

Yarkins Theaters
1100 Sunset Blvd.
Hollywood, CA 80234

Independent Mathematical Contractors
00 Anystreet
Anytown, Anystate 00000

Dear IMC:

My company operates a chain of theaters throughout the nation. Currently we allow local theater owners to set ticket prices based on their local market conditions. Unfortunately, this has led to varying levels of revenue from theaters. We would like to develop a more consistent scheme for pricing tickets based on statistics from the National Association of Theater Owners. I have included statistics on admissions and ticket prices in the US and Canada from 1998 to 2009.

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Admissions (billions)	1.438	1.440	1.383	1.438	1.599	1.521	1.484	1.376	1.395	1.400	1.363	1.414
Ticket Prices (\$ US)	4.69	5.06	5.39	5.65	5.80	6.03	6.21	6.41	6.55	6.88	7.18	7.50

There has been a great deal of discussion here on what we should be looking at to set guidelines for prices. We would like you to develop a function that describes North American revenue based on this data. Using this function, we would like you to find the price and admissions which maximize the revenue.

To help you accomplish these tasks, we suggest that you follow the following steps:

1. Make a scatter plot of ticket admissions x as a function of the price p .
2. Use regression to find a relationship between x and p .
3. Find the revenue function using the relationship $R = xp$.
4. Use derivatives to find the price and admission level that maximizes the revenue function.

We look forward to your final technical memo. We expect that the report will be in technical memo format. A scientific expert (your instructor) is available to answer any questions that you might have in the course of your investigations. This expert will not be available to assist on this project over the weekend before it is due. You should plan on meeting with this expert as soon as possible if needed.

Sincerely,
Levitz Spudowski
Executive Director, MVA