

IE 460 Comments on Homework #3

Homework 3 statistics:

Average: 2.17, Standard Deviation: 0.56

Grade	3	2	1	0
# of people	9	23	3	0

Question 1

Solution requires you to follow the steps of the question. Here, it is crucial that you compute the variance of orders and compare it with the variance of demand. The ratio asked will be more than one indicating a measurement for the bullwhip effect.

Comments regarding your performance:

- In (s,S) policy, some suggested that order is given when inventory position is less than or equal to s value. Some suggested that order is given when inventory position is strictly less than s value. Both approaches are acceptable.
- Some found the CSL value while finding safety stock, which is not necessary in our question. I did not deduct any points if you found it logically. However, you lost points if you made a logical error. For instance, some stated that no stock-outs are observed in the past data, so CSL value can be set to 0.99. This is a mistake because this decision depends on observed data, and you do not know the distribution of demand or safety stock value. Finding CSL value by assuming that safety stock = s = 3 was reasonable.
- Some did not attempt to solve this problem, they received 0 points.

Grade	3	2	1.5	1	0
# of people	4	12	6	4	9

Question 2

The question asks a typical supply chain question: where should we source? Note that both suppliers agree to deliver the products to the desired location, hence there is no need for considering in transit costs.

Comments regarding your performance:

- Some of you ignored cycle inventory holding cost intentionally since setup cost is not provided in the question whereas some assumed a setup cost. Both approaches are acceptable.

- Some forgot that there is a procurement cost (e.g. can be calculated by unit cost times the mean of yearly demand), regardless of the amount of cycle inventory. This is a mistake.
- Some calculated weekly procurement cost and compared it with safety stock value. However, holding cost was annual (25%). I suggest you read IE 375 textbook (Nahmias) p. 204-205 and 210-211 to understand the issue with holding cost and working with years or averages.
- A few of you thought that the delivery cost is charged as a fixed ordering cost and not unit procurement cost. I believe the meaning was clear in the question.

Grade	2	1.5	1	0.5	0
# of people	17	11	6	1	0

Question 3

The first part of the problem is pretty standard. However, the question regarding to “switching off to a continuous review policy” deserves a lot of attention. Of course, in the problem, we want you to understand the effect of such switching on the expected inventory carried. However, in real life such a switching requires that you have suppliers who would be able to operate on the same basis (you order at 3:01 and the supplier will be able to ship immediately). Of course, for relatively small time increments of supplier’s response compared to lead time duration (days in many situations can be approximated by continuous review if lead times are measured in months).

Comments regarding your performance:

- Your performance on this question is very good. Thanks!
- Some thought that average order amount is demand during lead time + review time. Please see equation 12.20 and figure 12-7 in Chopra.
- A few of you thought that average order size should be chosen such that CSL should be equal to the probability that demand during lead time is less than avg. order size. I believe this is a serious mistake.

Grade	3	2	1.5	1	0
# of people	4	21	6	3	1