

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

Problem Set #1—Handwritten Section

Due: September 12, 2019 (in class)

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

Show your work!

(Please round all reliability answers and percentage answers to four decimal places, e.g., 0.1234 or 12.34%.)

1. (5 points) If inputs decrease by 22%, and outputs decrease by 18%, what is the percentage change in productivity?
2. (10 points) Suppose that a firm is considering opening a plant on the moon, and the current exchange rate is 12 dollars per moon piece (mp). Also, the wage rate is 1.60 mp per hour. Suppose further that U.S. workers can produce 620 units per hour, while workers on the moon are expected to be able to produce 500 units per hour (more items float away).
 - a. What is the “relative” wage rate (in dollars, rounded to the nearest penny) of operating on the moon, after taking productivity differences into account?
 - b. Suppose that the U.S. wage rate is \$26.50 per hour. If the U.S. managers want to become the location of choice for production, and if they cannot lower their wage rate due to labor union agreements, what does the labor productivity in the U.S. need to become (rounded to one decimal place)?
3. (10 points) Consider an expensive part with a reliability of 89.8%. If the part fails, it will cost the firm \$4200.
 - a. What is the expected failure cost per part?
 - b. On each part, a backup can be installed that costs \$280. What is the minimum allowable reliability for the backup that would make installing it worthwhile? Support your answer.