

MgtOp 340—Operations Management (Section 1)
Washington State University
Fall 2019

Problem Set #2—Handwritten Section

Due: September 24, 2019

(The online portion of the assignment is found in MyLab Operations Management)

Show your work, and please complete it on a separate sheet of paper.

1. (10 points)

Suppose that a metal rod is supposed to be cut 44.6 mm. in length. The upper spec limit is set at 45.8 mm., and the lower spec limit set at 43.4 mm. A metal rod that is out of spec must be scrapped at a cost of \$54.00. The company uses the Taguchi Quality Loss Function to estimate quality costs. Suppose that a sample of 4 units was taken, and the rod measurements were: 45.0, 43.5, 44.4, and 44.9 mm., respectively.

- a. Simon believes that the Taguchi Quality Loss function is an appropriate measure for quality costs. What is the total Taguchi Quality Cost of that sample of 4 units? (You can round all costs to the nearest penny.)
- b. Alternatively, Howie likes the Taguchi Quality Loss function, but he believes that a *linear* function would better represent the cost of quality. Specifically, Howie prefers a loss function of the form: $L = T \times |D|$, where L , D , and T have the same definitions as in the Taguchi model. What would be the quality cost of the sample of 4 units using Howie's model? (You can round all costs to the nearest penny.)

2. (5 points)

We watched the video, "Quality Counts at Alaska Airlines" in class. There is an associated written case study in Chapter 6 of the textbook. To access it, get into MyLab Operations Management and click on "Pearson eText," then "View the eText." Go to the Table of Contents, then click on "6: Managing Quality." The Alaska Airlines case appears after the summary section of the chapter.

Answer Discussion Questions 1 and 4.

3. (10 points)

A quality inspector took the following samples of the length of time (in seconds) for glue to dry. Please round your calculations to three decimal places.

	Observation					
Sample	1	2	3	4	5	6
1	125	126	122	132	114	117
2	130	100	140	121	125	126
3	110	155	129	118	142	108

- a. What are the control limits for the R chart?
- b. What are the control limits for the $\bar{x}$ chart?
- c. Is the process in control?