

MgtOp 340—Operations Management (Section 1)
Washington State University
Fall 2019
Problem Set #5
Due: October 31, 2019
(The online portion of the assignment is found in Myomlab.)

Show your work!

1. (6 points)
Scary Clowns, Inc., supplies special makeup cases to a major circus. The circus orders its EOQ of 900 cases every four months from Scary Clowns. Scary Clowns incurs setup costs of \$5100 every time it produces these cases, and its annual holding cost per case is \$12.
 - a. How many units should Scary Clowns produce in each batch?
 - b. What is the total annual setup and holding cost for Scary Clowns using this policy?
2. (3 points)
Johnson's Juice sells bottles of "Keep Me Awake During Class" fruit juice to college students. Annual demand is 88,000 bottles. The company uses an annual holding cost percentage of 16%, its setup cost is \$45 per order. The current price per bottle from the supplier is \$0.75, and Johnson's Juice resells it to customers for \$2.00 each. However, the supplier has notified Johnson's Juice that starting next week, the purchase price will rise to \$1.15 due to tariffs imposed by the government. Johnson's inventory of bottles is about to be depleted. How many bottles should Johnson's Juice purchase in the next order? (Assume that the bottles are so full of chemicals that the drinks never expire.)
3. (8 points)
Consider a periodic review system, where orders are placed every 20 days. The firm strives to provide a 94.6% cycle service level. Demand averages 420 units per day, and the standard deviation of demand per day is 106 units. Lead time is 11 days.
 - a. How many units of safety stock should be held?
 - b. What should the target inventory level (order-up-to level) be?
 - c. Suppose that it is time to review the item. There are 160 units in inventory, and there is an outstanding backorder for 400 units. An order for 128 units is on the way. How many units should be ordered now?
4. (4 points)
Consider a continuous review inventory system. Demand is normally distributed with an average of 28,000 per month and a monthly standard deviation of 5000 units. Lead time is three weeks (assume four weeks per month). If the firm desires only an 87% cycle service level, how many units of safety stock should be held?
5. (4 points)
Skinner's Fish Market buys fresh Boston bluefish daily for \$4.20 per pound and sells it for \$5.50 per pound. At the end of each business day, any remaining bluefish is sold to a producer of cat food for \$1.60 per pound. Daily demand can be approximated by a uniform distribution between 200 and 320 pounds. What is the optimal order quantity?