IE 460 Comments on Homework #1

Homework 1 statistics:

Average: 1.79 (out of 2, with bonus 3), Standard Deviation: 0.58

Grade	3	2	1	0
# of people	6	23	6	4

Question 1

This is a typical situation that will arise in the context of supply chains: Depending on the organizational structure, delivery (or procurement) decisions to different customers (or from different suppliers) can be made by different departments, in the name of specialization. Although there are clear benefits of specialization, supply chain decisions require coordination among those decision makers for understandable economic concerns.

Part d) may instill interesting arguments. One approach was detailed in class which allowed for delivering some customers every cycle, or once in every two cycles, etc. You may want to see what that model is for, and adapt this problem to the model.

Comments regarding your performance:

- Some tend to round up/down numbers without questioning its meaning. For instance, in *part a*, full truck is sent to the small customer 0.7 times per year. Some of you rounded up this value and found 1 time per year.
- In *part c*, some did not calculate the ordering cost correctly. They added common ordering cost (800$) to each customer's ordering cost, making total ordering cost (800+250)*3.
- In *part c* and *part d*, some did not compare the order quantity with truck capacity.
- In *part d*, a lot of you did not solve this part or came up with a policy which increases cost. You need to decrease the total cost while suggesting a new policy.
- In *part d*, some compared their new approach with *part b*, and not *part c*. It can be accepted since *part d* asks you to compare your result with *part b* or *part c*.
- Days of inventory is Q/(2D), not Q/D

Students who solved all parts correctly (some mistakes in calculations is acceptable) received 2 points. Those of you who did not solve *part d* or used an approach with unsound arguments got 1.5 points (for example, those who found a higher cost value). Almost everyone solved the first three parts.

Grade	3	2	1.5	1	0
# of people	2	15	16	2	4

Question 2

This is a comprehensive example for quantity discounts in a supply chain environment.

Part a is the typical quantity discount model you have probably learned in IE375, with the effect of retailer's choice on the supplier. From the problem statement, we understand that the manufacturer is setting up only for the quantity ordered by the retailer (lot-for-lot is the term we use for this or a similar situation). So, once retailer decides on the quantity to order, we compute the associated cost to the manufacturer. However, note that one can optimize the operations of the manufacturer by letting her to produce more (an integer times the order quantity stated by the retailer).

Part b asks you to solve the supply chain problem, again assuming lot-for-lot assumption. Again note that in this case we can further analyze the cases where manufacturers quantity of production is an integer multiple of the retailer's order quantity.

Part c and *Part d* asks about effects of a possible discount given by the manufacturer to the retailer.

Comments regarding your performance:

- In *part b*, some of you thought that number of orders in a year (n) should be discrete and applied a method learnt in class. However, the method you learned in class was limiting the order sizes to be integer multiple of each other, not the number of orders per year. In almost all problems unless it is specified for one reason or another, n does not need to be discrete. If you explained your logic well, you still got some partial credits. However, if you just applied the formula without understanding it, you did not get any points.
- In *part c*, some of you found that Crunchy sells at a price lower than its production cost (3$) but still said it can offer this discount. I consider it as a serious mistake.
- In *part c*, some of you found the true discounted price, but did not compare with the costs you obtained in *part b* and *part c*. Although I did not deduct any points for this, I recommend you to check your numbers in case of any possible mistake.

Grade	2	1.5	1	0.5	0
# of people	16	7	7	2	7