharkiv		
	Income	Payments	Staff	Income	Payments	Staff	Income	Payments	Staff
	mln UAH	mln UAH	persons	mln UAH	mln UAH	persons	mln UAH	mln UAH	persons
January	51.58	41.19	49	3.48	2.91	17	4.80	3.60	21
February	56.53	38.17	51	7.12	5.44	17	5.10	3.83	23
March	50.72	36.66	51	4.10	3.08	17	5.20	3.90	23
April	58.92	48.50	47	7.57	5.68	18	4.50	3.38	23
May	55.89	46.76	49	3.31	2.78	18	4.40	3.30	25
June	36.09	27.93	52	3.68	2.86	18	4.80	3.60	21
July	49.54	37.39	51	6.48	5.16	19	4.90	3.68	23
August	40.76	33.26	52	3.04	2.48	19	7.20	5.40	23
September	43.95	29.80	53	5.13	3.85	19	6.40	4.80	24
October	54.65	36.61	53	6.12	4.69	18	3.40	2.55	24
November	41.15	34.77	46	4.63	3.97	18	2.80	2.10	26
December	41.86	35.74	54	3.50	2.63	18	8.40	5.91	26