

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

Problem Set #3—Handwritten Section

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

Due: October 3, 2019

Show your work!

1. (10 points)

Consider a firm with a plant in the U.S. and the U.K. A U.K.-based shipper charges £2.75 per unit to ship between the two countries. Assume no taxes, and consider the following data.

	<u>U.S.</u>	<u>U.K.</u>
Weekly Demand	12,000	13,000
Weekly Capacity	17,000	22,000
Sales Price	\$40.00	£50.00
Production Cost	\$28.30	£25.92

a. Suppose that the exchange rate is £0.81 = \$1.00. What is the best production and distribution plan, i.e., how much should be made in each country, and how much should be shipped between countries?

b. Given your plan in part a, what is the profit in each country (expressed in dollars)?

2. (5 points)

Consider a process with an upper spec limit of 180 grams, a lower spec limit of 170 grams, and a mean of 176 grams. What is the highest value that the standard deviation can be for the process to remain classified as “capable?”

3. (10 points)—*Round all intermediate numbers to the nearest 4 decimal places. The final answer can be rounded to the nearest dollar.*

Consider a normally distributed process that cuts wood with a “process center” of 32 inches and a standard deviation of .20 inches. The lower specification limit is 31.516 inches, and the upper specification limit is 32.42 inches. A piece of wood that is cut too short must be scrapped at a cost of \$15.60. A piece of wood that is cut too long must be re-cut by hand at a cost of \$4.00. The firm runs 22,000 pieces of wood through the machine per day and works 360 days per year. What is the annual expected fixing cost of this process?