Independent Mathematical Contractors
00 Anystreet
Anytown, Anystate 00000

Dear IMC:

My company manufactures several appliances in our facility in Noer, Iowa. In an attempt to gain a larger share of the small appliance market, we are planning to manufacture and sell a new two-slice electric toaster. This toaster will feature an eco-friendly design which will impact global temperature rise than our main competitor's model. By using local resources and a patented "No-Heat" design, we believe that our model will attract a portion of the market that has forsaken toast because of the impact on global warming.

After conducting extensive market surveys, our research department provided the data to the right regarding the demand of toasters at several different production levels. The finance department has estimated the cost at the same production levels.

Units (toasters)	Price per Unit (dollars)	Cost (dollars)
1175	11.97	11036
1000	13.69	10000
1040	13.26	10043
1200	11.20	10955
1150	12.21	10712
1025	13.49	10217
1030	13.43	9976
1100	12.61	10376
1100	12.62	10558
1125	12.11	10600
1150	11.84	10911
1175	11.39	11039
1200	11.13	10892
1225	11.30	11094
1250	10.73	11390
1250	10.42	11238
1225	11.05	11125

We are planning to produce 2000 toasters per week, but want to examine the marginal profit at that level to help us plan for changing production needs in the future. We need you to find the profit function for the toasters and the marginal profit to helps us decide whether it would be reasonable to change production from 2000 toasters per week. If we should change production, what level would be best?

To help you get started, your instructor has provided a technology assignment. In this technology assignment, you will find regression models for the data in the table. This will help you to find a revenue function R(x) (from the demand function) and a cost function C(x) where x is the number of toasters.

The profit function P(x) may be found from revenue and cost functions. To help decide the optimal production level, carefully examine the marginal profit when 2000 toasters are produced and sold. Use that value to guide you towards your proposed production level.

I look forward to your project documentation. 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 consulting with this expert as soon as possible if you are unclear on any of the requirements of

this project. You should also communicate with the rest of your team to make sure each member has read this letter and knows what is expected on this project.

Nell Armstrong
Vice President for Product Development