

Due: Friday, March 26th (11:59 p.m. PT.)

References are to the course textbook (Baker, 3rd edition), except as noted.

## Reading

For Wednesday, March 24th, Chapter 9.

For Friday, March 26th, Section 9.4 of Sarker and Newton (Available on-line through SFU's library.)

## Exercise to hand in

Read the *Case: Colgate Wave* at the end of Chapter 9 in the textbook. The case study gives a scenario where you would like to study a function whose values are given by a proprietary simulation. This function can be computed by adjusting the inputs to the Colgate Model spreadsheet available at <http://faculty.tuck.dartmouth.edu/optimization-modeling/data-files>.

1. How would you go about setting the prices for Colgate products using this spreadsheet? Assume that you only have time to evaluate about 200 price points.
2. Implement your strategy to get a good pricing strategy for the three current Colgate products.
3. Implement your strategy to get a good pricing strategy for all four Colgate products including the new Wave.
4. Write a two-page memo to Colgate-Palmolive management outlining your understanding of their position in the toothbrush market, and the the potential of the prospective new *Colgate Wave* product, and make recommendations.

Note that for this question we are proceeding without using a solver. The *Evolutionary Solver* is useful for this problem as it automates the process of trying a number of potentially good solutions, but for this exercise you should optimize by trial-and-error.

This problem requires detailed written answers, typeset in  $\LaTeX$ . The answers must be supported by mathematical models and their solutions. The models will be implemented as spreadsheets, which will be submitted as part of your solutions.

Each group will send their solutions to the instructor in a single e-mail with all the relevant files (.pdf and .xlsx) attached.