

IE 375 Comments on Homework #1

General Comment

To receive full points, I strongly recommend that you write the formulae before making the calculations since it is very likely that you make errors while dealing with the numbers. Unless you write the formulae at the beginning, incorrect numbers will indicate that you use an incorrect formula, thereby reducing your points from the homework.

Homework 1 statistics: Average: 1.7 (out of 2, with bonus 3), Standard Deviation: 0.72

Grade	3	2	1	0
# of students	3	35	9	5

Question 1

Some of you had problem with profit and revenue terms. Revenue is the total amount a firm earns after selling its products (selling price) $\times$ (# products you sold), whereas profit is the amount left to the firm after costs are discounted. It is pretty straightforward, but you have to know what you are doing while solving the questions. Always fully understand what is asked as question before attempting to solve it. Also some of you calculated the total cost instead of total revenue at this part since at break-even they are equal; however you didn't keep in mind that the production was not necessarily in integer amounts.

Question 1.36 is done correctly by almost all of you. In general you understand that there is a geometric incremental increase in the units produced each year. Hence, you need to calculate annual production multiplying the previous year's amount by 1.4.

Comments regarding your performance:

- Many of you did not change the unit cost from \$20 to \$25. Please read the homework carefully and make the necessary changes that are clearly stated in the text. Since not changing the numbers indicates a lack of focus and reading ability, those received at most 1 point from the question even if the remaining analyses were completely true.
- In question 1-35 *part b*, some stated that the revenue is equal to the initial investment 30,000. However, revenue is not equal to profit. Please read the relevant text to understand the terms revenue and profit.
- In question 1-35 *part c*, some increased both unit selling price and unit cost whereas some increased only unit selling price. Both versions are accepted as long as you are consistent with the analyses.
- Some did not attempt to solve Question 1-36. Those lost 0.5 points.
- Some found exceptionally large numbers at the end of the analyses. For instance, in question 1-36, some concluded that 30 years or 40 years are required to recoup the initial investment. Please always check whether the result is consistent with the question. If not, it is likely that your analyses contain error as well.
- In question 1-36, some rounded up the number of years required to recoup the initial investment, whereas some did not round. Both versions are accepted. However, the ones who rounded down could not receive full points.

Grade	2	1.5	1	0.5	0
# of students	17	11	17	2	5

Question 2

This question mentions a typical strategic decision problem. The detail level is minimal; however it is important that you consider the key issues which represent the trade-offs. A set of **sensitivity analyses/analyses of scenarios** are required before a reasonable decision can be implemented.

Comments regarding your performance:

- In *part a*, some wrote only the values of k and a without showing any derivation. Please note that you cannot receive partial grades by writing only the numbers. On the other hand, you may receive full points by writing the analyses although the numbers are not correct.
- In *part c*, most of you stated that the yearly production will be $15,000 \times 365$ without saying the reason. The reason is that the optimal production level in *part b* exceeds the capacity constraint therefore we produce with full capacity.
- In *part c*, some stated that the optimal timing does not change because the cost function and interest rate does not change. Those received at most 1.5 points from the question. Please understand the term capacity constraint.

Grade	2	1.5	1	0.5	0
# of students	19	13	8	3	9

Question 3

This is a standard question. Forecasts and realized values are given, you were simply expected to compute MSE, MAD and MAPE values, and compare and comment on the effectiveness of two forecasting methods using these measures. It is good that you understood how to calculate MSE, MAD and MAPE given a set of data. What is severely lacking is that you cannot sufficiently explain why a method is better than another by looking at the error terms. You need to understand the differences between these error terms, what they mean and when to choose a certain one.

Considering MAD and MAPE, forecasts from method 2 are more accurate, whereas MSE indicates that forecasts from method 1 are more accurate. This is mainly because the MSE is more sensitive to large errors compared the other measures. (Since the error term is squared in the MSE and not in the others.) It can be concluded that which method is to be chosen depends on the purpose of the study. If we are looking for forecasts with no radical errors it may be wise to use the MSE. If we are looking for more accurate forecasts in total or in percentage, then we may use the MAD or the MAPE, respectively.

Comments regarding your performance:

- Most of you did a great job in this question. Thanks!
- Some calculated MAD, MSE and MAPE but did not comment on the relation between them. Those lost 0.5 or 1 point.
- Some did not write the formulae for MAD, MSE and MAPE as well as made calculation errors. Those lost 1 point. Please always write the formulae or give a reference to the textbook to show that you can match the question with the relevant formula.
- Some stated that a measure of forecast accuracy is the best for method 1 because it yields the lowest number among all measures. Please understand how to use a measure of forecast accuracy.

Grade	2	1.5	1	0.5	0
# of students	11	17	12	5	7