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Solve the tasks using Excel or a data processing program if you are familiar with one. Attach the files used for the calculations along with the solutions.

Task 1: A supermarket is investigating losses due to spoilage of fruits and vegetables over the course of one year. Data on losses in BGN (Bulgarian Lev) are provided in Table 1.

Table 1. Losses from Spoilage of Fruits and Vegetables

Fruits and Vegetables	Losses (BGN)
Bananas	115
Oranges	301
Mandarins	5
Grapes	79
Tomatoes	788
Cucumbers	2392
Potatoes	324
Apples	340
Other	654

Create a Pareto chart and analyze the results.

Format the analysis of the results in a Word document, including the Pareto chart and corresponding commentary. Also, create a table containing the following: count, cumulative count, percentage, and cumulative percentage.

Task 2: Table 2 presents data on the axial runout of blanks for magnetic disks. Create a histogram and draw conclusions if the tolerance limits are: LSL = -20, USL = 20, with a target value of T = 0.

Create the histogram and analyze it in a Word document, including the histogram and commentary.

Table 2: Data on Axial Runout of Magnetic Disk Blanks

No	Axial Runout	No	Axial Runout
1	-7	21	-1
2	16	22	3
3	16	23	12
4	2	24	-7
5	-6	25	-7
6	-9	26	8
7	-19	27	7
8	-11	28	-14
9	6	29	-14
10	-7	30	3
11	4	31	-7
12	10	32	-12
13	4	33	-4
14	9	34	-3
15	-14	35	-13
16	-7	36	12
17	12	37	13
18	16	38	-6
19	-4	39	7
20	-5	40	-11

Task 3: Investigate the statistical relationship between the height of men (x) and women (y) in married couples. Data for 20 married couples are provided in Table 3. Heights are given in centimeters.

Table 3. Data on the Height of Men and Women in Married Couples

No.	x	y
1	197	161
2	183	169
3	196	175
4	177	155
5	205	154
6	160	162
7	174	149
8	210	162
9	210	151
10	214	173
11	162	159
12	193	160
13	194	165
14	177	167
15	188	149
16	195	157
17	173	165
18	180	159
19	193	168
20	185	161

Create a scatter plot and analyze it in a Word document, including the scatter plot and corresponding commentary.

Task 4: The process of deviation from a specified dimension has been investigated. Twenty samples of four parts each were taken, and the strength values were measured (Table 4). Examine the capabilities of the process.

Table 4. Data on Deviations from Specified Dimension (mμ)

No	x_1	x_2	x_3	x_4	No	x_1	x_2	x_3	x_4
1	-18	2	-6	-15	11	18	1	19	9
2	-8	-16	-17	-15	12	5	-5	-19	-12
3	-3	-2	-10	-5	13	20	0	2	-8
4	-15	-8	8	6	14	13	8	3	0
5	-17	-8	7	4	15	17	-17	5	-22
6	-8	8	-14	9	16	-17	13	0	-5
7	1	-3	-13	4	17	17	24	10	29
8	-13	1	5	-15	18	13	36	-31	-4
9	17	-14	6	-4	19	8	23	-24	4
10	-14	14	-9	1	20	14	-30	8	-17

Construct an $\bar{X}$-R (X-bar and Range) control chart and check if the process is stable. Analyze the results in a Word document, including the control chart and corresponding commentary.