PARETO CHART

Exercise 1:

To evaluate the quality of products produced, from date January 1, 2009, to March 31, 2009, Garment Company A conducted an inspection finished product and obtained the following results:

Numbers	Form of disability	Number of defective products
1	Tear	147
2	Dirty (due to machine oil)	165
3	Poor quality supplies and raw materials	213
4	Wrong technical specifications and design	275
5	Sewn incorrectly designed	784

Requirement: Use the Pareto chart to identify the types of defects that need to be prioritized to address.

Exercise 2:

A company that sells canned goods by mail has many returned packages. The quality management department has recorded the reasons why the goods were returned.

Numbers	Reason	Number of times
1	Misspelling of recipient's name	43
2	Price mistake	17
3	Quantity mistake	24
4	Incorrect address	10
5	The writing is not clear	31
6	Mistyped number	7
7	Wrong category number	58
8	Price change without notice	47
9	The customer's name is not clear	13
	Total	250

Requirement: Please propose measures to help the above Company overcome the above situation

HISTOGRAM CHART

Exercise 1:

To accurately determine the dimensions of metal materials related to the heat processing technology process being used. People take notes when measuring the deformation coefficient of metal materials during the heat treatment process as follows (take 100 samples):

0,9	1,5	0,9	1,1	1,0	0,9	1,1	1,1	1,2	1,0
0,6	0,1	0,7	0,8	0,7	0,8	0,5	0,8	1,2	0,6
0,5	0,8	0,3	0,4	0,5	1,0	1,1	0,6	1,2	0,4
0,6	0,7	0,5	0,2	0,5	0,3	0,5	0,4	1,0	0,8
0,7	0,8	0,3	0,4	0,6	0,7	1,1	0,7	1,2	0,8
0,8	1,0	0,6	1,0	0,7	0,6	0,3	1,2	1,4	1,0
1,0	0,9	1,0	1,2	1,3	0,9	1,3	1,2	1,4	1,0
1,4	1,4	0,9	1,1	0,9	1,4	0,9	1,8	0,9	1,4
1,1	1,4	1,4	1,4	0,9	1,1	1,4	1,1	1,3	1,1
1,5	1,6	1,6	1,5	1,6	1,5	1,6	1,7	1,8	1,5

Requirements: Draw a distribution chart (column chart) and comment.

Exercise 2:

Take a sample of 84 machined parts and determine its values as follows:

170	180	215	195	195	180	200	190	180	170	220	215
200	185	180	185	185	190	210	215	220	185	215	205
185	210	210	210	180	195	200	210	210	200	205	195
195	210	180	210	210	225	210	190	195	200	200	225
220	220	195	200	195	195	180	195	175	225	180	200
200	180	200	185	220	175	195	200	180	205	185	175
190	190	200	205	195	215	220	195	200	195	195	185

Requirement: Please draw a column chart and comment on the machining process.

CAUSE & EFFECT DIAGRAMS

Exercise 1:

Build a cause and effect diagram to find out the causes of being late to class.

Exercise 2:

Build a cause and effect diagram to reflect the effectiveness of a study session.

Exercise 3:

Build a cause and effect diagram showing the factors needed to cook delicious rice.

SCATTER DIAGRAMS

Exercise 1:

To determine the breaking force y of a type of paper with thickness x, people record the data in the following table

Thứ tự	X	Y
1	0,20	64
2	0,19	65
3	0,28	69
4	0,26	69
5	0,23	66
6	0,21	65
7	0,24	67
8	0,26	67
9	0,28	70
10	0,25	68
11	0,25	67
12	0,22	66
13	0,18	63
14	0,26	68
15	0,17	62
16	0,30	70
17	0,19	64
18	0,25	68
19	0,29	69
20	0,27	68

Requirement: Draw a scatter diagram and give comments

Exercise 2:

Indicate the correlation according to the recorded data as follows

X	8	9	10	7	9	11	13	9	8	11	12	10
Y	463	442	437	460	457	431	429	435	457	439	441	440

X	9	11	13	10	7	11	12	10	9	7	12	8
Y	452	435	426	436	470	431	429	439	444	468	428	460

PROCESS MAPS

Exercise 1:

Make a flow chart of your morning commute to work (or school) starting from the time you wake up until the time you get to work (or school). Thereby, find solutions to overcome delays (if any) and re-establish a new flow chart.

Exercise 2:

Set up a flow chart of the following operational process:

A company is applying quality management according to international standards ISO 9000. Every year, based on the requirements of equipping employees with professional knowledge and skills from functional departments and workshops. The Head of Human

Resources will develop a training plan for the entire Company after reviewing and balancing the Company's business and development plan. This plan will determine specific training programs such as the industry or profession that needs training, the type of training (on-site or in coordination with specialized organizations), expected implementation time, and participating personnel. , costs... For implementation, the training plan will be officially approved by the Director.

CONTROL CHART

Exercise 1:

Draw control charts $\overline{X} - R$ and comments.

Sample	Measure				
	1	2	3	4	5
1	5.02	5.01	4.94	4.99	4.96
2	5.01	5.03	5.07	4.95	4.96
3	4.99	5	4.93	4.92	4.99
4	5.03	4.91	5.01	4.98	4.89
5	4.95	4.92	5.03	5.05	5.01
6	4.97	5.06	5.06	4.96	5.03
7	5.05	5.01	5.1	4.96	4.99
8	5.09	5.1	5	4.99	5.08
9	5.14	5.1	4.99	5.08	5.09
10	5.01	4.98	5.08	5.07	4.99

Exercise 2:

At a production line, it was decided to use a control chart $\overline{X} - R$ to monitor the status of the content of ingredient x. For 5 consecutive days, each day at different times, samples were taken, each sample included 5 measurement results as shown in the data table below.

Sample	Measure				
	1	2	3	4	5
1	47	32	44	35	20
2	19	37	31	25	34
3	19	11	16	11	44
4	29	29	42	59	38
5	28	12	45	36	25
6	40	35	11	38	33
7	15	40	12	33	26
8	35	44	32	11	38
9	27	37	26	20	35
10	23	45	26	37	32
11	28	44	40	31	18
12	31	25	24	32	22
13	32	37	19	47	14
14	37	32	12	38	30
15	25	40	24	50	19
16	7	31	23	18	32
17	38	0	41	40	37
18	35	12	29	48	20

Exercise 3:

Draw a control chart $\overline{X} - s$

Denominator	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
That result X	1,09	1,13	1,29	1,13	1,23	1,43	1,27	1,63	1,34	1,10	0,98	1,37	1,18	1,58	1,31
Denominator	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
That result X	1,7	1,45	1,19	1,33	1,18	1,4	1,68	1,58	0,9	1,7	0,95	1,3	1,57	1,43	1,35